



Breaking the Plastic Habit

A Guidance Note and Practical Toolkit

Lessons from Single-Use Plastic Behaviour Change Interventions
in Indonesia, the Philippines, Thailand, and Viet Nam

Breaking the Plastic Habit: A Guidance Note and Practical Toolkit

Lessons from Single-Use Plastic Behaviour Change Interventions in Indonesia, the Philippines, Thailand, and Viet Nam

This study was conducted for the Regional Knowledge Centre for Marine Plastic Debris (RKC-MPD), Economic Research Institute for ASEAN and East Asia (ERIA)

Copyright by © 2024 by Economic Research Institute for ASEAN and East Asia (ERIA)

Authors:

Institute for Global Environmental Strategies (IGES) - Dwayne Appleby, Alice Marie Yamabe-Ledoux, Atsushi Watabe
Center for Southeast Asian Studies (CSEAS) - Arisman
Chula Unisearch, Chulalongkorn University - Pasicha Chaikaew, Nuta Supakata
University of the Philippines Diliman (UPD) - Brida Lea Diola, Noriza Tibon Sadie
Southern Institute of Ecology (SIE) - Diep Dinh Phong

Contributors:

Institute for Global Environmental Strategies (IGES) - Miho Hayashi, Ngoc-Bao Pham, Vivek Anand Asokan, Miki Inoue
Center for Southeast Asian Studies (CSEAS) - Andiana Hikmawati, Nurul Mahmuda
Chula Unisearch, Chulalongkorn University - Pongsun Bunditsakulchai, Phanpaporn Vitayavarawat
University of the Philippines Diliman (UPD) - Louise Jashil R. Sonido, James Christopher P. Buno, Katrina Andrae M. Tan, Toni Rose M. Santos
Southern Institute of Ecology (SIE) - Nguyen Quoc Khoa, Nguyen Thanh Trung, Le Thi Thu Ha

Supervision and coordination:

Regional Knowledge Centre for Marine Plastic Debris (RKC-MPD), Economic Research Institute for ASEAN and East Asia (ERIA) - Ayako Mizuno, Aulia Salsabella Suwarno, Maria Dominika Ivana Suradja, Elsa Noviani, Grace Pratama, Michikazu Kojima, Reo Kawamura

Layout and cover design: Match-up Co. Ltd.

ISBN: 978-4-88788-273-7

DOI: 10.57405/iges-13400

Please cite as: Appleby, D., Yamabe-Ledoux, A. M., Watabe, A., Arisman, Chaikaew, P., Diola, B. L., Phong, D. D., Sadie, N. T., & Supakata, N. (2024). *Breaking the Plastic Habit: Lessons from Behavioural Insight Applications in Indonesia, the Philippines, Thailand, and Viet Nam*.

Acknowledgements

We would like to acknowledge the valuable review and comments on this report from the team at Regional Knowledge Centre for Marine Plastic Debris (RKC-MPD), Economic Research Institute for ASEAN and East Asia (ERIA), including Reo Kawamura, Ayako Mizuno, Aulia Salsabella Suwarno, Maria Dominika Ivana Suradja, Elsa Noviani, Grace Pratama, and Michikazu Kojima. We also thank Sam Gray (Rare BE.Center) for providing technical guidance on the application of behavioural insights.

This report was commissioned and funded by the Regional Knowledge Centre for Marine Plastic Debris of the Economic Research Institute for ASEAN and East Asia (ERIA).

Contents

Acknowledgements	I
Executive Summary	III
Part I: Breaking the Plastic Habit:	
Behavioural Insight Application Strategies	1
Introduction	2
A Theoretical Foundation on Behavioural Insights	4
Behavioural Sciences	4
Behavioural Insights	4
Levers of Behaviour Change	4
Application of Behavioural Insights Approaches to Reduce Plastic Use	6
Current Literature and Knowledge Gaps	7
Part II: Breaking the Plastic Habit:	
Toolkit for Designing Behavioural Insight Interventions	9
Toolkit Overview	10
Behaviour Change Intervention Design Checklist	11
Dynamic Menu of Options	12
Initial Planning and Analysis	12
Partnership Building and Information Gathering	13
Behaviour Change Intervention Design and System Mapping	14
Implementation and Stakeholder Collaboration	17
Monitoring and Evaluation	19
Scaling and Policy Integration	22
Additional Resources	24
Part III: Breaking the Plastic Habit:	
Stories of Impact from Four Countries in the Asia-Pacific	25
Case Studies from the ERIA-IGES BI Project in Asia	26
Indonesia	27
Philippines	31
Thailand	35
Viet Nam	40
Summary Table: Behavioural Insight Approaches Implemented by the Pilot Cases	44
Part IV: Breaking the Plastic Habit:	
Dynamic Partnerships and Learning for a Plastic-Free Future	46
Discussion	47
Key Takeaways	47
Rising to the Challenge	49
Limitations	51
Conclusion	52
References	53
Appendix	53

Executive Summary

The world produces a staggering 430 million metric tonnes of plastic annually, with about two-thirds being short-lived products. Plastic pollution is heavily contributed to by countries in the Asia-Pacific region. Paradoxically, these countries, which are composed of archipelagos and long coastlines, are also some of the most vulnerable to plastic pollution.

Building an understanding of what drives individual and collective decision-making mechanisms can help identify the root causes of plastic usage. Behavioural insight interventions, incorporating levers of social influences, emotional appeals, and choice architecture, can function as a complementary or precursor approach to traditional policy instruments such as regulations, economic incentives, and awareness campaigns to curb the consumption of single-use plastics.

An easy-to-use toolkit consisting of an intervention design checklist, a dynamic menu of options, and a set of reflection prompts presents a series of steps to designing interventions applying levers of behaviour change. The steps include concrete examples drawn from lessons learnt in pilot implementations in the Asia-Pacific region. Each step includes a number of potential priority actions. This toolkit aims to assist practitioners developing projects to reduce single-use plastics through behavioural interventions.

Behavioural insight interventions to reduce plastic consumption were implemented in four countries in the Asia-Pacific: Indonesia, the Philippines, Thailand, and Viet Nam. Case studies on the four pilot projects provide a detailed account of the process of designing and evaluating interventions using a variety of behaviour change levers. Lessons and positive outcomes from these pioneering experiences form the foundation for scaling interventions with diverse partners in various settings.

The implementation of innovative approaches to curb plastic consumption in these four pilot countries were driven by the proactive engagement of the educational community with local partners. Stakeholder involvement from an early stage was shown to deepen their understanding of plastic issues and empowered them as primary co-creators. Additionally, pilots were all characterised by a strong commitment to continuous learning and adaptability, key to reshaping long-established behaviours. It was also crucial to design emotionally appealing messages and strategically place them in high-impact areas to capture the attention of a wider audience. Finally, pilots highlighted the value of learning from past experiences and successes while planning for future broader systemic initiatives.

Future interventions should acknowledge key challenges stemming from the complex and long-term process of shifting business and consumer behaviour patterns, navigating supply chains to ensure the availability and affordability of sustainable alternatives, and the need for government engagement to bring about systemic change. In order to effectively address these challenges, it is crucial to build alliances with a community of local practitioners and implement clear and shared evaluation measures to foster transparent communication and continuous mutual learning.

Part I

Breaking the Plastic Habit: Behavioural Insight Application Strategies

Part I serves as an introduction to the report, laying the groundwork with a rationale for this Guidance Note. The rationale evidences the urgency to tackle plastic pollution in the Asia Pacific region and underscores the need for local and national action plans to incorporate a comprehensive behavioural understanding to facilitate systemic changes. The subsequent section on the theoretical background introduces the much-needed behavioural insights approaches for encouraging behaviour change, specifically in the context of reducing plastic consumption. Following this, a brief literature review of empirical studies offers an overview of the current implementation and impacts of interventions to reduce plastic waste informed by behavioural insights and highlights gaps in the literature.

Introduction

Plastic pollution in the Asia-Pacific region

It is currently estimated that the world produces 430 million metric tonnes of plastics each year, of which an estimated two-thirds are short-lived products which become waste soon after use.¹ While efforts to map and quantify the amount of plastic pollution in our ecosystems are ongoing, recent studies have indicated that plastic leakage into the oceans is heavily contributed to by countries in the Asia-Pacific region, particularly the Philippines, India, Malaysia, China, and Indonesia.² Paradoxically, these countries, which are composed of archipelagos and long coastlines, are also some of the most vulnerable to plastic pollution. It is also important to note that several countries in the Asia-Pacific have been burdened with plastic waste originating from developed nations, despite their lack of appropriate waste management and recycling facilities.

Plastics and the triple planetary crisis

Plastics as a whole are significant contributors to the triple planetary crisis of climate change, biodiversity loss, and pollution. Plastics impact heavily on climate change through the emission of carbon dioxide and other greenhouse gases through both its energy-intensive production and its incineration. Biodiversity loss is accelerated and conservation efforts are hindered by the presence of plastics in the environment. Plastics also have a significant impact on the challenge of pollution. In addition to the impacts on marine life, terrestrial ecosystems and human health also experience negative impacts from plastic production, use, and disposal. This is especially true for single-use plastics, which often end up in landfills, waterways, and incinerators, contributing to pollution on land, sea, and air. Impacts from plastic pollution disproportionately affect vulnerable populations, starting from workers and communities living in close proximity with plastic production and waste disposal sites.

National and global actions to end plastic pollution

Confronted with this plastic challenge, many governments are developing national action plans and collaborating internationally to formulate a global treaty to end plastic pollution. Combatting this crisis requires a multi-pronged strategy and substantial financial support to curb the consumption of single-use plastics and close the plastic leakage pathways to the ocean. Above all, urgent actions must prioritise preventing the influx of plastic into the market, ranging from limiting the production of single-use plastic products to supporting the implementation of zero-waste lifestyles by developing alternative delivery systems and reusable products. As a first step to reducing the flow of plastic, many cities and countries have focused their policy efforts on eliminating or reducing single-use plastics, which constitute the largest share of plastic production. Single-use plastic items include carrier bags, cutlery, sanitary products, and packaging materials. In many places, bans and fees have been imposed on the use of single-use plastic products to steer producers and consumers away from plastics and promote alternative distribution systems.

Behavioural insights as a novel approach to address the plastic challenge

However, it is essential to recognise that these 'hard' regulations, in the absence of more comprehensive behaviour change efforts that address the motivations, values, and local contexts of people, can in certain cases lead to unintended consequences. Given that the use and disposal of single-use plastic items has long been the default and convenient option for most people, simply removing them from circulation may not address the systemic cause of the problem and may even lead to rebound effects. For example,

¹ United Nations Environment Programme (2023)

² Meijer, et al. (2021)

regulating behaviours away from single-use plastic items could lead consumers to accumulate many reusable alternatives that go unused, ultimately resulting in increased waste disposal, or imposing increasing up-front costs on lower income individuals. Changes to plastic use and related waste systems may also have adverse impacts for businesses and the informal waste sector, causing harm to small businesses and marginalised people who rely on this sector for employment. Therefore, efforts to combat plastic pollution in sustainable and impactful ways must go beyond traditional regulatory measures to incorporate a comprehensive understanding of stakeholder behaviour concerning plastic use.

Behavioural insights, drawing upon principles from psychology, cognitive science, and social science, facilitate a nuanced comprehension of human behaviour. In turn, this understanding enables the development of effective interventions to induce behavioural change. As such, behavioural insights offer innovative approaches to understanding and influencing human behaviour to facilitate the adoption of low-waste practices for consumers. Behavioural insight interventions can function as a complementary or precursor approach to traditional policy instruments such as regulations, economic incentives, and awareness campaigns to curb the consumption of single-use plastics. While behavioural insights to reduce plastic consumption have been increasingly applied and reported in Western countries, we observed a literature gap on their application in the Asia-Pacific region. A deeper exploration of plastic reduction interventions in Southeast Asia's unique context can provide invaluable lessons on the drivers of behavioural change and inform policy on how to effectively promote positive change in the region.

Purposes of the Guidance Note

The Institute for Global Environmental Strategies (IGES), a not-for-profit policy research institute in Japan, launched a collaborative effort to harness behavioural insights against the plastic pollution crisis in the Asia-Pacific region. The project aimed to test the effectiveness of the application of behavioural insights in reducing the consumption of single-use plastics in cities and communities in the Asia-Pacific region. The project was funded by and conducted in close collaboration with the Regional Knowledge Centre for Marine Plastic Debris of the Economic Research Institute for ASEAN and East Asia (ERIA). As a result, behavioural insight interventions to reduce plastic consumption were implemented in four countries in the Asia-Pacific: Indonesia, the Philippines, Thailand, and Viet Nam. The implementation of innovative approaches to curb plastic consumption in these four pilot countries were driven by the proactive engagement of the educational community with local partners. Additionally, pilots were all characterised by a strong commitment to continuous learning and adaptability, key to reshaping long-established behaviours. Lessons and positive outcomes from these pioneering experiences form the foundation for scaling interventions with diverse partners in various settings. The result of this collaborative work is a comprehensive Guidance Note aimed at disseminating practical knowledge on the application of behavioural insights in concrete settings and providing an easy-to-use toolkit for local governments, businesses, and schools to design and implement their own interventions to reduce plastic consumption.

The Guidance Note is structured into four main sections. The first part establishes the project's rationale and introduces the theoretical foundation of behavioural insights applications and the use of behavioural change levers. It also includes a concise literature review. The second part is a practical toolkit enriched with concrete examples from pilot cases in the Asia-Pacific region to facilitate the design of effective behaviour change interventions. The third section delves into four case studies, offering a detailed examination of the implementation and evaluation of behavioural change interventions in Indonesia, the Philippines, Thailand, and Viet Nam. Finally, the fourth part explores common lessons and challenges faced by the pilot cases, highlighting the pivotal role of continuous learning, stakeholder engagement, and emotionally appealing messaging in shifting behaviours.

A Theoretical Foundation on Behavioural Insights

Behavioural Sciences

Behavioural sciences encompass a diverse and interdisciplinary field of study that focuses on understanding and explaining human and animal behaviour. This field seeks to uncover the underlying mechanisms, patterns, and influences that shape our actions, thoughts, and emotions. The behavioural sciences draw from a range of methodologies and theoretical perspectives, making it a dynamic and evolving field.

The core disciplines within the behavioural sciences include psychology, sociology, anthropology, and economics, among others. Each of these disciplines examines behaviour from a distinct angle.

Behavioural scientists employ a variety of research methods, including experiments, surveys, observations, and data analysis, to delve into the intricacies of human and animal behaviour. They seek to unravel the reasons behind decision-making, social interactions, and broader societal trends. These insights are often applied in diverse fields, including healthcare, marketing, public policy, and education, to enhance our understanding of how individuals and groups behave and how this knowledge can be used to improve various aspects of society. As the world continues to evolve, the behavioural sciences remain vital in addressing contemporary challenges and contributing to a better understanding of the human experience.

Behavioural Insights

The field of Behavioural Insights (BI) is an interdisciplinary sub-set of the behavioural sciences that combines elements of psychology, economics, and social science to understand and influence human decision-making. It examines how individuals and groups make choices, with a focus on the often irrational or predictable aspects of behaviour. Behavioural insights, as a practice, aims to bridge the gap between how people actually make decisions in a status quo situation and how they could make more informed decisions that align more closely with held or desired values and outcomes.

In practice, projects designed with BI methodology make use of several levers to effect behaviour change. The Rare Center for Behavior & the Environment, a world-leading behaviour change NGO focused on environmental action, details six specific levers of behaviour change. Each of these levers represents a set of intervention strategies based on evidence-based principles drawn from the behavioural and social sciences.

Levers of Behaviour Change

The first three levers of behaviour change are commonly used by policymakers, businesses, and other social actors. They emerged out of the behavioural sciences literature and practice, most notably through the concept of 'nudging' and the application of information campaigns.



3 Rare Center for Behavior & the Environment.



Material Incentives : This lever of behaviour change addresses the fact that people care about the costs and benefits, in terms of time, money, and effort, of their actions. It is most easily understood at the introduction or removal of material costs (i.e.: fees, discounts, credits, etc.) to make desired behaviours easier and undesirable behaviours harder. This can include a system of rewards and penalties to reinforce desired behaviours.



Information: This BI lever seeks to help actors to identify their behaviours, learn about what is motivating them, and to make improvements through informed decisions. Common forms of information strategies include providing instructions or guidance through training or making instructional materials available. Awareness raising campaigns are another form this BI lever takes, and can include informational meetings/consultations and informative materials.



Rules & Regulations: By changing rules and regulations, this BI lever seeks to make changes to the formal and informal systems that maintain order and signal right and wrong behaviour. It can take the form of new mandates from government or institutions that require or encourage (or incentivise – see Material Incentives above) particular behaviours. Conversely, rules and regulations can be leveraged to prohibit or limit certain behaviours.

The final three levers of behavioural change emphasised by the Rare Center for Behavior & the Environment move beyond the standard nudging approaches to encompass a fuller understanding of the factors motivating behaviour and the range of available methods for influencing them. These levers can be applied as a complementary or precursor approach to traditional policy instruments to reduce the use of single-use plastics, such as regulation, economic incentives, and awareness campaigns.



Social Influences: Methodologies based on this lever are about the use of social norms and comparisons: we are affected by the way people around us behave, the way we compare to our peers, and how we believe others perceive us. Interventions may include providing ways for people to signal their participation or shifting behaviours such as public commitments or declarations. Interventions can also seek to shift the perception of what the norm is by reframing messaging away from static toward more dynamic norms. In contrast to static norms (e.g., “80% show behaviour X”), dynamic norms emphasise that a norm is currently changing in a specific direction and that increasingly more individuals are showing a desired behaviour. People anticipate the target behaviour to become the future norm and conform to it as if it already were the current reality. Further, a dynamic norm signals that other people perceive this behaviour as important.



Emotional Appeals: This BI lever recognises that many of the decisions we make are driven by how we feel about a potential action, or how it connects to personal concerns and self-interest. People are often motivated by strong emotions such as pride, hope, fear, anger, and shame, and behaviour change interventions can be designed to speak to these emotional levers. Personalising the message to tap into these emotions requires that project implementers take the time to really get to know their audience and the context in which they are located; however, time and care to target the right emotions can result in increased impact, while triggering the ‘wrong’ emotions can have the opposite effect.



Choice Architecture: Designing the decision-making environment in which we prompt, structure, and frame choices can exert a strong influence on people’s behaviours. Methods for designing choice architecture include drawing direct attention to desired behavioural pathways by making it the default option; making messages and decisions simple by streamlining complex decisions and language, or providing shortcuts for multi-step behaviours. It can also take the form of timely interventions designed around moments of transition and habit formation, or timely prompts to reinforce behaviour change and remind people about desired behaviours.

The insights gained from the latest developments in behavioural sciences tell us that effective use of the later three behaviour change levers is essential for deep and lasting behavioural change. When combined with the more traditional levers of behaviour change, behavioural insights can become a powerful tool for promoting sustainable consumption and a reduction in plastic consumption.

Application of Behavioural Insights Approaches to Reduce Plastic Use

Plastic has become ubiquitous in our daily lives. Eliminating plastic and adopting alternatives to single-use plastic will require large shifts in societal behaviour, which in turn will rely on increased public awareness of the negative impacts of plastics on the environment and human health and wellbeing. Consequently, building an understanding of what drives individual and collective decision-making mechanisms can help identify the root causes of plastic usage and reveal promising levers for encouraging changes in behaviours.

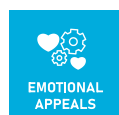
Plastics, and especially single-use plastics, are routinely used despite growing evidence and awareness that the use and disposal patterns of plastic leads to substantial pollution. This underlines a significant difference between what people think and what they actually do. Efforts to bridge this “intention-action gap” are largely determined by habits and external circumstances, such as norms or the physical environment.⁴ The most important factors to reducing the consumption of single-use plastics are not knowledge or motivation to address the problems of pollution. Rather, individuals and businesses respond best to efforts that address ingrained habits, social norms, and other situational factors in combination with informational and price-based incentives. As such, interventions to reduce plastic waste should not only focus on providing information but should also consider increasing people’s motivation and opportunities to reduce plastic use.

Additionally, as bans and taxes on plastics have become commonplace, recent literature reviews on behaviour change interventions have highlighted the short-term effectiveness of regulatory interventions in reducing the use of single-use plastics.⁵ Externally mandated coercive measures tend to elicit compliance rather than encouraging intrinsic motivation to change behaviours. Inversely, voluntary and internally set goals, encouraged by non-controlling language, have proven to be more effective to foster lasting changes. They can lead individuals to identify with the target behaviour but also adopt a pro-environmental identity, facilitating the uptake of related sustainable behaviours through positive spillover effects. As a consequence, this underscores the need for voluntary behaviour change interventions preserving autonomous decision making.

The latter three levers of behaviour change listed above, Social Influences, Emotional Appeals, and Choice Architecture, can be tailored to behaviours associated with plastic consumption and combined with ongoing regulatory and awareness-raising interventions to ensure effective and lasting reductions in plastic consumption.



Social Influences play a pivotal role in shaping behaviours related to plastic consumption through social pressures to collaborate, conform, and participate, as well as desires to emulate those we admire. By promoting and celebrating the shift away from single-use plastics and providing people with ways to signal their participation, interventions can tap into positive feelings, attitudes and norms. Such interventions to reshape societal norms around plastic use can include community-wide initiatives that celebrate individuals and businesses adopting plastic-free practices, such as carrying reusable bags and containers.



Emotional Appeals can be a powerful tool in reducing plastic consumption by connecting with individuals on a personal level. Creating campaigns that evoke emotions that resonate with individuals like empathy and concern can motivate people to make choices that align with plastic waste reduction. For instance, impactful advertisements or educational materials that vividly portray the harmful consequences of plastic pollution, or that feature the health and happiness of communities free of plastic litter, may instil a sense of responsibility and commitment to curbing plastic consumption.

⁴ Heidbreder, et al. 2020

⁵ Allison, et al. (2022); Borg, et al. (2022).



Changes to **Choice Architecture** through changing defaults and reordering physical environments are key to ensure that plastic waste reduction behaviours are easy and enjoyable to adopt. Vendors can shift behaviours to make the sustainable, non-plastic items the default option, or, in the case of items like straws, serve drinks without straws as the new normal. Restructuring physical environments can take the form of strategically placing reusable alternatives and making them more accessible, or conveniently placing recycling and composting stations with clear usage guidance. Interventions can place reusable bags and containers at store entrances, alongside clear signage highlighting their environmental benefits, while placing unsustainable options above eye level or require customers to specifically request them.

Reducing plastic consumption is a complex challenge, given its intricate relation with diverse actions from multiple actors across various contexts. As such, addressing this issue requires empirical investigation of a broad spectrum of actions, actors, and contexts. However, different cultures and communities often have different relationships with plastics, which presents both challenges and opportunities for practitioners seeking to shift behaviour away from single-use plastics. This is especially true where the use of single-use plastics occurs within food systems where issues of health, convenience, and cleanliness are present. Behavioural insights methodology provides a framework for engaging with individuals and groups in ways that are sensitive and responsive to local cultural and traditional practices and values. Applying these methods requires practitioners to deeply engage with stakeholders to gain a full understanding of what values and priorities motivate current patterns of behaviour, what set of beliefs and practices reinforce the status quo, and what the costs and benefits of interventions may be for shifting away from single-use plastics in the current environment.

The pilot-projects presented in Part III highlight the importance of designing interventions built upon different behaviour change levers and tailored to the local context.

Current Literature and Knowledge Gaps

This short review of interventions from the extant scientific literature provides concrete examples illustrating the importance and impact of integrating social influences, choice architecture, and emotional appeals in addition to the classic 'nudging' levers of material incentives, regulatory change, and informational campaigns to behaviour change interventions to foster enduring shifts in behaviour. This exploration spans diverse geographical contexts, though there is a notable lack of examples in the literature from the Asia-Pacific region, and addresses various types of plastic waste reduction, offering valuable insights and lessons for future applications. However, the diversity and non-specificity of studies limited a comparative analysis between findings.

The role of **social influences**, notably dynamic norms, were exemplified through a German intervention promoting reusable cup use in a local cafe.⁶ Banners and signs highlighting the increasing number of customers switching from a disposable cup to a sustainable alternative encouraged consumers to resist their old habit of using disposable cups. Another instance in Germany suggests the role of social norms in creating "windows of opportunity" for change.⁷ In this experiment, the plastic reduction intervention was conducted during the 'Plastic Free July' movement to encourage participants to conform to the campaign's objectives. In Japan, high school students were encouraged to set individual goals for reducing the use of plastic products, demonstrating the efficacy of setting targets and peer-pressure in inducing behaviour change, especially for low-cost behaviours such as refusing free plastic-wrapped wet wipes.⁸

6 Loschelder et al. (2019)

7 Heidebreder et al. (2020)

8 Kurokawa et al. (2023)

Emotional appeals, demonstrated in an Australian university experiment, indicated that interventions evoking environmental values had a more substantial and enduring impact on shifting to reusable cup use.¹² An innovative experiment in Napoli, Italy, showcased a unique approach by linking plastic bag consumption to football team preferences, resulting in an 8–12% reduction in carrier bag use.¹³ This study highlighted the significance of creativity and local knowledge in designing effective interventions.

Choice architecture interventions were illustrated by another German experiment which sought to change the default way drinks were served, by separating straws from cups to reduce plastic straw consumption.⁹ In England, a change in the framing of the question offering a plastic carrier bag, where an affirmative response corresponded to the desired behaviour, considerably reduced plastic carrier bag use.¹⁰ The intervention proved as effective as adding a 5 pence charge, and its combination with a financial disincentive further decreased plastic use. Changes to the physical environment were implemented in a US intervention, where the provision of free reusable bottles and water fountains effectively increased water intake while decreasing sweet beverage consumption and plastic bottle usage among youth in low-income neighbourhoods.¹¹ To ensure consumers' acceptance and long-term adoption of the new behaviour, interventions highlighted the need to combine behaviour change interventions with informal information campaigns showing that the change fits both vendors' and consumers' interests and values.

Actors investigated across previous empirical studies included University students/staff or visitors, employees, retailers, while the vast majority of studies focused on the general public. The most commonly studied context in which interventions took place were shopping environments and university environments. However, it is important to note that focusing on the general public's consumption and waste disposal behaviour in public spaces may shift the focus away from the systemic drivers of plastic waste behaviours, shaped by governmental policies, industrial and commercial practices. As such, plastic waste reduction behaviours should be explored with a contextual and systemic understanding of the multiple factors determining behaviours.

As noted above, currently there is a dearth of empirical studies on behaviour change from the Asia-Pacific region in the scientific literature.¹⁴ Indeed, most reported applications of behavioural insights were conducted in Western countries. The limited availability of studies on plastic waste reduction conducted in the Asian continent was flagged as a significant gap in the literature given the major contribution and vulnerability to plastic pollution of many countries in the region. However, the dearth of documented cases in academic literature does not necessarily imply an absence of behavioural insight applications for reducing plastic consumption in the region. Rather, it reflects their underrepresentation in English scholarly research, despite some instances noted in the grey literature, which we excluded from the scope of our review. The Guidance Note aims to address this gap and provide insights into behavioural interventions tailored to the region's unique context and challenges, contributing to the broader literature on plastic consumption interventions.

9 Mundt and Harhoff (2020)

10 Chandra (2020)

11 Lawman et al. (2020)

12 Novoradovskaya et al. (2021)

13 Romano and Sotis (2021)

14 Mathew, et al. (2023)

Part II

Breaking the Plastic Habit: Toolkit for Designing Behavioural Insight Interventions

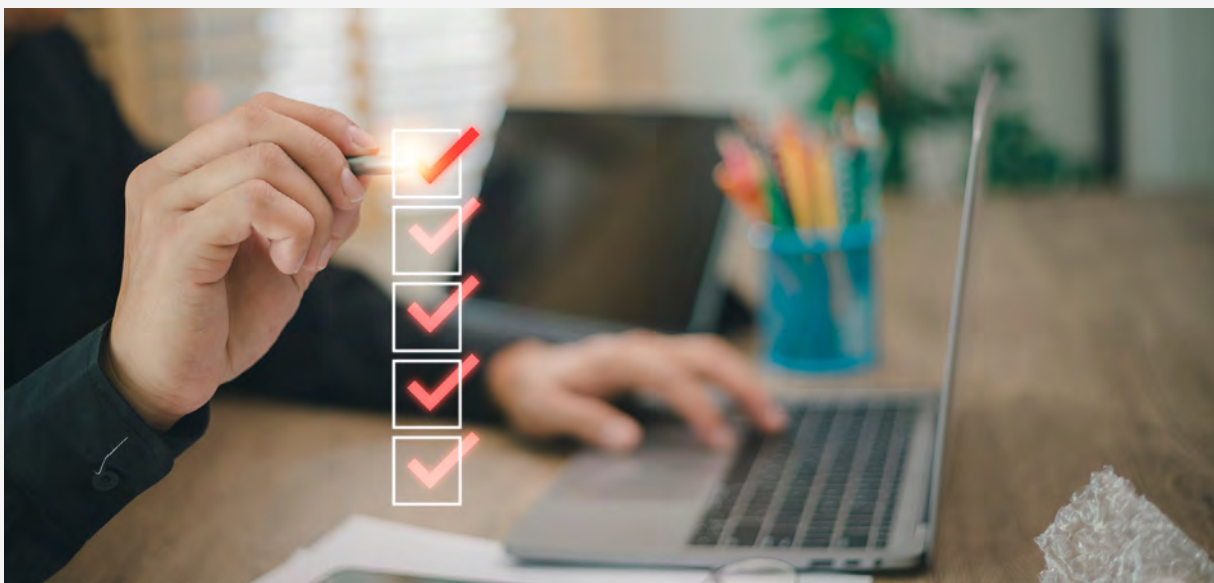
This section presents practitioners with a toolkit designed to help guide them through the development of interventions that make use of behaviour change levers. The toolkit specifically aims to assist those developing projects to reduce single-use plastics through behavioural interventions, emphasising the importance of engagement, flexibility, and ongoing evaluation in the process. Regardless, many of the tips and lessons have broad applicability for behaviour change focused interventions across topics.

Toolkit Overview

The toolkit begins with a high-level **checklist** of intervention components and methodologies, broken into six distinct sections, to assist in assessing which BI features and levers will be incorporated into the project intervention(s). This list is a distillation of the dynamic menu of options presented in the next subsection. It is not a set of sequential steps that must be taken to achieve a successful BI intervention. While many options on the list will be necessary for any intervention design, others may be less relevant, or may need to be adapted to better fit local conditions.

Following the checklist, the toolkit presents the **dynamic menu of options**. The menu consists of six sections organised around different stages of the intervention planning and implementation process. In each section, the menu elaborates on several potential options for priority activities, discussing the benefits and potential challenges of each activity. Finally, each menu section ends with a set of **reflection prompts** for behavioural interventionists to reflect on their planning and implementation progress. These prompts are designed to encourage critical review of the intervention design to ensure that all actions are maximising the potential for effective behaviour change, including ensuring that no stakeholders are marginalised, that conscious and unconscious biases are accounted for, and that the design is always considering future action and impact.

Throughout the **toolkit**, several small cases are presented to illustrate how the pilot projects discussed in this report made use of specific methodologies and practices.



Behaviour Change Intervention Design Checklist

The following checklist can be used to track which methodologies and components will be applied during behaviour change intervention design, implementation, monitoring, and evaluation.



Initial Planning and Analysis

- Identify the target issue and behaviours
- Identify the target audience and location
- Learn from local experiences and acknowledge personal biases
- Map potential benefits and harms, placing behaviour within the system



Partnership Building and Information Gathering

- Engage relevant stakeholders, recognising local history and power dynamics
- Engage in deep and active listening during consultations
- Gather information about target groups, their values, motivations, and barriers



Behaviour Change Intervention Design and System Mapping

- Map connections between gathered information about actors/behaviours and behavioural insights
- Identify potential intervention points and strategies
- Design the behaviour change intervention



Implementation and Stakeholder Collaboration

- Test the intervention on a small scale and assess the feasibility of planned collaborations
- Continuously communicate the purpose of proposed interventions to collaborating stakeholders
- Make adjustments and preparations to tailor interventions to unique local conditions



Monitoring and Evaluation

- Measure and compare outcomes, collecting quantitative and qualitative data
- Evaluate the effectiveness and durability of interventions
- Assess reach and impact on different populations
- Refine the intervention design based on feedback and challenges



Scaling and Policy Integration

- Propose a plan to scale interventions to a broader audience and new contexts
- Engage all stakeholders and local communities in the scaling process
- Collaborate with governments to integrate successful interventions into policies and regulations

Dynamic Menu of Options

Behavioural interventions are not only useful in fostering the uptake of alternative behaviours, but can also promote the acquisition of knowledge, local buy-in, and collaboration among partners which are essential for modifying the systemic contexts of behaviours. It is important to note that these 'steps' need not follow a strict sequence from 1 to 6, nor will all points be relevant for all interventions. An iterative approach that revisits previous steps, incorporating insights gained during implementation and partner feedback, proves to be the most effective.

Initial Planning and Analysis



- **Identify the target issue and behaviours**

Begin by identifying a current behaviour that contributes to plastic pollution. This will allow you to start defining a target behaviour to address this issue. Make sure to target an action, as opposed to an attitude or awareness. Some behaviour changes might be constrained by cost or structural barriers so it is important to identify a behaviour that is easy to change (refusing a plastic bag, switching to a reusable packaging). You should also ensure that the target behaviour is the most impactful solution. For example, refusing to use single-use plastics will have a bigger and more direct impact than encouraging the sorting and recycling of plastic products.

- **Identify the target audience and location**

Identifying the actors or audience whose current behaviours contribute significantly to plastic pollution is crucial for effective intervention strategies. Identify the best locations where interventions will have the most significant impact. This will require careful consideration of the roles different groups play in the plastics system and an analysis of current waste management practices and infrastructure. It will also be necessary to begin to understand the various regulations and the availability of alternatives to single-use plastics that are in place in the area which may impact on the success of any interventions.

- **Learn from local experiences and acknowledge personal biases**

Keep the local context, values, culture, and traditions in mind when building partnerships and planning interventions. This awareness is crucial for developing interventions that resonate with and respect the communities involved. Acknowledge your own personal biases stemming from power, identity, position, to ensure that interventions are culturally sensitive and inclusive.

- **Map potential benefits and harms, placing behaviour within the system**

Conduct a comprehensive baseline analysis to understand the physical and social context in which the current behaviour occurs. You should identify and understand the factors that initially motivated this behaviour to become the norm from both the users' and providers' perspective. For example, if the current behaviour is the use of single-use cups for coffee, key factors at play for consumers are concerns for hygiene and prevention of contamination, convenience to consume their drinks on the go, and projecting an image of sophistication or individuality associated with coffee consumption. From a business owner's perspective, using disposable coffee cups allows them to save on labour and handling costs and to promote their brand image on cups carried by customers.

Understanding the system from both the users' and providers' perspective will enable you to map potential benefits and harms associated with the targeted behavioural change. Identify who might be negatively affected by the behaviour changes or might be unable to adopt the new behaviour. Keeping these limitations in mind, consider measures that can be implemented to support them.

Reflection Prompts:

- Have we identified a target behaviour that maximises impact and feasibility?
- Have we identified a target location and audience who are well-positioned to have impact and are likely to participate?
- What personal biases may affect the way we build this intervention?
- Do we have a comprehensive understanding of the benefits and harms associated with the proposed behavioural changes?

Partnership Building and Information Gathering



- **Engage relevant stakeholders, recognising local history and power dynamics**

Identify who is responsible for each component of the behaviour you are targeting. For example, in a University, the sustainability coordinator or the Faculty Dean will play pivotal roles in the success of interventions. Understanding the scope of their responsibility and acknowledging power dynamics will be useful to determine the reach and impact of your intervention. Start by reaching out to these key groups or individuals to communicate your goals and solicit their inputs. This will ensure you gain their support from an early stage to amplify your intervention later on.

- **Engage in deep and active listening during consultations**

Visit the location where you plan to introduce the intervention and meet with the providers and users involved in the behaviour. Interviewing local stakeholders will help identify issues and opportunities that are more difficult to detect for you. However, be mindful of personal biases and note that they may also mis-predict some behaviour changes. This collaborative approach fosters a deeper understanding and acceptance of proposed interventions.

Concerted Efforts to Ensure Horizontal and Vertical Integration of Behaviour Change Interventions at the University of the Philippines Diliman

The pilot project for plastic-free vending in UP Diliman involves collaboration between the Task Force on Environmental Sustainability (TFES), the UP Institute of Civil Engineering (UP ICE), and the UP Diliman Environmental Management Office (UP DEMO). By combining the expertise and resources of TFES, UP ICE, and UP DEMO, and active participation of partner vendors, faculty, students and other customers, the project has created a holistic and sustainable approach to address the plastic issue on campus. Effective communication, collaboration, and a shared commitment to environmental sustainability among the proponents and beneficiaries contributed to the success of the project.

Inputs from partner vendors, both ambulant and non-ambulant, through focus group discussions, proved to be crucial. As a result, it fostered a sense of shared responsibility in addressing the plastic issue on campus; the stakeholders exhibited ownership of the project. Regular communication through meetings and online updates, and project monitoring were also conducted to facilitate the flow of information. This ensured that stakeholders' concerns and suggestions were considered throughout the decision-making process. This approach helped guarantee that decisions are informed by a comprehensive understanding of the issue and that the implemented solutions are practical and sustainable.

This horizontal and vertical integration ensured that the solutions were well-informed, widely accepted, and aligned with the organisational culture and values, contributing to long-term sustainability and a positive environmental impact.



Meetings with non-ambulant vendors (left) and ambulant vendors (right)

- **Gather information about target groups, their values, motivations, and barriers**

Conduct thorough information gathering about target groups, understanding their values, motivations, and barriers. This step provides crucial insights for tailoring interventions that align with the specific needs and challenges of the audience. Understand how behaviours are made in your chosen context. Try to identify what form of influences are at play for people to adopt your target behaviour. Is there a social stigma that may discourage people to bring their own container? Inversely, there might be some entry points that can be harnessed to facilitate the adoption of the target behaviour. For example, students may be in need to save money, so introducing a discount on bringing their own container might be a powerful material incentive.

Reflection Prompts:

- Did we build collaborative alliances with key stakeholders, taking into account local history and power dynamics?
- Have we listened carefully during consultations to ensure all voices are heard?
- Have we gathered a comprehensive understanding of the actors involved, including their values, motivations, and operational context?

Behaviour Change Intervention Design and System Mapping



- **Map connections between gathered information about actors/behaviours and behavioural insights**

Illustrate connections between the information gathered about actors and behaviours and selected behaviour change levers. This systematic mapping approach reveals potential leverage points where interventions can be most impactful. Understanding these connections will be a powerful guide in designing targeted and efficient interventions.

- **Identify potential intervention points and strategies**

Identify potential intervention points within the mapped connections. Pinpoint areas where behavioural insights can be applied effectively to influence positive change. Formulate strategies that align with these intervention points and compare the strengths and weaknesses of each potential approach.

Student-led Continuous Learning in Ho-Chi Minh City, Viet Nam

The pilot project conducted at Thanh Loc School and Hiep Binh School was co-designed with the school's STEM club, including students as key actors. Students members of the STEM club spearheaded the organisation of multiple events, such as the distribution of information materials on plastic waste, a site visit, waste segregation, and contests (painting, model, photo, and video). This co-creation approach ensured that activities and interventions were tailored to reflect students' priorities, interests, and concerns, while integrating well with the existing curricula. As a result, all awareness-raising and capacity-building activities integrated crucial fun and competitive aspects to encourage students' enthusiastic participation.

As part of the pilot project, the STEM club students worked with the Southern Institute of Ecology to create informative pamphlets focused on plastic waste and waste segregation guidance. Through this process, the students benefited from access to leading national experts on plastics and waste systems and learned valuable lessons both on environmental issues and on how to communicate clearly and effectively to induce behaviour change. Through these activities, the students built their confidence and capacities to engage actively in shaping the choice architecture in their school environment in ways that promote the future they want to see. As a result, the students at Thanh Loc School went on to co-design workshops on the impacts of plastics and on the importance of behaviour change, including using alternatives to plastic and waste segregation strategies.

Students at both schools were able to translate the lessons they learned into an ongoing presence on their school fan pages, ensuring that the student dialogue around plastics will continue into the future.



Student-led waste reduction activities

- **Design the behaviour change intervention**

Based on the comparison of approaches, determine the most feasible and appropriate intervention approach that aligns with the given setting and population to design the behavioural intervention. Define the timeframe within which you expect to see the behaviour change occur—whether it is within a few months, by the end of the year, or another specified timeframe. Additionally, consider the following aspects when developing your intervention:

Aspects	Considerations
Implementability	Assess how easily the intervention can be implemented within the targeted context, time period, and available resources. Consider whether its implementation relies on voluntary participation or requires substantive support, or training from experts.
Acceptability	Explore potential negative reactions from users and other stakeholders. Consider whether the intervention may be controversial or unpopular for specific population groups.
Affordability	Determine to what extent stakeholders could invest in the intervention. Consider economic justification, transitional costs, long-running monitoring costs, and identify who would bear the financial burden.
Evaluability	Identify the form of data that will guide monitoring and future policy scaling steps. You should prioritise an approach with quantifiable impacts to determine behavioural outcomes (purchasing patterns or monitoring registers). Attitudinal effects can also be inferred from surveys or interviews to provide added richness of information.
Expected Effects and Durability	Try to predict whether you expect the intervention to produce instant change or a long-term response. Take into consideration the expected durability of effects long after the collaborative intervention has terminated. Would the behavioural effect be temporary, or bring lasting adjustments to business models and form new consuming habits?
Expected Effects and Equity	What is the expected impact on the target audience and how will messaging reach them? Consider the extent to which this intervention may have varying effects on differently advantaged and disadvantaged populations, and who may be left out.
Adaptability and Scalability	Explore the possibility of gradual adjustments to other contexts and its potential scalability. If an intervention was specifically tailored to a selected population it may affect other groups differently.

Reflection Prompts:

- Are the connections between the collected information and behavioural insights revealing strategic points for intervention?
- Have we identified potential intervention points and formulated strategies aligned with these points?
- What is an intervention approach that is both acceptable and reasonable to implement, considering aspects of affordability, evaluability, durability and adaptability?

Implementation and Stakeholder Collaboration



- **Test the intervention on a small scale and assess the feasibility of planned collaborations**

Test out the behaviour change intervention on a small scale to see how easily it can be implemented. A time-limited trial with iterative evaluation will inform further collaboration before scaling. Assess the viability of planned collaborations with market stakeholders, ensuring long-term commitment and alignment with the intervention goals. Maintaining and developing a collaborative alliance with businesses will be key to facilitating the proposed implementation and collecting monitoring information later on.

- **Continuously communicate the purpose of proposed interventions to collaborating stakeholders**

This can be done through the distribution of communication materials or workshops inviting representatives. A feedback loop should be established so that concerns and experiences raised by collaborators can be continuously addressed and integrated into the implementation plan.

- **Make adjustments and preparations to tailor interventions to unique local conditions**

The operationalisation of the proposed intervention in the practical, organisational, and procedural contexts may require tailoring to each site's unique conditions. For example, a local business collaborating to apply the intervention might need to inform or train their staff, reorganise the way they offer their products or interact with the clientele. This may also include adapting the intervention to local languages or customs, and building in opportunities to course correct the intervention as conditions change.

Collaborative Learning and Continuous Improvement in Reducing Plastic Usage at the University of Indonesia

The pilot project conducted at the University of Indonesia's Faculty of Social and Political Sciences offers unique lessons on the challenges and benefits of combining traditional and novel levers of behaviour change.

As part of the intervention, straws were removed from the storefront and an extra 2,000 Indonesian rupiah (IDR) charge was introduced to customers requesting straws. Many vendors initially faced difficulties explaining the new business practice to their customers. In response, some vendors preferred to stop offering straws to their customers altogether, while others applied the charge without clear explanations to their customers. Despite these initial challenges, vendors collaborated to find reasonable solutions and shared their concerns with implementers during focus group discussions. In parallel, a continuous communication strategy with plastic-free events held around the campus (recycling workshops, movie screenings and discussions, environmental talk shows, and posts on social media) created a sense of community around the new target behaviour, influencing social norms through peer-to-peer influence. After a few weeks of implementation, customers became familiar with the new straw rule, allowing vendors to revert to providing straws only upon request with the IDR 2,000 charge. Such a learning process illustrates that continuous improvement fostered by project partners is vital for effective behaviour changes.



Implementation of measures to reduce the use of plastic straws

Adding Visual Cues to Clarify the Messaging Approach at the University of the Philippines Diliman

Four types of posters were created and displayed at partner vendor locations - both on site and online through social media pages. These posters introduced the project, highlighted the benefits of compostable alternatives, urged customers to bring their own reusable containers, and clearly explained how to segregate waste properly.

A well-structured waste segregation system was implemented on campus by providing dedicated bins with proper labels and guidance for various types of waste, including compostable waste, to encourage food vendors and their customers to segregate their waste properly, ensuring an effective waste collection and processing. Interviews and on-site observations of waste segregation practices revealed a confusion about the specific waste types suitable for each bin. This confusion stemmed from the community's unfamiliarity with compostable foodware and with the relatively new introduction of the waste segregation system in the ambulant vending sites. Members of the community found it challenging to differentiate between foodware made from bagasse, cornstarch, and non-biodegradable plastics. In response, the project team clarified the waste segregation messaging approach by incorporating a physical example of what should be disposed of on each bin label. This enhancement aimed to provide clear and intuitive guidance, especially concerning the proper disposal of compostable foodware and recyclable materials. Subsequent to the implementation of these visual aids, upon visual inspection, the waste segregation significantly improved.



After implementation: addition of physical and visual aids on bin labels



Four types of posters: About the project, Proper segregation, Bring-your-own-container, and Compostable alternatives to plastics

Reflection Prompts:

- Are the proposed behaviour change interventions feasible to implement in practice?
- Are the planned collaborations with market stakeholders viable in practice and in the long term?
- What adjustments and preparations are needed to effectively implement the interventions?



- **Measure and compare outcomes, collecting quantitative and qualitative data**

Compare the effectiveness of different interventions, by collecting data to cover the period prior to, during, and following the implementation of the intervention to establish an evolution trajectory from baseline levels (pre-post evaluation).

Types of quantitative data to be collected include:

- Sales records from collaborating businesses.
- Records of wholesale purchases of single-use plastic products.
- Amount of discarded plastics in nearby waste bins or from waste management facilities. Despite being cumbersome, this method also provides essential information on the local waste sorting behaviour. Keep in mind that this data may be influenced by consumption patterns originating from outside the pilot setting (e.g. food purchased outside the school grounds).

Interview collaborating businesses and consumers to gather their reactions to the interventions. Obtain feedback from collaborating shop owners to identify preferred interventions and their impacts on their business activities. Additionally, collect feedback from customers to identify preferred interventions and their impacts on individuals, while maintaining a focus on their impact on marginalised or vulnerable communities. Ensure to conduct a comprehensive survey by covering a representative sample of the population, encompassing people of different genders, professions, and cultural backgrounds. Determine the most relevant sample size by considering statistical principles such as confidence levels and margins of error, ensuring it is large enough to capture meaningful trends but manageable for thorough analysis.

- **Evaluate the effectiveness and durability of interventions**

Solely relying on the pre-post evaluation may lead to overestimating the effectiveness of the intervention if it assumes that no other factors influenced the adoption of the target behaviour during the intervention period. The influence of different variables (seasonal patterns, associated campaigns etc.) should be accounted for.

It is also important to assess the durability of interventions, as interventions related to the reduction of plastic consumption may need continued compliance with the desired behaviour even without the support of the intervention. Evaluating the stability of the change in behaviour during the intervention period will provide a robust indicator on its effectiveness before making scaling out decisions.

- **Assess reach and impact on different populations**

Evaluate the reach of your interventions by measuring the number of consumers reached by your interventions. You can count the distribution of intervention materials or messages across various communication channels (e.g. social media, workshops, community events) for different populations. You should also analyse messaging strategies (communication methods, language, and visual elements) to determine which were most effective at capturing and maintaining the attention of the target audience over time.

Segment the population to identify which interventions were most successful for specific groups. Your evaluation must also be sensitive to potential unintended negative or positive effects across different populations. Are there populations that responded more positively or negatively to the intervention? Analyse and document any demographic or contextual factors that explain these impact variations. The target population's wellbeing and social cohesion should remain key success indicators alongside the targets set for the intervention itself.

- **Refine the intervention design based on feedback and challenges**

Identify the most effective behaviour change interventions and determine the best practices that should be applied as you go forward. Analysing why some of the interventions did not bring expected results will also allow you to draw important insights for future interventions. Reflect on the feedback, challenges and concerns that emerged during the intervention and determine if the issues are specific to certain locations, demographics, or aspects of the intervention. Based on the nature of the challenges and feedback, develop tailored solutions that address the root causes. These solutions may include adjustments to the intervention’s design, communication strategies, or implementation procedures. The refinement process may involve multiple iterations. Be prepared to make additional refinements if new challenges or feedback emerge during the ongoing implementation.

Overcoming Data Collection Challenges in a Zero Waste Campaign Pilot at Chulalongkorn University Flea Market, Thailand

The pilot implementation of a zero waste campaign at the CU flea market in Chulalongkorn University encountered challenges in monitoring the effects of the interventions. The pilot team had to collect data on the quantity of plastics emitted in each shop and stakeholders’ reactions to the plastic free campaign both before and after the intervention.

The monitoring process was hindered by the different frequencies of businesses’ presence at the markets. In order to ensure accurate comparison between the two phases, the same shops had to be surveyed before and during the campaign. While most shops taking part in the experiment were open on a weekly basis, some shops only opened twice or once a month. Several shops also changed their name or owners, preventing the continuous data collection process.

As a way to overcome this data collection challenge, a large team of 20 students was recruited, trained, and deployed every time the market was held to collect data from shop-owners, including information on the opening frequency of each shop, to increase chances of finding the same shop-owners during the two phases of implementation. As a result, a total of 100 shops were surveyed before and after the pilot implementation at the CU market and Samyan market. This monitoring sample exceeded the required 90 to ensure a margin of safety against any potential failure in the data collection process.

In addition to benefiting the project monitoring capacity, the engagement of this large group of students provided them with a practical understanding of plastic reduction interventions and valuable experience working alongside food vendors and the academic community.



Interviews with shop owners about the “No free single-use plastic bags” intervention

Challenges to Engaging Stakeholders in Ho Chi Minh City, Viet Nam

An unforeseen challenge faced during the implementation of the waste reduction intervention at Thanh Loc School and Hiep Binh School was the presence of many food vendors in close proximity to the schools, but outside of school jurisdiction. These food vendors did not participate in the behaviour change protocols implemented within the schools and effectively undermined the impact of the projects. As a result, the implementing teams identified co-located food vendors as a priority stakeholder group to engage with to enhance the impact of future iterations of their projects. By engaging with local businesses in the future, implementers hope to influence behaviour change among local food vendors and.

Vendors consider cost-effectiveness and convenience for customers as a primary concern. Standard practice in the off-site vendors near the schools includes providing food wrapped in plastic or in plastic containers, and preparing plastic glasses filled with ice before lunch hour to provide faster service. Each day, many students frequented the off-site vendors during lunch breaks, bringing plastic waste back to the school grounds and presenting a challenge to school efforts to reduce the use of single-use plastics.

Learning from the challenges faced during the pilot project, the implementing teams have realised that fostering a collaborative environment that engages with stakeholders in the community beyond the school grounds is crucial for achieving meaningful reductions in plastic waste from off-site food vendors.



Mixed waste was collected despite the different colour of bins

Reflection Prompts:

- How have behaviours changed compared to the baseline or control? What positive or negative reactions have you observed?
- What type of intervention worked best to encourage the reduction of plastic consumption? To what extent can we attribute changes in behaviour to the intervention?
- What parts of the population were affected differently by the intervention? What adaptation of the intervention or messaging strategy could reach a wider and more diverse group of people to enhance their effect?
- How can we integrate the feedback you collected from stakeholders to improve the intervention?



- **Propose a plan to scale interventions to a broader audience and new contexts**

Develop a comprehensive scaling plan that outlines how the interventions can be expanded to a broader audience, other policy contexts, or other product categories. Interventions are generally developed with a specific target group and geographical context in mind, so scaling them out or replicating them elsewhere may not guarantee similar results. Ahead of scaling an intervention, conduct an in-depth analysis of new contexts and products and prioritise similar implementation contexts or geographically generalisable interventions.

Engaging Key Stakeholders for Effective and Scalable Outcomes at the University of Indonesia

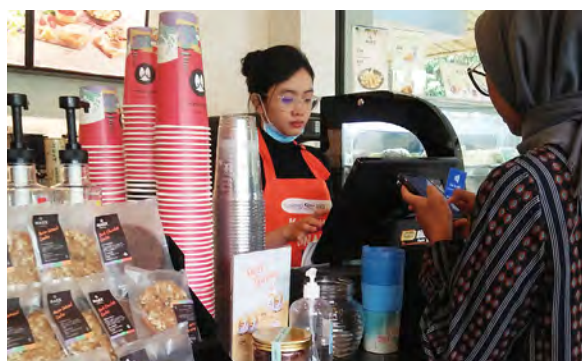
The pilot project at the University of Indonesia tapped into the presence of both local and national businesses, drawing a comparative analysis of the differing effectiveness and scalability of their respective interventions. Continued communication fostered through focus group discussions with both partners played a pivotal role in ensuring their understanding of the interventions and garnering their initial support.

The collaboration with the traditional canteen was facilitated by it being directly regulated by the Faculty of Social and Political Sciences. The absence of third-parties in the implementation process was key to the customisation and direct application of behavioural interventions in this local context. As a result, interventions at the traditional canteen provided more successful impacts than at the modern coffee shops.

Conversely, the adoption of new business practices at Maxx Coffee, a cafe chain operating at a national scale, depended on the support and commitment of key decision-makers in the network of modern coffee shops at the national level. Despite initial challenges to initiate the implementation process, the nationwide presence of Maxx Coffee brought opportunities to replicate successful plastic reduction measures across diverse locations where Maxx Coffee operates.



Implementation at the traditional canteen



Implementation at Maxx Coffee

- **Engage all stakeholders and local communities in the scaling process**

Organise local workshops or participate in community meetings to discuss scaling the interventions with local stakeholders. This provides an opportunity to invite their feedback and inputs and address their concerns. Incorporating this feedback into the scaling plan and ensuring that local community interests are represented will be instrumental in ensuring wider local participation and long-term effectiveness. Actively communicate with community representatives and utilise a variety of communication channels (social media, local newspaper or radio channels) to disseminate information on the scaling plans.

Utilise various channels to create momentum around plastic reduction behaviours and continuously communicate on the benefits of reducing plastic pollution. For example, integrate the insights gained from the pilot programme into school curriculums and organise community events on plastic reduction. Offer incentives to participation in scaling efforts and empower community members by providing them with knowledge, tools and resources needed to lead scaling efforts at the local level.

Creating Campus-wide Momentum Against Plastic Pollution at Chulalongkorn University, Thailand

The Chula Zero Waste campaign was led by a core team of Chulalongkorn University lecturers who integrated zero waste principles and practices into their student's curriculum. As part of this campus-wide plastic reduction effort, students were involved as co-creators of the plastic-free campaign. Notably, a communication class assigned its students a project to create and produce their own promotional videos to raise awareness and educate students on plastic pollution.

The active involvement of students in designing promotional and educational materials propagate waste sorting behaviour and waste reduction practices across campus had several positive impacts. First, it encouraged students to take ownership of the campaign, fostering a sense of responsibility and commitment to its success. Additionally, the resulting materials were more intentional, reflecting students' experiences and insights. This ensured that the materials were more relatable, emotionally appealing, and understandable for students. The resulting videos were strategically projected on screens in various resting areas across the campus.

Students were engaged in every aspect of the campaign's communication strategy from scriptwriting, filming, editing, and voiceover, to sharing the final output on social media and among their friends. The mobilisation of students in designing messaging and communication tools ensured that the campaign captured the attention of the wider academic community at Chulalongkorn University and contributed to fostering a sense of campus-wide momentum against plastic pollution.



Images from a video on waste segregation created by students

- **Collaborate with governments to integrate successful interventions into policies and regulations**

Building collaborative alliances with local and national governments will provide opportunities to scale up behaviour change interventions and facilitate the development of an appropriate policy environment. Additionally, policymakers can conduct wide reaching information campaigns to build the momentum on plastic reduction behaviours.

Interventions conducted during the pilot programme will provide valuable evidence to support policy integration at the local and national levels. Report the impacts and best practices learnt during the pilot implementation to local and national policymakers. Highlight the multiple benefits of BI in supporting the application of regulations to reduce plastic consumption and produce sustainable spillovers.

Reflection Prompts:

- How can the interventions be disseminated to other policy contexts, regions or nations?
- What additional stakeholders can be engaged to scale this intervention?
- What additional resources or policy support are needed to scale up this intervention? What are the benefits of integrating this behavioural insight intervention into existing/future waste management policies at the local or national levels?

Additional Resources

Bujold, P. M., Bujold, P. M., Williamson, K., & Thulin, E. (2020). The Science of Changing Behavior for Environmental Outcomes: A Literature Review. <https://behavior.rare.org/literature-review/>

Lymeus, F., PBM Sweden AB, & Swedish Environmental Protection Agency (EPA). (2020). Next Steps: Tackling Plastic Litter: A Nudging Strategy for Reducing Consumption of Single-Use Disposable Cups tackling plastic litter. <https://www.oneplanetnetwork.org/knowledge-centre/resources/next-steps-tackling-plastic-litter>

OECD. (2017). Tackling Environmental Problems with the Help of Behavioural Insights. OECD. <https://doi.org/10.1787/9789264273887-en>

Rare Center for Behavior & the Environment. (n.d.). Levers of Behavior Change: Principles and Strategies. Retrieved December 23, 2023, from <https://behavior.rare.org/wp-content/uploads/2021/07/Understanding-Behavior-Change-Levers-and-Strategies-scroll-July-2021-.pdf>

United Nations Environment Programme, GRID-Arendal, & Behavioural Insights Team. (2020). The Little Book of Green Nudges: 40 Nudges to Spark Sustainable Behaviour on Campus. <https://www.unep.org/resources/publication/little-book-green-nudges>

Part III

Breaking the Plastic Habit: Stories of Impact from Four Countries in the Asia-Pacific

Part III details the pilot projects' experiences across campuses in four ASEAN countries, highlighting the unique challenges posed by single-use plastics at each project site. It explores the collaborative efforts with partners, innovative approaches, and lessons gleaned from applying behavioural insights methods for reducing consumption of single-use plastics. When considered alongside the guidance outlined in the toolkit in Part II, readers will discern that successful implementation of behaviour change interventions hinges on strong partner collaboration and developing a system of continuous learning among implementers and project partners and stakeholders.

Case Studies from the ERIA-IGES BI Project in Asia

The Institute for Global Environmental Strategies (IGES), a not-for-profit policy research institute in Japan, launched a project to test the effectiveness of behavioural insights in reducing the use and waste of single-use plastics in cities and communities. The project was funded by and conducted in close collaboration with the Regional Knowledge Centre for Marine Plastic Debris of the Economic Research Institute for ASEAN and East Asia (ERIA).

The project was titled: "Survey and Piloting of the Application of Behavioural Insights Approaches for Plastic Reduction." Its objective was to develop practical knowledge about applying behavioural insights in concrete settings and provide an easy-to-use toolkit for local governments, businesses, and schools to implement this knowledge.



INDONESIA

Depok

Center for Southeast Asian Studies (CSEAS)

CSEAS
Center for Southeast Asian Studies

Project Overview

Government regulations have imposed restrictions on single-use plastics. Indonesia aims to reduce waste by 30% and improve waste management to 70% by 2025, with plans to phase out some single-use plastics by 2029. However, the effectiveness of these measures in reducing waste has been inconsistent. To address this issue, the Center for Southeast Asian Studies (CSEAS) partnered with the Faculty of Social and Political Sciences at the University of Indonesia (FISIP UI) to pilot a program from March to June 2023, targeting single-use plastics, specifically plastic cups and straws. FISIP UI, established in 1968, is one of the largest faculties in Indonesia, comprising 7 departments, 20 study programs, over 150 lecturers, and more than 3,500 students in the 2022/2023 odd semester. FISIP UI was chosen due to its diverse canteen types, both traditional and modern, allowing for meaningful comparisons. Traditional canteen vendors charged extra for plastic straws, while customers at the modern coffee shop could opt to bring their tumblers or pay a premium for single-use cups. The initiative included emotional appeals and public events to raise awareness.

Short Description of the location/setting

The project targeted customers of both traditional canteens and modern coffee shops in FISIP UI, a central area on campus with over ten food vendors. While dishes such as rice and vegetables are served on reusable plates, beverages including juice, tea, and coffee are presented in either reusable glasses or single-use plastic cups with straws. The availability of recycling bins is limited. Maxx coffee, a popular spot on campus, attracts students and teachers, despite higher coffee prices compared to the canteen. Customers often choose single-use cups over available reusable tumblers, even though the faculty started distributing tumblers to freshmen in 2023.



Behaviour Change Intervention Design

The project began with a focus group discussion involving traditional beverage vendors and Maxx Coffee to establish a shared project goal of reducing single-use plastic cups and straws through behaviour change interventions. Subsequently, a baseline survey was conducted to gauge customer knowledge, attitudes, and practices related to plastic use. The results showed that respondents generally had good knowledge about disposable plastics but still relied on single-use plastics due to practicality. Transitioning to more eco-friendly options like tumblers might occur if campus regulations were put in place.

Following these initial stages, the project team, in collaboration with beverage sellers, designed intervention activities:

- At the traditional canteen, single-use plastic straws were removed from the front display, with customers needing to request them, and a charge of IDR 2,000 was imposed for straws¹⁵. Vendors also displayed stickers with messages like “Juicinya Asik, Sedotannya Toxic” (Juice is cool, but the straw is toxic) and placed them on canteen tables.
- The modern coffee shop offered a 10% discount to customers who brought their own tumblers. Additionally, Maxx Coffee implemented a similar campaign, requiring customers to bring Maxx tumblers, although FISIP’s Maxx offered discounts for customers with other tumblers. Maxx shop sellers also wore aprons with emotional messages and placed posters near the cashier.



In May 2023, the “FANTASTIC” plastic-free campaign was organised, featuring events like customer pledges, a movie screening and discussion with Greenpeace and Carbon Ethics, a recycling centre workshop, and talk shows with plastic reduction and sustainable lifestyle experts. The project team also shared content on the official Instagram account of the Student Executive Board of FISIP UI.



Monitoring

CSEAS and FISIP UI formed an internal team to conduct routine weekly data collection to monitor plastic straw and cup usage. Data was gathered every Friday afternoon using different techniques for each canteen. In traditional canteens, the team compared Monday’s prepared straws with those remaining on Friday. For the modern coffee shop (Maxx Coffee), employees provided sales data recorded automatically by the system. Key metrics include the number and percentage of plastic straws and cups used before and after the intervention, the cost of buying plastic straws before and after the intervention, the number of customers choosing to use their own tumblers at the coffee shop before and after the intervention, and the number of customers opting for reusable cups at the coffee shop before and after the intervention.

¹⁵ Equivalent to 40% of the price of a beverage cup (priced on average at IDR 5,000).

Additionally, a survey on the “Knowledge, Attitudes, and Practices on Single-Use Plastics Consumption at FISIP UI” was conducted towards 300 respondents. The survey assessed respondents’ level of knowledge on plastic waste impacts, their plastic consumption habits, attitudes toward plastic waste management, as well as attitudes and practices toward plastic reduction.

What worked/what did not work as expected

The approaches in both the traditional canteen and Maxx Coffee led to a significant reduction in plastic straw (99%) and cup (50%) usage compared to before the pilot project (Figure 1 and 2). Before the intervention, the traditional canteen used 6825 straws per month. During the intervention, monthly straw usage remained below 100, with March having 61, April 82, May 83, and June 69. Vendors initially encountered challenges explaining the changes, some opting to remove straws entirely or charge IDR 2,000 without explanation. Over time, customers adapted to the new rule, allowing vendors to provide straws upon request and charge IDR 2,000.

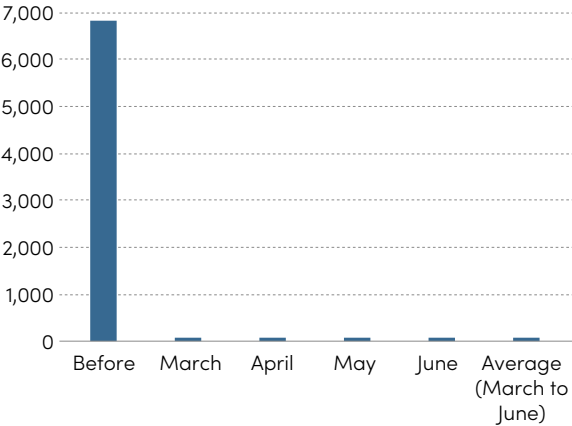


Figure 1. Reduction of straws use at the traditional canteens. The average amount of straws consumed after implementation was 74 per month, compared to 6,825 before intervention. This results in a 98.92% decrease in straw use.

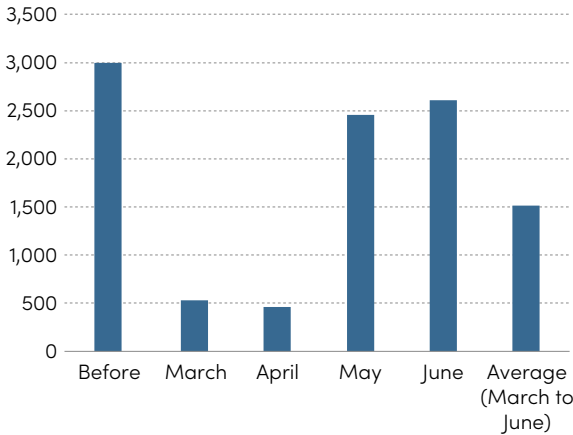


Figure 2. Reduced use of plastic cups at Maxx Coffee. The average amount of plastic cups consumed after implementation was 1,514 per month, compared to 3,000 before intervention. This results in a 49.53% decrease in plastic cup use.

In Maxx Coffee, monthly plastic cup usage decreased from 3,000 before the intervention to 529 in March, 465 in April, 2,459 in May, and 2,601 in June. Factors like national holidays, Ramadan fasting in April, and semester breaks influenced the fluctuations, with lower usage during March–April due to Eid and semester breaks.

The effectiveness of the nudging theory varied between the traditional canteen and Maxx Coffee. The traditional canteen experienced a more pronounced decrease in straw usage, as not using straws was seen as an easy choice with little difference in drinking experience. Students didn’t need to replace plastic straws with alternatives. In contrast, Maxx Coffee presented challenges as students needed to bring their own tumblers. The application was also simpler in traditional canteens, given the closer relationship between sellers and students.

Positive responses were observed in the traditional canteen, where students opted not to use straws when they had to request them. In the survey, 77% of respondents declared to use less than five plastic straws a week. This reduced use of straws may reflect respondents’ awareness about plastic impacts to marine ecosystems (98.3%), terrestrial ecosystems (96.3%), and human health (84.7%). Traders benefited from reduced straw expenses. Customers expressed hope for similar reductions in other single-use plastics like cutlery and bags, with large majority of respondents desiring to switch to reusable tumblers (90.3%), cloth bags (68%) and food containers (64.7%).

Lessons learned

The project demonstrated the effectiveness of a BI approach, allowing customers to choose whether or not to use single-use plastics, accompanied by emotional encouragement through campaigns and plastic-free events. This approach is more practical for school and university campuses compared to binding regulations. However, it is essential to note that nudging is just one of many possible approaches. Behavioural interventions can work alongside various efforts, including awareness campaigns, rewards, incentives, design improvements like providing water dispensers, socialisation, and stakeholder collaboration. Education and awareness about the environmental impact of single-use plastics should be integral to pilot projects, enhancing the campus community's knowledge and capacity to adopt sustainable alternatives.

Conducting a baseline survey and data collection before the intervention is recommended to assess the research subjects' initial attitudes. Comparing this with post-intervention data can reveal the changes resulting from the project. The baseline survey also helps identify the most widely used types of single-use plastics, enabling the development of more effective reduction strategies. This targeted approach can focus on products or areas with high single-use plastic usage, making interventions and regulations more effective. Continuous monitoring, data collection, and evaluation during the pilot project are crucial to understanding strategy effectiveness, identifying barriers, and finding opportunities for improvement.

In BI projects, engaging primary partners throughout the process, including problem identification, design, baseline survey, implementation, and evaluation, is vital. Partners like students, lecturers, traders, staff, and all members of the academic community contribute valuable insights, offer creative solutions, and promote continuous learning to enhance implementation effectiveness. For instance, the adaptation of beverage vendors in traditional canteens to the new practice of removing straws and charging additional costs highlights the importance of ongoing learning among project partners.

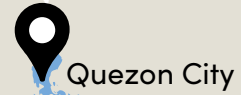
Scaling opportunities

Based on the evaluation, it is essential to continue research and pilot projects to reduce single-use plastic usage. This project serves as a concrete step to mitigate the environmental impact of single-use plastics and can serve as a model for other institutions, promoting behavioural changes, particularly in Indonesian campuses.

To expand the intervention, it is recommended to seek support from relevant business and government partners. For instance, collaboration with the Ministry of Environment and Forestry can provide informational materials on the environmental impacts of single-use plastics in Indonesia. Additionally, establishing strong partnerships with business suppliers offering eco-friendly alternatives to single-use plastics can support the reduction efforts.

In the long term, this pilot project may serve as a foundation for the development of internal regulations to address the issue of single-use plastics more comprehensively.





PHILIPPINES

University of the Philippines Diliman (UP Diliman)
Task Force on Environmental Sustainability (TFES)



Project Overview

The University of the Philippines Diliman (UP Diliman), through the Task Force on Environmental Sustainability (TFES), in partnership with the UP Institute of Civil Engineering and UP Diliman Environmental Management Office, embarked on a Pilot Project for Plastic-Free Vending in UP Diliman. This initiative aims to gain valuable insights on vendor and consumer behaviours towards effective reduction of single-use plastic consumption within the campus.

The project was designed to conduct a three-week trial run of plastic-free policies in selected food stores and ambulatory vendors and food kiosks on the campus. To achieve this, the proponents devised a comprehensive communication strategy to raise awareness about the University's environmental sustainability efforts and goals. The community was encouraged to actively participate by bringing their own reusable food and water containers, while partner ambulant and non-ambulant vendors were equipped with biodegradable food packaging alternatives and segregation bins.

Through this endeavour, UP Diliman aimed to:

- Illustrate the feasibility of going plastic-free for campus vendors;
- Provide insights on vendor and consumer behaviours toward plastic reduction; and
- Aid in establishing model sites of good waste management practices in UPD for future expansion.

Short Description of the location/setting

UP Diliman boasts a sprawling 493-hectare campus situated in the heart of the bustling Quezon City in the National Capital Region, Philippines. Each day, this vibrant campus accommodates thousands of students, faculty, and staff members, including both formal and informal residential communities.

Because of its large population, the university generates a significant amount of waste. Among the major contributors to plastic waste is the food sector, with numerous food providers relying heavily on single-use plastics for serving and packaging food and drinks. Plastic cups, bags, plates, and utensils, especially for takeaways, are commonly used. Unfortunately, UP Diliman currently lacks a systematic waste segregation system and a plastic recycling facility, although it does operate a Materials Recovery Facility under the Diliman Environmental Management Office that handles compostable waste products. Non-biodegradable waste is collected by city dump trucks and often ends up in the landfill.



Behaviour Change Intervention Design

This project was designed through a process of substantive consultation and collaboration with university administration, food services, and local food businesses. The consultation process helped the implementers to design the project based around four key pillars of interventions that make use of behavioural insights to shift consumer, vendor, and institutional behaviours.

1. Development of a comprehensive communication strategy with food providers to encourage customers to bring their own reusable food and water containers and segregate their waste properly. This included the creation and display of informative posters and materials (including through social media and online venues) in collaboration with partner food vendors. These materials highlighted the benefits of compostable alternatives to plastic packaging, urged customers to bring their own reusable containers, and emphasised how to segregate waste properly.



2. Sustaining the prohibition of selling drinks in plastic bottles and offering discounts to customers who choose to bring and use their own reusable food containers.

With the ban on selling drinks in plastic bottles at non-ambulant vendor locations, UP Diliman provided customers with water refilling stations, encouraging them to bring their own tumblers as a sustainable alternative to purchasing plastic bottled drinks. To further incentivise the use of reusable food containers, UP Diliman also promoted a 5-pesos discount¹⁶ for those who complied with this practice at two of the non-ambulant vendor locations.



3. Provision of compostable alternatives to plastic food packaging and utensils by the partner food providers to test alternative packaging acceptability and practicality.

UP Diliman supplied food providers with compostable plates, utensils, cups, straws, and other packaging materials as alternatives to single-use plastics. Partners were requested to utilise these eco-friendly options for a duration of three weeks. Following this, customer satisfaction surveys were conducted to gauge the acceptability of the alternatives among consumers. Additionally, feedback was gathered from the partner food providers about their experience with the new packaging and utensils. This process provided valuable insights into the practicality and acceptance of transitioning to less plastic packaging in the food sector.

4. Regular collection of compostable food packaging through implementation of a proper waste segregation system in partner sites.

At partner sites, a well-structured waste segregation system was implemented by providing dedicated bins with proper labels and guides for various types of waste, including compostable waste. This initiative aimed to encourage food vendors, customers, and the entire community to practise responsible waste segregation.



To facilitate the collection and processing of compostable waste, the Diliman Environmental Management Office assumed responsibility for managing the waste at the Materials Recovery Facility. In preparation for potential expansion, two small electric vehicles, specifically designated for waste collection, were procured. These vehicles were utilised to collect food and other compostable waste, including the plastic alternatives provided, for further processing at the Materials Recovery Facility.

¹⁶ Equivalent to 20% of the price of a cup of coffee (on average priced at 25 Philippine Pesos).

Monitoring

In order to observe behavioural shifts or changes, quantitative data was collected before the project implementation and monitored daily during project implementation. The data points were collected by vendors on daily tally sheets, gathering data on:

- Number of customers catered by the vendor per day
- Number of customers who bring their own bottles/utensils/containers per day
- Number of customers who opt for zero plastics at the counter
- Quantity of collected compostable packaging

Through random sampling, project implementers also conducted a survey with stakeholders of partner vendors, and the college/s to which they are attached, if any, during and after the project implementation. The survey will help the university to determine:

- Stakeholders' awareness of the project
- Stakeholders' responses to the project
- Stakeholders' identified challenges and opportunities

The team also conducted individual and focus group discussions during the pilot implementation of plastic-free food handling with vendors to check their understanding/acceptance of the approaches. Post-implementation consultation and surveys were also conducted to gain insights from vendor, customer, and institutional experience with the pilot-project.

What worked/what did not work as expected

The behavioural interventions implemented in the UP Diliman ambulatory and non-ambulatory food vendors resulted in considerable reductions in the use and disposal of single-use plastics among customers, with an overall reduction of 43% (**Figure 3**). The communications campaign launched by the pilot project had a particularly positive impact, bringing an increased number of customers to vendors compared to the weeks before implementation.

Customers who were surveyed indicated that the implementation of compostable alternatives to single-use plastics was highly aligned with their values, garnering positive feedback. They were particularly impressed by the quality of the eco-friendly foodware. However, some customers (8.3% of respondents) did note drawbacks to some of the compostable cutlery, which sometimes left an aftertaste, became flimsy when used with hot soup or very cold drinks, or had difficulty cutting harder food items.

The removal of plastic water bottles for sale, combined with the increase in available water refill stations resulted in a large increase in the number of students bringing their own reusable bottles. However, efforts to increase the use of reusable food containers had only limited success. While there was a noticeable uptick in students bringing their own containers (**Figure 4**), the proportion of students declaring to always bring a reusable container remains a minority (6.5%). The 5-peso discount may not be enough

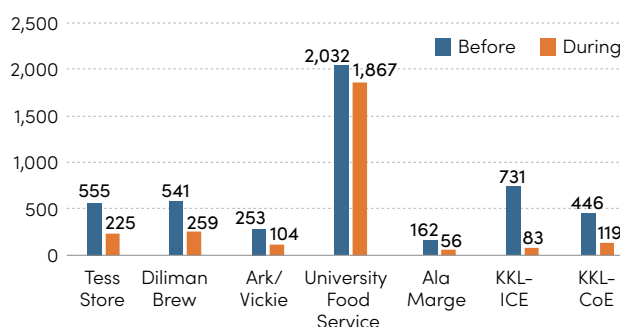


Figure 3. Daily use and disposal of single-use plastics before and during the intervention (overall 42.52% reduction)

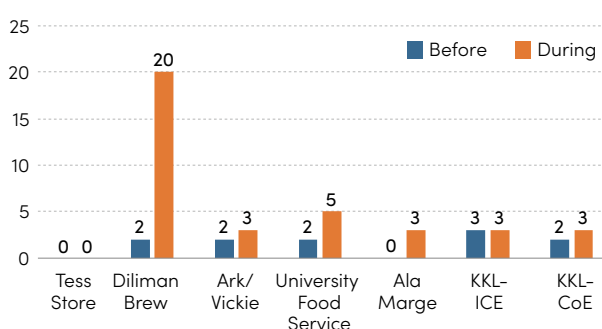


Figure 4. Customers bringing their own food container (*baunan*) before and after the intervention

of a material incentive to encourage students to bring their own containers. Post-implementation surveys have indicated that students are willing to pay a higher price in exchange for the use of sustainable alternatives, so further experimentation with fees and discounts is needed.

It should be noted that the cost of alternatives to plastics is still quite high in the Philippines, so there are challenges related to procurement that need to be addressed.

Overall, the project resulted in a significant decrease in the amount of plastic waste produced by the participating vendors. At the same time, there was an increase in the production of compostable waste collected by the Material Recovery Facility, which will have positive knock-on effects on the campus food production system.

Lessons learned

The pilot project at UP Diliman demonstrated the high potential for impact of implementing environmental interventions informed by behavioural insights. By combining a number of BI approaches, the implementers were able to have a significant impact over a short period of time. As such, many lessons were learned through the project process.

To begin, the pilot project was greatly enhanced by the inclusion of deep consultation before, during, and after implementation. This allowed the project to be designed in a way that took best advantage of the values, concerns, resources, and existing context of the UP Diliman campus. It also allowed for many opportunities to make adjustments during implementation by providing regular feedback channels from vendors and customers.

The pilot also demonstrated the limitations of taking a narrow nudging approach to behavioural change interventions. While the introduction of a discount for bringing a reusable container had some limited success, it was most successful when paired with adjustments to the choice architecture (i.e.: the removal of easily available plastic water bottles).

The development of communication materials (i.e.: posters, social media cards, etc.) showed the effectiveness of smart information campaigns that make use of both data and emotional appeals. The materials made good use of text, image, colour, and location to enhance the impact of their messages and were received very positively by students and vendors.

Finally, the project revealed a desire among students and vendors to shift away from single-use plastics, and a willingness to work together to address the challenge. Continual dialogue with stakeholders (including students, vendors, university administrators, waste management, etc.) will be a key factor in determining the success of this transition.

Scaling opportunities

In order to scale up efforts to reduce single-use plastics, it is important to ensure a reliable and affordable supply of compostable alternatives to single-use plastics. This may require working with the larger business community and other universities to develop the local market and bring down costs. As this example suggests, collaborative efforts among multiple actors are essential to making substantive changes around single-use plastics. Engaging with industry associations and manufacturers can also foster the production of cost effective compostable alternatives.

Similarly, the creation of information campaigns and more enabling policies at the university level, such as plastic pans and incentives for eco-friendly practices, will encourage participation and compliance among all stakeholders.

Finally, there is room for further research to better understand the UP Diliman population, their motivations, values, and how best to align future activities with community aspirations. Ensuring that future efforts are done in partnership with the local community, or even community-driven, will be essential to building a movement around this transformation.



THAILAND

Chulalongkorn University (CU)
Chula Unisearch



Project Overview

The project assessed the effectiveness of the application of behavioural insights to reduce single-use plastic in two flea markets in Bangkok: Chulalongkorn University (CU) flea market and Samyan Flea Market and drew comparative insights on the level of consumers' and vendors' acceptance of new plastic reduction interventions and their resulting behaviour change.

The behavioural insight interventions implemented at the CU flea market were built upon the pre-existing plastic-reduction campaign led by the Chula Zero Waste project since 2017. As part of this project, the University adopted ambitious waste reduction objectives and new waste management processes for all its buildings, including common areas and canteens. In a push to prevent waste creation, all stores on campus stopped giving out free plastic bags and all plastic cups were replaced with biodegradable paper cups, and reusable tumblers were distributed to all students and staff. Moreover, the introduction of a new waste segregation system enabled various types of waste to be diverted from landfill toward new uses: food waste (as fish feed), plastic waste (to be collected and recycled by a cement manufacturer), and Chula Zero Waste cups (to be composted). Chula Zero Waste grew to become one of the University's flagship projects, testament of its commitment to be a sustainable and green University. After a successful first phase (2017–2021) and brief hiatus during the COVID-19 pandemic, the Chula Zero Waste project resumed in February 2023 with the launch of a plastic-free campaign.

Short Description of the location/setting

Chulalongkorn University, situated in the heart of Bangkok, hosts two prominent flea markets on its vicinity: CU flea market and Samyan market. These two markets operate under the management of two distinct offices in Chulalongkorn University, each with its unique set of waste management policies in place. Assessing the effectiveness of behavioural insight interventions for plastic reduction in CU Market and Samyan Market offers a unique opportunity to gain valuable comparative insights into the impact of such interventions in distinct target groups within urban and academic environments.

The CU flea market, managed by Chulalongkorn University's Office of Physical Resources Management, serves as a hub for students and staff. Operating twice a week on Tuesdays and Fridays, the 99 shops serve a wide range of prepared food and drinks to its clientele. Before the implementation of behavioural interventions, it was observed that the average daily single-use plastic usage per shop was 1.87 kg, as calculated from data collected from 50 shops. CU market has served since 2017 as a testing ground for Chula Zero Waste's multiple waste reduction initiatives. Consequently, the infrastructure and facilities necessary to support waste management initiatives have been robustly set in place, with consumers and businesses generally showing receptiveness and enthusiasm for participating in plastic reduction activities.





Samyang market, located near the Chula campus, is operated by Chulalongkorn University's Property Management. Held every Saturday, this bustling market gathers university students, locals, and tourists. A large variety of products are sold from fresh fruits and vegetables, to prepared food and clothing. Before the interventions, the 50 markets averaged a production of 1.51 kg of single-use plastic per day. Unlike the CU market, the market has only sporadically implemented waste-reduction campaigns, and thus may not be as receptive to waste reduction initiatives. Prior to the pilot implementation, the market had a single waste disposal system, preventing the recycling of key recyclable resources.

Behaviour Change Intervention Design

At CU flea market, a plastic-free campaign was led by the Office of Physical Resource Management. Shop owners were informed of the need to ban single-use plastic carrier bags and encourage the provision of biodegradable packaging materials/cutlery. As part of the campaign, consumers were given several options:

- Implementation of a no-free single-use plastic bags policy. Customers were charged a 2 Thai Baht (THB) fee for plastic bags¹⁷, and were offered free tote bags and paper bags at the Chula Zero Waste booth.
- Incentives to shift to biodegradable or reusable food containers and utensils. Food vendors were encouraged to shift to biodegradable packaging materials and utensils, which could be purchased at the CU cooperative store. Moreover, many shops offered the possibility to choose between single-use plastic or biodegradable containers and cutlery. The "My Cup" campaign offered discounts for customers bringing their own reusable cup or container. Additionally, the #Yourcupwetreat campaign encouraged students and university staff to bring their own reusable cups to receive free drinks or popcorn.
- Comprehensive plastic-free campaign, online and offline. The targeted behaviour was continuously reinforced through consistent and repetitive communication. All shops prominently displayed banners to inform consumers about the incentives in place and social media campaigns promoted plastic-free related events. The campaign was also broadcast across speakers and screens throughout the market and campus to remind students and staff of the ongoing zero waste efforts.



At Samyang market, a formal single-use plastic reduction campaign has not yet been introduced but some waste reduction measures could already be observed such as posters encouraging consumers to bring their own bags and biodegradable containers for prepared meals. The Office of Physical Resource Management recently replaced the single outdoor waste containers by four different containers (red for hazardous waste, blue for general waste, yellow for recyclables, and green for food waste) to encourage waste separation at the food court and daily shops.

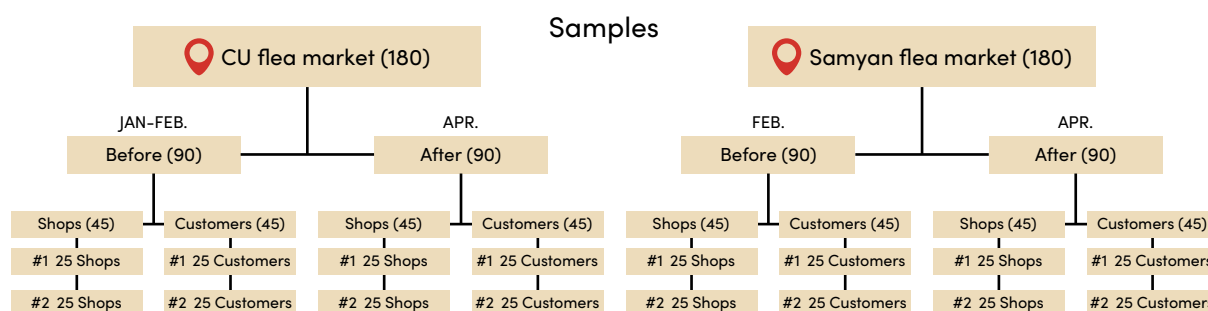


¹⁷ Equivalent to 10% of the price of a cup of coffee (on average priced at 20 Baht).

Monitoring

A team of 20 undergraduate students of Chulalongkorn University's Department of Environmental Science, Faculty of Science, were recruited and trained to collect data. A total of 100 vendors were interviewed at the CU market and Samyan market before and after launching the plastic-free campaign to measure the daily consumption of single-use plastic products (including alternatives). This monitoring sample exceeded the required amount to accurately sample the population at both markets and ensure a margin of error. Additionally, the monitoring team counted the amount of single-use plastic products discarded in trash bins in the surrounding area of the CU market.

- 50 shop owners were surveyed at each market to collect qualitative data before and after the plastic reduction interventions. This survey was crucial to determine:
 - shop owners' level of satisfaction with the intervention
 - The level of influence of the plastic reduction measures on the number of consumers
 - shop owners' preferred approach to encouraging the reduction of single-plastics
- 50 customers were surveyed at each market to collect qualitative data before and after the plastic reduction interventions. The survey compiled information on:
 - Consumers' adaptive behaviour to the interventions
 - The level of influence of the plastic reduction measures on their shopping frequency at the market
 - Consumers' preferred options to encourage the reduction of single-plastics.



What worked/what did not work as expected

What worked:

- Reduction in plastic waste.

Three months after the campaign was launched, the total amount of all single-use plastic products in CU flea market was reduced by 43% (**Figure 5**). The most substantial reduction, at 94%, was observed for the use of plastic bags, as a result of the “no free single-use plastic bags” campaign implemented at CU market. As such, a general shift to consumers bringing their own reusable bags was observed, which was generally preferred over paying the 2 THB fee. In comparison, the use of single-use plastic bags at Samyan flea market was reduced by 6.7% over the same period.

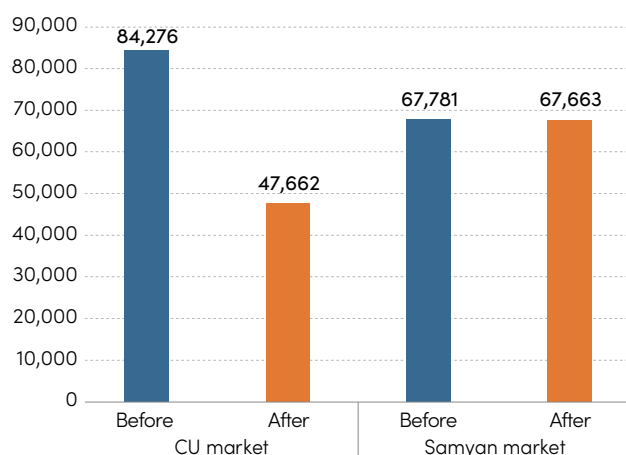


Figure 5. Comparison of single-use plastics reduction at CU flea market (-43.45%) and Samyan flea market (-0.17%) (Total weight of plastic in gram)

- High level of acceptance on the imposed policy intervention.

Shop owners at CU flea market expressed a higher level of acceptance with the campaign than the shop owners at Samyan flea market both before and after the policy implementation. By comparing the degrees of the shops' compliance with the rules of using environmentally-friendly and biodegradable containers before and after the policy implementation, it was found that there was a significant increase in the level of compliance at CU flea market. On the contrary, the shop owners at Samyan flea market were less likely to reduce their plastic consumption. This could be due to the fact that shop owners at Samyan market are generally in a pre-mature stage of change as compared to those at CU flea market. This hypothesis also supports our cautionary statement that behavioural change is a gradual and long-term process.

Additionally, consumers in both markets responded positively to a potential future implementation of similar reduction measures for other plastic products: plastic containers, plastic cutlery, plastic seasoning packet, and plastic straws.

- General shift to consumers bringing their own reusable bags.
The introduction of a strict no-free single-use plastic bags policy prompted a large majority of customers to start bringing their own reusable bags. Another underlying reason for this shift was the availability of free reusable bags and paper bags at the Chula Zero Waste booth at CU flea market.

What did not work as expected:

- Divided reactions to the THB2 fee on bioplastic bags.

Shop owners generally considered that the THB2 fee on bags was too expensive, especially at the Samyan market. They shared their concern about potential consequences on the product costs. However, it is interesting to note that this observation was balanced by the fact that 60% of respondents considered the THB2 cost on bags to be reasonable.

- Difficulty to shift to the "bring your own food/beverage container".

Despite an overall reduction in plastic demand at the CU flea market, the smallest reduction rate was noted for the use of plastic cups (1.9%). Reducing the demand for food and beverage containers remains a key challenge as most consumers use the cups provided by shops instead of bringing their own despite the "My Cup" campaigns.

- Pre-mature stage of sustainability transition at the Samyan market.

Study findings reveal that the shopkeepers and customers at CU flea market exhibited a significantly higher level of acceptance for plastic reduction measures compared to those at Samyan flea market. Since the launch of the Chula Zero Waste Project six years ago, customers at the CU flea market have been encouraged to reduce waste, particularly single-use plastic, whereas the Samyan flea market has only recently initiated this campaign. At the Samyan flea market, more time is required to achieve this aim of "no free single-use plastic bags". This observation is evidenced by the different single-use plastics reduction rates between CU market (43.4%) and Samyan market (0.2%). Additionally, an 8.7% increase in plastic containers was observed in the Samyan market. Among other factors, this evolution could be due to an increase in food delivery services during long holidays or tourists' preference for ready-to-eat takeaways during the Songkran Festival.

- Biodegradable food packaging and other alternatives are more expensive and less versatile than plastic food packaging.

Reducing the consumption of single-use plastic is impeded by the fact that consumers and retailers must pay more for bioplastic and alternative food packaging. Furthermore, the majority of single-use plastic food packaging is transparent, allowing consumers to see the food inside and attracting them to purchase, whereas the biodegradable alternative is opaque. In addition, the sizes of bioplastic/alternative food packaging sold to retailers/shop owners by the CU cooperative are limited.

Lessons learned

The pilot project at Chulalongkorn University has provided valuable insights by boldly implementing initiatives and practices from the university campus and extending them to the external community.

Building upon the Chula Zero Waste project, the plastic-free campaign secured widespread support from the academic community, ultimately forming an integral part of the University's identity and branding strategy. Notably, the objectives of the campaign were incorporated into student's curriculum, with classes designing some of the campaign's promotional materials to disseminate plastic reduction practices throughout campus. As a result from strategic communication campaign and the wide-array of sustainability events taking place on campus, a strong sense of community emerged, fostering a culture of environmental awareness and practices throughout the University.

The challenges faced in scaling established plastic reduction practices beyond the campus grounds highlight that the progressive shift will require careful planning and adaptation to differing settings and target groups, thereby reflecting the need to adopt an iterative approach to behavioural interventions.

Moreover, the university's collaboration with external businesses to recycle and circulate plastic waste generated on campus provide a valuable example of a broader systemic change strategy. Faced with the impossibility to sustainably dispose of the plastic waste generated on the campus grounds, the university waste sorting system established an agreement with a local cement company, where plastic waste could be utilised to fuel their furnace and the leftover sludge was incorporated as a composite in the cement material. As such, this innovative partnership not only addressed the plastic waste issue but also offered a systemic solution contributing to a more sustainable and circular approach in the construction industry. This comprehensive approach illustrates that waste reduction and management are most effective when viewed holistically, considering the entire lifecycle of products and the engagement of external businesses.

Scaling opportunities

- Promotion of the zero waste campaign. The Chula Zero Waste Project should continue to consistently communicate and promote the reduction of single-use plastic waste across communication channels. This can include regular reminders and updates on reduction impacts through the university's website, social media, and other widely used platforms to ensure that the community remains informed and engaged in the initiative.
- Guarantee affordable and diverse alternatives to single-use plastic products. In order to encourage the adoption of sustainable packaging, interventions should not only foster greater awareness and demand for sustainable alternatives but also work closely with suppliers and manufacturers to ensure the affordability of biodegradable/compostable packaging. It was also noted that biodegradable packaging is often not as appealing to consumers as they are not able to see the product/food inside. As a consequence, several shop owners highlighted that the transition to biodegradable packaging should not be made at the expense of the product's attractiveness to consumers and sales. Consequently, vendors and the waste management office should provide comprehensive information on the most appropriate types of packaging to ensure that a wide variety of packing, both in size and materials, are available to tailor to the diversity of products being sold.
- Single-use plastic products wholesalers such as PRM and CU Cooperative should collaborate with vendors to offer a discount (3–5 Baht) to customers who bring their own cups/lunch boxes/bags. Such measures will not only encourage behaviour change but also make sustainable choices more accessible for all stakeholders.





Ho Chi Minh City

VIET NAM

Southern Institute of Ecology (SIE)



Project Overview

The pilot project was implemented at Thanh Loc High School and Hiep Binh High School located in Ho Chi Minh City, Viet Nam. Currently, solid wastes, including plastic waste, are collected daily using garbage cans at both schools. The project aims to investigate the potential application of behavioural insights for plastic reduction in two schools. From February to July 2023, the schools hosted numerous events, such as the distribution of a pamphlet on plastic waste, a site visit, waste segregation, and contests (painting, model, photo, and video). At both schools, a Knowledge, Attitudes, and Practices survey (KAP survey) and plastic waste audit were conducted prior to and following the intervention to evaluate the impact of the activities.

The project was implemented in the two schools with the following objectives:

- Environmental communication and education for changing behaviour of the youth towards plastic pollution control;
- Providing students with sufficient information to discuss alternatives to plastic-related products to gradually trigger their lifestyle and habit changes, and sustainable behaviours toward plastic-free schools; and
- Capacity building for students/youth on leadership and social responsibility.

Short Description of the Location/Setting

In Viet Nam, a number of coastal cities are experiencing rapid economic and population growth. Plastics and imported plastic materials have increased in quantity and value, but garbage collection services and infrastructure have barely kept up. Plastic waste has been and continues to be a problem in schools. In addition to being the most convenient, these items generate a substantial amount of waste. Currently, solid wastes, including plastic waste, are collected daily in both schools using garbage cans. The majority of solid waste consists of plastics, primarily single-use plastics from food waste (take away containers, plastic bags, beverage bottles, etc.). Plastic waste with a high economic value, such as PET bottles, is collected for recycling, whereas all other plastics are mixed with other solid wastes and transported to the treatment facility.

Environmental education has been incorporated into the curriculum. Additional environmental education at the school is still limited and organised as events such as campaigns that are scheduled according to City and District programs.

The public's understanding of plastic waste and its negative effects on the environment and human health remains limited. Reducing plastic waste requires the cooperation of the community, organisations, and individuals, in addition to government policies, the roles and responsibilities of businesses, and technological solutions. The design and implementation of interventions, including education and training programs inside and outside of schools, which alter behaviour around the use of single-use plastic products and reduce plastic waste is an effective and sustainable solution. In Viet Nam, this solution is still in its infancy,

and its effectiveness is insufficient to meet current demand. Changing plastic usage habits is the primary driver for combating plastic pollution. Promoting awareness and concern for single-use plastics and nudging consumer behaviour are effective and sustainable ways to reduce plastic waste. This is why the pilot was implemented with the intention of increasing students' awareness of saying no to plastic waste and practically reducing plastic waste in schools.

Behaviour Change Intervention Design

The design of the pilot project was co-created with the school's science, technology, engineering, and mathematics (STEM) club, recognising that the students themselves would be a key actor in implementing the project with support from their teachers and researchers from SIE. This co-creation model allowed students to help create activities and interventions that reflected their priorities, as well as their interests and concerns, in ways that integrated well with existing curricula.

In order to identify target behaviours for interventions, in-depth interviews and discussion with members of the STEM club were conducted. This was complemented with a quantitative survey to understand students' knowledge, attitude and practice on single-use plastics. Additionally, in-depth interviews were conducted with the teachers to understand the existing situation regarding waste management and waste issues at both schools.

Recycling bins with labels indicating different types of recyclable wastes (plastic, paper and cardboard, glass, metal, etc.) were provided at both schools. The existing bins at the schools are used for the collection of other wastes (except for hazardous waste).

Awareness-raising and capacity building activities were conducted, including training for the STEM club on single-use plastics; distribution of 1,000 brochures on the impacts and mitigation of single-use plastic; visit and tour of the SIE office; environmental contests (wallpaper and photo contests); cleaning event; and a field trip to a waste management plant (Ajinomoto Viet Nam Co., LTD).

Throughout implementation, the STEM club was actively engaged in the evaluation of activities and alternative options to single-use plastics during regular meetings.

Monitoring

Quantitative monitoring was conducted twice in February and May 2023 (before and after the intervention) to assess the effectiveness of the pilot project via questionnaires and waste audit surveys.

Questionnaire survey: At least 120 questionnaires per school were collected during each of February and May to quantitatively assess the effectiveness of the pilot. The questionnaires covered the following contents: Awareness on single-use plastic; Behaviours toward plastic reduction; Willingness to adopt proposed practices of single-use plastic reduction; Level of participation in the pilot and influenced/nudged by the pilot activities; and Ranking effectiveness of activities of the pilot.

Survey of plastic waste audit: the wastes are collected for 5 consecutive days (from Monday to Friday). The waste is classified into different single-use plastics (take away containers, grocery bags, food wrappers, etc.), counted in pieces, and weighed to determine the change in plastic waste volume and composition. Result of the survey (before and after the pilot) is calculated separately for the 2 schools to evaluate effectiveness of the pilot intervention.

Moreover, monthly monitoring activities of project progress based on expected outputs described in approaches were conducted: number of activities, number of news on the school's website and Facebook, etc.



What worked/what did not work as expected

The result of the KAP surveys shows that knowledge on single-use plastic is unchanged after the intervention. This is due to the fact that activities of the project provide information on plastic in general not specific information on single-use plastics. Other knowledge and attitude show a slight increase after intervention (Figure 6).

The result of waste segregation efforts shows reductions in plastic waste are 4.8% and 12.4% for Thanh Loc High School and Hiep Binh High School respectively. The amount of plastic waste which was not separated is 28.2 kg (13.7%) and 22.3 kg (16.7%kg) for Thanh Loc High School and Hiep Binh High School. The result shows the waste segregation at the school is still limited.

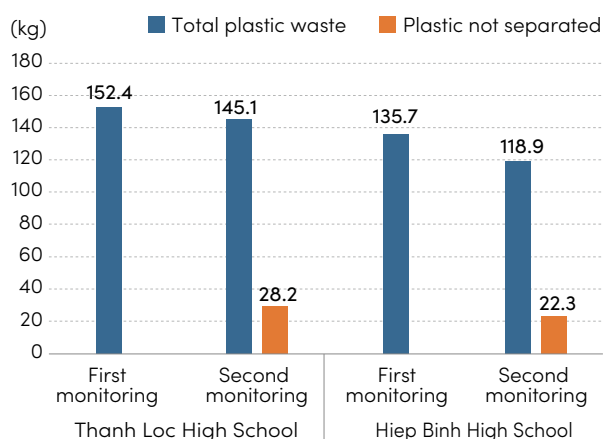


Figure 6. Plastic waste audit of one week at two schools

Students actively participated in project-related activities. Some activities, such as waste segregation, photo and painting contests, and waste segregation contests, were applied to all students as part of the pilot program's participation requirements.

STEM club and Youth Union students are involved in the pilot's implementation. During the final workshop, the representative students also presented the pilot's results. Together with SIE, the STEM club of Thanh Loc created a pamphlet on plastic waste.

What did not work as expected:

Due to the high volume of waste produced in schools, waste monitoring necessitates a large investment of time and effort. The waste collection was conducted at noon (in Hiep Binh High School) and at night (in Thanh Loc High School) without the participation of students in order for them to better comprehend the current status of plastic waste in the school.

Due to the short duration of the implementation, the KAP results and waste audit yielded limited results. The majority of activities were completed within three months, which is rather short for a knowledge-to-behaviour shift toward plastic reduction. In addition, the project occurred during the final months of the school year, when students in grade 12 are preoccupied with national examinations and therefore cannot participate in sufficient numbers.

Convenient for students, food and beverage stores near schools that use single-use plastics containers/cups, PS foam boxes, PP plastic boxes, and PE plastic bags hinder the project because they sell beverages and breakfast. Thanh Loc High School, for instance, is located near many shops, so its plastic waste output is greater than that of Hiep Binh High School, as students frequently purchase plastic items from outside the school.

After contests, the products of pilot activities such as paintings and models are stored in traditional school rooms. Therefore, students are unable to observe these products frequently, resulting in a diminished visual impact on them.

Lessons learned

The driving factor is the active participation of responsible teachers and key students in all pilot activities.

The schools designed the activities in consultation with the SIE team, which enabled the implementation of time- and workload-feasible activities. Activities were varied and utilised social media (school Youth Union fan page) to disseminate information and encourage student participation.

Students in 10th grade participate in the program’s primary activities and can be viewed as the core group in terms of implementing and developing future activities over the next two years.

The Hiep Binh High School is extremely concerned with environmental issues and viewed the project as an opportunity to enhance its reputation. Consequently, when evaluating the viability of applying and implementing activities, it is essential to ensure the enhancement of the school’s roles and benefits in contributing to the environment and fostering student capacity.

Diverse stakeholders are required to participate in plastic waste reduction activities. From the KAP survey, ideas for applying knowledge awareness on plastic waste to stakeholders and implementing additional activities should be implemented as follows:

- Environmental activities should be implemented in the community: posters on plastic waste or joint efforts to protect the environment.
- Encourage market-goers to use recyclable or non-plastic bags instead of plastic ones.
- Organise recycling efforts or visit a waste treatment facility.
- Participate in school presentations and extracurricular activities: Remove garbage from the surrounding area.

Scaling opportunities

Future research and additional behavioural interventions to implement








- Future activities must place a greater emphasis on the solutions proposed by the students in order to improve their roles and responsibilities, which will increase their motivation to implement the ideas. Students should be encouraged to propose innovative solutions based on competitions with prizes/ certificates, and a contest on creative solutions to reduce plastic waste that is organised for schools in the district may be the most appropriate intervention.
- In addition, teachers who enthusiastically participate in activities must visit and exchange ideas with models that have been implemented elsewhere in order to improve the quality of management and sustain project activities.
- The activities must be implemented early in the school year to ensure a longer duration of implementation and better results.
- Summer break is also an excellent time for extracurricular activities. In practice, schools organise a variety of summer activities during this time; therefore, a project’s activities can be incorporated into the school’s program.
- Schools (with sufficient space) can construct an outdoor area for displaying products (paintings, recycle models, etc.) to provide students with a visual representation of plastic waste. In fact, this solution was discussed during kickoff meetings, but due to the pilot’s time constraints, it is not feasible.










Summary Table:

Behavioural Insight Approaches Implemented by the Pilot Cases

This table summarises the key interventions and behavioural change levers used by each project partner. One large and two small behavioural change lever icons appear for each intervention. Large icons indicate the main lever used in the intervention, while smaller icons indicate supporting levers.

Pilot Case	Behaviour Change Interventions & Levers	Impacts & Reactions
Traditional and modern canteens at the University of Indonesia (FISIP UI), Indonesia	 <p>Plastic straws were removed from the front display case, forcing customers to request them. A 2000 IDR fee was imposed for straws.</p>	A pronounced decrease in straw usage was observed, as not using straws was considered an easy choice with little difference in the drinking experience. Businesses benefited from reduced straw expenses.
	 <p>10% discount offered to customers bringing their own reusable tumbler. Free tumblers provided to new students. Shop sellers also wore aprons with emotional messages and placed posters to encourage the reduction of plastic consumption near the cashier.</p>	Difficulties in shifting customers' habits to bringing their tumblers from home.
	 <p>Online and offline "FANTASTIC" plastic-free campaign (customer pledges, a movie screening and discussion with Greenpeace and Carbon Ethics, a recycling centre workshop, and talk shows with plastic reduction and sustainable lifestyle experts).</p>	Students expressed positive reactions to the opportunity to reduce their impact on the environment. Some of them also hoped for the extension of plastic reduction measures to plastic cutlery and carrier bags.
Campus of University of the Philippines Diliman (UPD), Philippines	 <p>Online and offline communication strategy to encourage customers to bring their own reusable food and water containers and segregate their waste properly.</p>	Customers found the posters visually appealing and informative, leading to increased awareness of waste segregation practices.
	 <p>Ban on plastic bottled drinks. Availability of water refill stations to encourage consumers to bring their own tumblers. 5 PHP discount offered to customers bringing their own food container.</p>	The ban and availability of water refill stations resulted in a successful shift towards customers bringing their own reusable drinking containers (56.8% of respondents always bringing their own container). The 5 PHP discount brought a marginal rise in customers bringing their own reusable containers.
	 <p>Provision of compostable alternatives to plastic food packaging and utensils by partnering food providers to test their acceptability and practicality.</p>	Overall positive sentiments towards compostable alternatives (appealing designs), despite some concerns about the aftertaste left by the wooden utensils and fragility or containers. 66% of customers expressed willingness to shoulder additional cost of compostable alternatives.
	 <p>Regular collection of compostable food packaging through implementation of a waste segregation system. Sample of waste displayed to guide waste sorting.</p>	Waste segregation considerably increased. A daily average of 2,410 compostable products were collected to be sold to buyers around campus.

Pilot Case	Behaviour Change Interventions & Levers	Impacts & Reactions
CU flea market and Samyan flea market, Thailand	 <p>Implementation of a no-free single-use plastic bags policy: customers were charged a 2 THB fee for a plastic bag, free tote bags and paper bags were provided at the Chula Zero Waste booth.</p>	<p>Shop owners generally considered that the THB2 fee on bags was too expensive, especially at the Samyan market. A general shift to consumers bringing their own reusable bags was observed, with a 94% reduction of plastic bags use at CU market.</p>
	 <p>Incentives to shift to biodegradable or reusable food containers and utensils: discount for customers bringing their own reusable cup or container, choice between single-use plastic or biodegradable containers and cutlery, free refill of drink containers with drinks or popcorn.</p>	<p>Biodegradable packaging were generally seen as more costly and less appealing to customers. Reducing the demand for food and beverage containers remains a key challenge as most consumers use the cups provided by shops instead of bringing their own despite the “My Cup” campaigns.</p>
	 <p>Online and offline plastic-free campaign (banners, shark mascot, promotional videos made by students, messages on speakers etc.).</p>	<p>The plastic-free campaign secured widespread support from the academic community, ultimately forming an integral part of the University’s identity and branding strategy.</p>
	 <p>Waste segregation with 5 different containers signalled by clear messaging and images (general waste, recyclables, recovery as refuse-derived fuel, Chula Zero Waste cup to be reused as planting bags and compost, and green for food waste to be fish feed).</p>	<p>Students and faculty staff shared their feedback on the initial waste sorting system. Integration of their feedback ensured that the waste segregation was clearly understood and could be followed by all students and staff.</p>
Thank Loc High School and Hiep Binh High School, Viet Nam	 <p>Introduction of a waste segregation system (non-recyclable waste and recyclable PET bottles).</p>	<p>Need for continued information to adjust students’ waste sorting behaviour in the long term.</p>
	 <p>Communication strategy to raise awareness on single-use plastics and waste segregation (poster, distribution of brochures).</p>	<p>All awareness-raising activities were successful in providing students with knowledge and information about single-use plastics, with more than 75% of students declaring to have learnt about single-use plastics at both schools during the implementation period.</p>
	 <p>Student participatory activities (photo and painting contests, waste segregation contests, site visit to waste management facilities). Reward system with tumblers given to contest winners.</p>	<p>Site visits to waste management facilities offered visual and concrete information to students.</p>

Part IV

Breaking the Plastic Habit: Dynamic Partnerships and Learning for a Plastic-Free Future

Part IV will present a discussion of the pivotal insights gained from the pilot projects conducted in the four countries. This analysis will specifically focus on the application of the behavioural insights methods to reduce single-use plastics. Additionally, it will present a series of lessons learned, drawn from aspects of the pilots that shed light on valuable experiences. Attention will also be directed to discussing points that are future-facing, where further work is needed to refine behaviour change approaches, and where project activities have opened the way for new partnerships and scaled impact.

Discussion

As the case studies above have demonstrated, there are both significant similarities and differences in the experience of implementing behaviour change interventions targeting single-use plastic consumption in the Southeast Asian context. The range of interventions developed by the four pilot projects revealed a number of promising strategies for shifting behaviour, as well as practical insights for replication and scalability. Similarly, several noteworthy challenges were identified, suggesting the need for further research and piloting to pin down the range of influences on business and consumer behaviour, and the important role that regulators have to play.

In addition, a set of insights emerged about the value of contextual and even opportunistic intervention planning with broad applicability for behaviour change. Of particular note were observations around reframing life transition moments such as moving into campus housing and graduation as moments of opportunity to encourage new behaviours and ways of living. These suggest that there is space for targeted messages and programming to assist and inform students and faculty about more sustainable ways of living during these transition periods. The significant disruption of daily life imposed by the COVID-19 pandemic also presented opportunities once students and faculty returned to campus, which was an unexpected contextual piece not accounted for in the project planning process.

In the following sections we will explore some of the key insights and challenges that emerged from the pilot projects, as well as offering some recommendations to promote a system of collaborative learning and strengthen partnerships.

Key Takeaways

In developing and implementing the four pilot projects, the teams leveraged the experience of global experts on behaviour change methodology, plastics, waste management, sustainable living, and education for sustainable development. Each team also benefited from the knowledge, experience, and insights from the various stakeholders and community members engaged through the project process. Some teams had the benefit of a pre-existing institutional sustainability 'roadmap' or plan, while others developed their own targets and goals. In all cases, the pilots achieved a good measure of success owing to a number of factors. Here, we distil some of the key insights from the pilot projects.

Making use of team member experiences and institutional knowledge: Leveraging the experience of team members and collaborators can amplify the success of programmes using a Behavioural Insights approach. Each of the four pilot projects drew on the campus sustainability expertise of faculty, administrators, business operators, and students to enhance the design and impact of the projects. Building on the team members' existing experience and familiarity with issues such as supply chain partners, effective communication, waste management policies, and consultation processes played an important role in the projects' efforts to diminish the use of single-use plastics.

Similarly, making use of institutional knowledge and experience can be a key support for behaviour change projects. Prior accomplishments at the institutional level can provide opportunities to identify and engage with allies and stakeholders who might otherwise not be directly engaged in the project. This can facilitate knowledge transfer between stakeholders and deepen opportunities for learning. These efforts can also lend momentum to the project, framing it as a continuous process growing organically from actions already familiar to local stakeholders.

Proactive and evolving collaboration with partners: Partners, including vendors, teachers, and learners, played a proactive role in proposing and improving interventions in all four pilot projects. Their shared commitment to problem-solving and willingness to experiment with new approaches contributed to the success of the pilot initiatives. Partners are not just implementers of behavioural interventions in plastic reduction efforts. They are collaborators who can play a proactive role in proposing, improving, and evaluating interventions. Such input and feedback from partners is essential to identifying challenges and developing timely and impactful responses. To ensure effective co-production with partners, it is important to:

Engage partners early on: All four pilots successfully engaged partners from the early planning and implementation stages. This diversity of stakeholders, including vendors, consumers, students, faculty, and administration, provided a holistic approach and comprehensive understanding of the challenges and opportunities. By engaging with stakeholders from the earliest stages of project planning, the pilots were able to develop more effective interventions that were appealing to both vendors and consumers.

Foster a continuous learning process: All partners committed to continuous learning, acknowledging that not all interventions would yield immediate results or align with existing practices. Moreover, a continuous learning mode allowed the pilot project teams to collaboratively assess impacts and make adjustments to the interventions in real time, enhancing the relevance and reach of the projects. Mutual learning and adaptability were strongly emphasised throughout the project processes to good effect.

Enhance stakeholder capacity: Including stakeholders in the project from an early stage is of great benefit to project planners, but it is also valuable to stakeholders. Stakeholders will not only deepen their knowledge and understanding of plastic-related issues but also provide them with valuable experience working alongside faculty, the community, and vendors. By inviting stakeholders to participate in the project planning and intervention design process, communication and outreach development, and implementation and monitoring community capacity is increased. Given the potential for expanding these activities to other departments, schools, and off-campus communities, the experience gained by stakeholders as primary co-creators is invaluable.

Messaging that appeals to social norms and emotions: Designing messaging and communication tools that make use of emotional appeals and are in line with social norms proved to be highly effective. By taking into consideration the types of language used by the target audience, as well as their values and priorities, messaging can be developed that is more likely to resonate and shift behaviour. This is especially true if the language and messaging incorporate forms of emotional appeal that are positive and align the desired behaviour with the values, traditions, and aspirations of the audience. Additionally, messaging that includes language that invokes social influence was shown to be highly impactful, particularly the communication of dynamic norms that reinforce the idea that behaviours and attitudes are already shifting.

Displaying messaging in high-impact areas: Where communication materials are displayed or distributed is as important as how the material is developed. By taking into account local conditions, existing patterns of behaviour, and the design of the interventions, communication strategies were developed that placed materials where they would be most impactful. Interestingly, some unconventional locations emerged as being highly effective, such as rain shelters and bus loops, places where people gather but are usually not associated with single-use plastics.

Similarly, using different modes of communication proved to be effective where it was tailored to specific audiences. In some cases, gamifying the messaging can be impactful, such as creating contests. Elsewhere, using radio or podcast programming can reach some audiences and generate discussion and interest. This underlines the importance of taking the time to get to know your audience and developing communication tools that speak to them directly.

Building on success: There is great value in embedding efforts toward sustainable behaviour change within larger, systemic efforts to shift behaviour. Wherever possible, behaviour change interventions should be aligned with existing or emerging processes such as institutional sustainability roadmaps, changing local governance priorities, and shifting social values. Two of the pilot projects were able to build directly on existing institutional actions and roadmaps, which provided an existing framework for cross-department collaboration.

Where these processes do not already exist, efforts can be made to form partnerships and alliances across stakeholder groups to foster a purpose-driven movement among citizens, businesses, and local authorities focused on shifting behaviour toward sustainable patterns of consumption. Natural allies might also include networks taking action toward zero-waste goals, food waste and community composting, businesses working toward circular models, and community groups.

Planning for the future: A final lesson gleaned from the experience of the four pilot projects is the importance of building in consideration of future efforts into the project planning, implementation, and monitoring and evaluation processes. By including these aspects into the projects, implementing teams can create longer-term partnerships, forge relationships with local authorities and business communities, develop trust with the target audience, and build momentum around behaviour change. Keeping an eye to the future when designing the project process helps to ensure that interventions and their outputs are useful in supporting next steps for both the implementing team(s) and various stakeholder partners.

In this way, future planning is particularly valuable for engaging with policymakers to reinforce municipal waste reduction and plastic reduction strategies, as well as other sustainability-focused policies. Policymakers often respond best to quantified results and demonstrated public and private interest, so building long-term relationships allows for the development of communication channels and relationships of trust. Such relationships increase the likelihood that policymakers will take project outputs into consideration, and may help to encourage policymakers to actively engage with project activities.

Rising to the Challenge

Through observing the four plastic-related behaviour change pilot projects it becomes apparent that many experience similar challenges. In particular, five key challenges emerged as important insights from the implementing teams. These challenges stem from the complexity of shifting business and consumer behaviour patterns, navigating supply chains, and the need for government engagement to bring about systemic change. While the pilot projects focused their efforts on shifting behaviour away from single-use plastics, the insights below will be of use to practitioners taking action to shift behaviour in other areas.

With these points in mind, it is essential to acknowledge the following challenges from the early planning stage:

Behavioural shifts in business practices are not straightforward: Implementing behavioural interventions to address issues like single-use plastic must take into consideration how to promote changes in established business practices. The interpretation and integration of these interventions into daily operations by vendors and partners can be a complex process, involving consultations, capacity building, and experimentation. In particular, where sustainable practices are not commonly in place, businesses may require convincing to try shifting away from their status quo. In the end, it may take some time to gain allies and build capacity in the business community, and to determine with them the most effective approaches to reducing the use of single-use plastics in their business.

Consumer adaptation may take time: As with the business community, consumers may take convincing and need time to adjust to new purchasing and information-sharing methods. Consumers may initially not respond positively to interventions such as charging for disposable containers. They may also distrust or dislike the reusable alternatives provided by business and institutions. This means that intervention designs should consider the need for robust consultations and the development of well-tailored communication tools. In addition, including feedback gathering provisions in implementation is important to allow for adapting the intervention in response to consumer sentiment.

Lack of availability and affordability of alternatives should be expected: Two factors influencing both business and consumer responses to interventions promoting alternatives to single-use plastics are the availability and affordability of alternatives. In many cases, due to low or non-existent demand, local systems of provision for alternatives such as reusable or biodegradable utensils and containers may not be mature, or may not exist at all. Similarly, where such products are available, local recycling or composting capacity may not be in place. These factors can lead to higher costs associated with shifting behaviour and present significant barriers for individuals with lower incomes. Project teams will need to work closely with the local business community to identify opportunities in the supply chain to address these potential shortfalls.

Comprehensive measures will need governance efforts: A holistic approach that combines alternative solutions to single-use plastics with efforts such as waste sorting, recycling, composting, and more necessitates the establishment of implementation systems and capacity building. This in turn requires the development, implementation and enforcement of responsible policies to accompany the building of relevant infrastructure to effectively manage waste flows.

Managing extensive waste volumes and multiple waste streams also poses challenges in terms of time and workforce requirements. On top of effective policies and infrastructure, capacity building among citizens, businesses, and workers will be necessary to ensure that waste systems and alternatives to single-use plastics are used responsibly. Furthermore, designing and operating recycling stations and collection methods can be intricate, requiring effective governance both at the level of regulatory oversight and day to day operations.

Manage expectations and plan accordingly: Finally, it is important to acknowledge that addressing certain challenges demands patience, because the impact of plastic reduction efforts using Behavioural Insights may not materialise immediately upon intervention launch. Deep behaviour change may require a broader shift in societal behaviour, including changes in attitudes among business, consumers, and regulators. Taking a medium- to long-term view of systems change can thus help to manage expectations and lead to more effective planning for network and coalition building, influencing policy, and creating an environment of innovation and experimentation.

Indeed, to address the challenges discussed above effectively, it is essential to foster continuous collaborative learning with partners and stakeholders. To this end, we recommend considering the following points right from the project's inception:

Establishing a Community of Local Practitioners: The successful implementation of behavioural interventions requires more than just a few vendors or project leaders. Expanding the network of engaged stakeholders is a key success factor for behaviour intervention projects. For projects that begin with a limited number of partners, it is crucial to maintain ongoing interactions with potential collaborators for later project phases. For the four pilot projects this included engaging other vendors involved in waste management and food supply, as well as organisations participating in departmental and community decision-making and information dissemination. Involving such stakeholders in the implementation partnership at the appropriate stage, and encouraging them to anticipate potential challenges that may arise in the future can help to increase local ownership of the project and build valuable momentum and broader interest.

Fostering an environment of continuous learning: By creating an environment that facilitates active learning between partners and local stakeholders, behavioural intervention projects can build local knowledge, capacity, and resilience. Collaborative and continuous learning was built into the pilot projects through ongoing consultations, public awareness campaigns, and a variety of activities and events. These efforts result in a number of short- and long-term benefits for the project. In the short-term, partners and stakeholders gain the opportunity to learn more about project activities and the importance of the interventions to their communities. This is also a chance to gain the attention of local governments. In the longer-term, continuous learning systems provide a framework for sharing information as it develops, building capacity among key stakeholders, and influencing policy making processes.

Creating Clear and Shared Evaluation Measures: Behaviour change projects benefit from developing a robust and transparent set of evaluation metrics. These are best developed collaboratively with stakeholders to ensure that the information gathered is both useful for all involved and respectful of confidentiality. It is also important to establish a common understanding of what the information will be used for and who it will be shared with. It is vital to ensure transparency in the evaluation methodology, encompassing both the evaluation indicators and partners' roles in the evaluation process. Collaborative evaluation with partners helps in shaping the direction for scaling practices, such as expanding the initiative, transitioning toward zero-waste efforts that cover non-plastic waste, or influencing policy deployment. A shared and transparent evaluation methodology also facilitates mutual learning with future practitioners implementing similar initiatives in different locations.

Limitations

- This document and its advice may not apply equally to all locations. Current piloting is limited to school campuses in cities in four ASEAN countries. This limited scope may restrict the generalizability of findings to other contexts characterised by different socio-cultural factors influencing plastic consumption behaviours. Further work is needed to test implementation methods and strategies in rural settings and outside of educational institutions. Furthermore, it is important to note that the absence of common impact measuring methods hinders a systematic evaluation and comparative analysis of interventions. The pilots could also benefit from a more extensive exploration of the interplay between individual behaviours and larger socio-economic and policy-driven factors to develop a more holistic understanding of plastic waste reduction.
- The pilots provide a limited assessment of the potential challenges in the implementation of behavioural change interventions or the long-term sustainability of the proposed changes. Potential rebound effects include an increase in consumption of biodegradable plastic alternatives. In addition to any environmental impacts from the production of these alternatives, this is particularly concerning in contexts where proper infrastructure is not in place to process the new waste streams. Another potential rebound effect is the reduced access to food services for lower income individuals due to higher up-front and incremental costs for alternatives to single-use plastics. This may be of particular concern for seniors and those engaged in the informal sector.

Conclusion

The use of single-use plastics presents countries and communities around the world with a major challenge. Annually, global plastic production exceeds 430 million metric tonnes, two thirds of which are short-lived plastics. Most of these short-lived plastic products end up in landfills, presenting complex sustainability challenges touching on biodiversity and human health. For ASEAN member states, the need to reduce plastic consumption is perhaps even more pressing, with several member states implicated in significant plastic leakage into marine environments, including local waterways.

Addressing the triple planetary crisis of climate change, biodiversity loss, and pollution requires that ASEAN stakeholders take serious and sustained action to stem both the production of and demand for single-use and short-lived plastic products such as carrier bags, cutlery, straws, cups, plates, and many types of packaging. Such action will require the concerted efforts of governments, the business community, and civil society, as well as international partners. Indeed, many governments are responding by developing national action plans to address the challenge of plastics, as well as coming together globally to develop a legally binding instrument to end plastic pollution through the International Negotiating Committee.

The use and casual disposal of single-use plastics has been the status quo behaviour for many years in southeast Asia. As such, the challenge of encouraging a shift in behaviour is complex and entrenched. The four pilot projects have begun to reveal the sets of behaviour change levers, or nudges, that can effectively induce positive change toward sustainable alternatives to single-use plastics.

Through the four pilots that participated in this project, university and high school campuses from Indonesia, the Philippines, Thailand, and Viet Nam have taken a small but important first step to understanding how the methodology of behavioural change interventions can be applied to the plastics challenge in southeast Asia. While the results in terms of reduced plastic consumption are limited when compared to total regional consumption, the lessons learned have implications for further efforts both on and off campus. Moreover, in each case a baseline for consumption and responses to targeted behaviour change levers has been established, providing a valuable tool to support engaging local governments in the future.

Looking forward, each pilot has a clear pathway forward to continue utilising behaviour change methods to design and implement plastic reduction projects. There is more to learn about what motivates and (dis)incentivises consumer choices on campuses in the southeast Asian context. Building on the positive experience of this round of pilots, the projects are well positioned to continue with future phases and expand their partner coalitions and scale up implementation. In these next phases, it will be critically important to engage with local governments to begin to assess and contribute to policy formulation that envisions a future free of single-use plastics.

References

- Allison, A. L., Baird, H. M., Lorencatto, F., Webb, T. L., & Michie, S. (2022). Reducing plastic waste: A meta-analysis of influences on behaviour and interventions. *Journal of Cleaner Production*, 380, 134860. <https://doi.org/10.1016/j.jclepro.2022.134860>
- Chandra, G. (2020). Non-monetary intervention to discourage consumption of single-use plastic bags. *Behavioural Public Policy*, 1–14. <https://doi.org/10.1017/bpp.2020.9>
- Heidbreder, L. M., Steinhorst, J., & Schmitt, M. (2020). Plastic-free July: An experimental study of limiting and promoting factors in encouraging a reduction of single-use plastic consumption. *Sustainability (Switzerland)*, 12(11). <https://doi.org/10.3390/su12114698>
- Kurokawa, H., Igei, K., Kitsuki, A., Kurita, K., Managi, S., Nakamuro, M., & Sakano, A. (2023). Improvement impact of nudges incorporated in environmental education on students' environmental knowledge, attitudes, and behaviors. *Journal of Environmental Management*, 325, 116612. <https://doi.org/10.1016/j.jenvman.2022.116612>
- Lawman, H. G., Grossman, S., Lofton, X., Tasian, G., & Patel, A. I. (2020). Hydrate Philly: An Intervention to Increase Water Access and Appeal in Recreation Centers. *Preventing Chronic Disease*, 17, E15. <https://doi.org/10.5888/pcd17.190277>
- Loschelder, D. D., Siepelmeyer, H., Fischer, D., & Rubel, J. A. (2019). Dynamic norms drive sustainable consumption: Norm-based nudging helps café customers to avoid disposable to-go-cups. *Journal of Economic Psychology*, 75. <https://doi.org/10.1016/j.joep.2019.02.002>
- Mathew, A., Isbanner, S., Xi, Y., Rundle-Thiele, S., David, P., Li, G., & Lee, D. (2023). A systematic literature review of voluntary behaviour change approaches in single use plastic reduction. *Journal of Environmental Management*, 336, 117582. <https://doi.org/10.1016/j.jenvman.2023.117582>
- Meijer, L. J. J., van Emmerik, T., van der Ent, R., Schmidt, C., & Lebreton, L. (2021). More than 1000 rivers account for 80% of global riverine plastic emissions into the ocean. *Science Advances*, 7(18). <https://doi.org/10.1126/sciadv.aaz5803>
- Mundt, D., Carl, S., & Harhoff, N. (2020). A Field Experiment on Reducing Drinking Straw Consumption by Default. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.565537>
- Novoradovskaya, E., Mullan, B., Hasking, P., & Uren, H. V. (2021). My cup of tea: Behaviour change intervention to promote use of reusable hot drink cups. *Journal of Cleaner Production*, 284. <https://doi.org/10.1016/j.jclepro.2020.124675>
- Rare Center for Behavior & the Environment. (n.d.). Levers of Behavior Change: Principles and Strategies. Retrieved December 23, 2023, from <https://behavior.rare.org/wp-content/uploads/2021/07/Understanding-Behavior-Change-Levers-and-Strategies-scroll-July-2021-.pdf>
- Romano, A., & Sotis, C. (2021). Odi et Amo: A nudge to reduce the consumption of single-use carrier bags. *Waste Management*, 120, 382–391. <https://doi.org/10.1016/j.wasman.2020.09.021>
- United Nations Environment Programme. (2023). Turning off the Tap: How the World can End Plastic Pollution and Create a Circular Economy. United Nations Environment Programme. <https://doi.org/10.59117/20.500.11822/42277>

Appendix

Appendix 1. Tables and Figures

https://www.iges.or.jp/en/publication_documents/pub/policyreport/en/13400/Appendix+1.pdf

Appendix 2. Survey Questionnaires and Tally Sheets

https://www.iges.or.jp/en/publication_documents/pub/policyreport/en/13400/Appendix+2.pdf

Prepared by:

Institute for Global Environmental Strategies

2108-11 Kamiyamaguchi, Hayama, Kanagawa 240-0115, Japan

Tel: +81-46-855-3700

Fax: +81-46-855-3709

Supervised by:

**Regional Knowledge Centre for Marine Plastic Debris (RKC-MPD),
Economic Research Institute for ASEAN and East Asia (ERIA)**

Sentral Senayan II 6th Floor

Jalan Asia Afrika No. 8

Gelora Bung Karno, Senayan

Jakarta Pusat 10270, Indonesia

Tel: +62-21-5797-4460

Fax: +62-21-5797-4463