

Maria Piacentini, Alison Stowell, Ooi Pei Boon, La Ti Gew, Yee Xuan Low, Yee Yee Yau, Alex Skandalis, Lenka Brunclikova and James Cronin.

Table of Content

Executive Summary	2
Introduction	4
Malaysia Event (March 12-13, 2025)	5
Mapping Plastic Packaging Landscape	5
Household Challenges and Solutions	7
Strategies for Waste Management	8
Technology and Innovation	8
KDEB Waste Management Infrastructure	8
UK Event Findings (July 9, 2025)	10
Global Plastic Treaty Negotiations	10
UK Policy Overview	11
UK and Malaysia Household Research Comparisons	12
UK and Malaysia Waste Management Research Comparisons	14
Infrastructure and Collection System Challenges for Plastic Recycling	15
Capturing Material Quality	16
Navigating the Responsibility for Plastic Recycling	16
Recommendations for future areas of research	18
Consumer behaviour and infrastructure interface research	18
Economic models and circular economy implementation research	18
Technology integration and digital monitoring research	19
Cross-cultural policy research	19
Funding landscape and implementation opportunities	19
Extended Producer Responsibility (EPR) Funding	19
Government Infrastructure Investment	19
Private Sector Responsibility Programs	20
International Funding	20
Conclusions	20
Author and speaker Biographies	21
PPiPL Resources	26

Executive Summary

The International Communication Platform (ICP), created under the Plastic Packaging in People's Lives (PPIPL) initiative, serves as a comprehensive knowledge exchange platform addressing challenges in plastic packaging, Extended Producer Responsibility (EPR), and sustainability. In 2025, two ICP Knowledge Exchange Events were held:

- Malaysia Event: March 12-13, 2025, at Sunway Resort Hotel, Malaysia
- UK Event: July 9th, 2025, hosted by Lancaster University via Zoom.

Both events brought together academic, industry, government and community stakeholders to discuss waste reduction strategies, consumer attitudes, and policy interventions for sustainable packaging and waste management.

Malaysia discussions highlighted three barriers to reducing single-use plastic packaging: behavioural resistance, infrastructure limitations, and inconsistent policies. UK discussions focused on implementation challenges and infrastructure requirements, noting persistent disconnects between regulatory intent and consumer behaviour.

A common theme was the misalignment between technical definitions of recyclability and consumer decision-making perceptions. Households in both countries often relied on “touch and feel” judgments rather than guidance, leading to widespread “wishcycling” and contamination. Malaysia's *Trash for Cash* practice and the UK's plastic packaging tax illustrated how well-meaning policies can misfire when human behaviour is overlooked.

Stakeholders also raised economic issues: Malaysia noted steep cost differences between sustainable and conventional packaging, while some UK participants reported that some firms simply pay the plastic packaging tax instead of sourcing recycled content. The UK's reliance on imported recycled material (65%) was flagged as a concern.

Community initiatives provided practical insights. Malaysia's *KDEB Selangor Recycle Surge* collected 4.5 million kg of recyclables in 2024, while *Sunway University* eliminated plastic bottles, installed refill stations, and introduced recycling incentives. Both suggested that combining infrastructure with community engagement yields stronger results.

These knowledge exchange events took place against the backdrop of stalled international “Plastic Treaty” negotiations, reflecting global tensions between life-cycle approaches and narrower waste-management frameworks, similar to the challenges seen in Malaysia and the UK. Opportunities for cross-learning were identified: Malaysia's partnerships with the informal sector and the UK's standardised data systems. However, participants noted the

need for further research on transferability and adaptation.

Research priorities emerging from both events included:

- Aligning consumer behaviour with available infrastructure.
- Designing incentives that prevent contamination while maintaining participation.
- Integrating technology to optimise material flows.
- Adapting policies across cultural contexts.

The events also established potential research collaborations and highlighted funding avenues through EPR systems, government programmes, corporate partnerships, and international sources. Overall, the ICP events provided a foundation for shared learning, showing that effective solutions must integrate consumer behaviour, economic realities, and infrastructure capacity working in alignment rather than in opposition.

Introduction

Plastic waste, particularly single-use plastic packaging (SUPP), remains a major environmental challenge, driven by inefficient recycling systems, inadequate infrastructure, and consumer behaviour (UNEP 2018). With growing regulatory pressures and international sustainability commitments, governments, industries, and communities face increasing pressure to adopt circular economy approaches that prioritise reducing, reusing, and recycling to minimise waste and environmental harm.

In response, the International Communication Platform (ICP) was established as part of the [Plastic Packaging in People's Lives \(PPiPL\)](#) initiative. The ICP fosters collaboration between academia, industry, policymakers, and communities, bridging the gap between research and practice. Its aim is to translate evidence-based insights into scalable strategies for sustainable packaging, effective waste management, and Extended Producer Responsibility (EPR).

Funded by the UK Research and Innovation International Science Funds (Institutional Support Grant to Lancaster University, RE-CL-2024-03), the ICP brings together a multidisciplinary UK–Malaysia team, including Sunway University researchers, with expertise in consumer behaviour and waste management.

The project is driven by three core objectives:

- Translate academic research into actionable insights for businesses and policymakers.
- Facilitate cross-sector dialogue on waste reduction and sustainable packaging.
- Identify emerging research priorities and future collaboration opportunities.

This report presents the findings from the ICP Knowledge Exchange events held on March 12-13, 2025, at Sunway Resort Hotel, Sunway City, Malaysia and the UK event held online on July 9, 2025, and hosted by Lancaster University via Zoom. Both events explored consumer attitudes, policy effectiveness, waste management strategies, and industry-specific challenges. By enabling dialogue across diverse stakeholders, the ICP events aimed to generate actionable recommendations to strengthen policy, improve infrastructure, and encourage responsible consumption and production.

Malaysia Event (March 12-13, 2025)

A two-day knowledge exchange event was held at Sunway Resort Hotel, Sunway City, on March 12–13, 2025. The ICP project supports waste reduction by examining consumer behaviour, waste management practices, and sustainable packaging alternatives through a multidisciplinary approach that combines research, stakeholder engagement, and academia–industry collaboration.

Key stakeholders (academics, policymakers, manufacturers, waste managers, and consumers) took part in structured discussions, panels, and collaborative exercises. These highlighted the need for financial incentives, public education, and stronger enforcement to drive sustainable practices, alongside exploring solutions such as composting, material innovation, and fiscal support for alternatives.

By mapping the plastic packaging ecosystem and facilitating cross-sector dialogue, the ICP initiative aims to deliver practical, scalable strategies to reduce single-use plastics, improve waste management efficiency, and support meaningful progress toward a sustainable future.

Mapping Plastic Packaging Landscape

Discussions on single-use plastic packaging, led by Dr. Ooi Pei Boon, Ms. Jen Uyin Lee, and Dr. Intan Nadia Ghulam Khan, highlighted the need for a systemic shift in Malaysia’s approach to plastic waste. Dr. Ooi Pei Boon emphasised that while research offers valuable insights, effective action depends on cross-sector collaboration. Participants agreed that without adequate recycling and waste management infrastructure, penalties and incentives have limited impact. Recycling alone is not a complete solution: mechanical methods face contamination issues, while chemical recycling is costly and unsuitable for all plastics. Greater emphasis is needed on reducing plastic use and designing products for recyclability.

Behavioural change was also identified as a key challenge. Ms. Jen Uyin Lee (city councillor from Subang Jaya) highlighted that convenience strongly shapes sustainable practices, with older generations often resistant to changes that disrupt daily routines. Economic pressures further limit participation, as lower-income households prioritise immediate needs over waste sorting. In high-density housing, shared disposal systems complicate accountability, making fair enforcement difficult.

Dr. Intan Nadia Ghulam Khan (a legal expert from Universiti Sains Islam Malaysia) stressed that manufacturers must take greater responsibility for plastic waste, focusing on reducing unnecessary plastics at the source rather than just managing waste. While essential

single-use plastics, such as medical and food packaging, remain necessary, excessive packaging should be minimised. Businesses should invest in sustainable materials, support end-of-life solutions, and fund recycling initiatives.

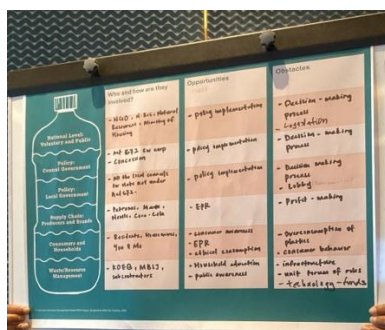
The roundtable discussion identified key stakeholders in the food plastic packaging value chain to include: central (NRES, KPKT) and local governments (MBSJ), manufacturers (Petronas, MAREA, Nestlé, Coca-Cola, Innovative Shield Sdn Bhd), waste management entities (KDEB, KBEB), and consumers (Sunway Centre for Planetary Health).

Key challenges identified include:

- Central government enforcement of sustainability regulations under ACT 672 and ACT 673, while local governments manage waste disposal with varying policies and fines up to RM100,000 in Selangor.
- Manufacturers contribute to plastic production but face high costs for sustainable alternatives (30–40 times higher) and consumer resistance.
- Waste management companies struggle with rising operational costs, limited budgets, and difficulty tracking waste from collection to disposal.
- Consumers across income groups (B40, M40, T20) need awareness campaigns, enforcement measures, and targeted education on waste separation.

Opportunities include promoting sustainable materials, improving waste tracking, and boosting public education, although challenges persist. A sustainable plastic waste system requires cross-sector collaboration, greater funding for eco-friendly solutions, and stronger education and policy enforcement to drive lasting change.

Photo 1: Stakeholder Mapping Roundtable



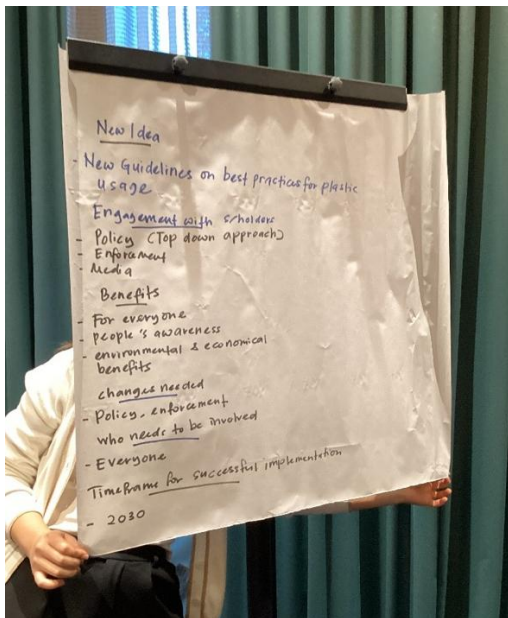
Household Challenges and Solutions

The plenary session, led by Dr. Lenka Brunclikova and the Sunway University Student Council (SUSC) Panel, highlighted the importance of consumer education, accessibility, and infrastructure in reducing single-use plastics (SUPPs). Dr. Brunclikova shared findings from the PPIPL study, showing that initiatives such as "No Plastic Bag Day" have limited impact due to entrenched consumer habits, ongoing use of LDPE bags and takeaway containers, and inconsistent waste separation guidelines that lead to landfill contamination.

Jonathan Pun Yung Jian (SUSC) supported these findings with DS Smith poll results, showing strong consumer demand for clear recycling guidelines, more bins, and sustainable alternatives. A Deloitte survey noted that over 50% of Generation Z has reduced SUPP use, though limited recycling facilities and inconsistent policies remain obstacles.

Dr. Jane Gew presented composting as a key waste strategy, sequestering 1.842 kg CO₂ per kg over 100 years with lower emissions than landfills, but high costs limit accessibility. The session also explored redesigning packaging, alternative materials, and incentive-based policies to encourage sustainable practices.

Photo 2: Developing solutions to single-use plastic packaging roundtable



The discussions highlighted that reducing plastic waste requires a balance of policy enforcement, infrastructure, and education, with collaboration among government,

businesses, and consumers essential for a circular economy. Sustainability efforts should offer practical, engaging, and accessible solutions for all, including B40 communities and people with varying abilities. By 2030, the aim is to normalise SUPP reduction, expand composting, and integrate sustainable practices into daily life.

A subsequent roundtable explored strategies such as promoting reuse, adopting biodegradable materials such as bamboo, and using recyclable mono-polymer plastics to minimise waste. Participants stressed the need for clear guidelines for paper-coated plastics and a top-down approach combining education, policy enforcement, and media advocacy. Collaboration among government bodies (KDEP), NGOs, manufacturers, designers, waste collectors, and Malaysia ESCO was deemed crucial for improving waste separation and recycling infrastructure. The discussion highlighted economic benefits, environmental impact reduction, and public awareness, reinforcing commitments to SUPP reduction, 3R adoption, and Malaysia's Plastic Sustainability Roadmap (MPSR) targets by 2030.

Strategies for Waste Management

The plenary session addressed key challenges and advancements in plastic recycling, waste-to-energy technologies, and policy initiatives. Dr. Lenka Brunclikova highlighted Malaysia's fragmented recycling system, where regional disparities and confusing labelling hinder proper sorting, contaminating recycling streams. Practices such as "Trash for Cash" can worsen contamination, while inconsistencies in Act 672 contribute to illegal dumping and mismanagement. Proposed solutions include standardised labels, digital waste tracking, and public awareness campaigns to improve recycling and support Malaysia's Plastic Sustainability Roadmap (MPSR) targets.

Technology and Innovation

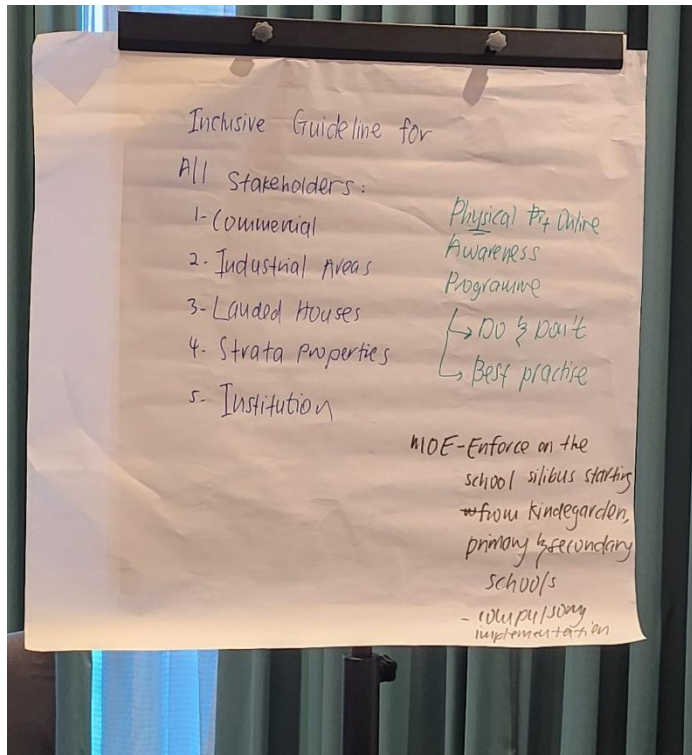
Professor Hwai Chyuan Ong highlighted plastic-to-fuel and waste-to-energy innovations, including microwave-assisted biofuel production, hydrothermal deoxygenation, and wet torrefaction for converting plastic and biomass into renewable energy. While these technologies could advance Malaysia's transition to a circular economy, high production costs, regulatory barriers, and limited public awareness remain significant challenges to wider adoption.

KDEB Waste Management Infrastructure

Mr Ammar Ehsan Bin Omar at KDEB Waste Management shared insights into Selangor's waste infrastructure, which serves 7 million residents and processes 7,000 tons daily. The Selangor Recycle Surge (SRS) Initiative has collected 4.5 million kg of recyclables in 2024, showcasing the potential of community-driven waste separation programs. Community

programs, drop-off centres, MRCFs, solar-powered facilities, and IoT-based monitoring systems enhance waste diversion and operational efficiency.

Photo 3: Roundtable discussions – Reducing SUPP



The final roundtable on reducing single-use plastic highlighted challenges including limited infrastructure, higher costs for sustainable packaging, and low public awareness. Participants called for a comprehensive policy framework to support Malaysia's circular economy, including clear waste separation guidelines, pilot studies, financial incentives, and education initiatives (from school curricula to programs for households, businesses, and industries). The discussion concluded with a call for collaboration among policymakers, businesses, and communities to implement inclusive, effective policies that advance Malaysia's transition to a circular economy.

UK Event Findings (July 9, 2025)

The Lancaster University PPIPL Team hosted a three-hour online Knowledge Exchange (KE) event (over Zoom), bringing together experts and stakeholders to discuss key issues in plastic policy and management. The session opened with an introduction to the global plastic treaty negotiations, followed by an overview of the UK policy context. It also featured summaries of recent research on household waste management in the UK and Malaysia, providing participants with insights into comparative practices and emerging challenges in plastic use and disposal. Finally, there was a roundtable discussion of the issues and challenges emerging from the talks presented.

[Global Plastic Treaty Negotiations](#)

Dr. Alexandra Harrington, chair of the IUCN World Commission on Environmental Law's Agreement on Plastic Pollution Task Force and lecturer in Environmental Law at Lancaster University, provided insights on the "Plastics Treaty" negotiations. Formally known as the *international legally binding instrument on plastic pollution, including in the marine environment* (ILBI), the treaty was authorised by the UN Environment Assembly in February 2022, with an unusually tight 2.5-year timeline to address the full life cycle of plastic pollution, not just waste management.

Five Intergovernmental Negotiating Committee (INC) meetings were scheduled:

- INC1: November 2022, Uruguay
- INC2: May 2023, Paris
- INC3: November 2023, Nairobi
- INC4: April 2024, Ottawa
- INC5: November–December 2024, Busan

The process faced early challenges, including procedural disputes over voting rules that consumed 2.5 days at INC2. By INC4, the draft text had grown from over 50 to 72 pages, becoming unwieldy for effective negotiation. A fundamental split emerged between countries advocating a "full life cycle" treaty (the High Ambition Coalition) and those favouring a focus on waste management. Despite multiple "non-papers" from the chair to bridge differences, no agreement was reached at INC5 in Busan.

The next round of negotiations was scheduled for August 2025 in Geneva for 10 days. At the time of writing, consensus had not been achieved, leaving open the possibility that the UN Environment Assembly may revise the treaty mandate, and that some countries may turn to alternative forums to advance a strong plastic pollution agreement. Dr. Harrington noted that both the UK and Malaysia have been active participants, often providing policy and legal suggestions, though their positions differ on some aspects of plastic pollution.

UK Policy Overview

Richard Hudson, Technical Manager at the Chartered Institute of Waste Management (CIWM), outlined UK environmental and sustainability policies affecting plastic packaging. The UK faces major challenges: of 2.4 million tonnes of plastic packaging entering the market annually, only 1.3 million tonnes is collected for recycling, with nearly half a million tonnes exported and much of the rest sent to energy recovery, landfill, or escaping into the environment. Public awareness grew following David Attenborough's *Blue Planet 2* documentary series in 2017, prompting the 2018 Resources and Waste Strategy.

In this policy context, the UK's most significant implemented policy is the plastic packaging tax, introduced in April 2022, which imposes a charge of £223.69 per tonne on packaging containing less than 30% recycled content. While it has generated significant revenue (£268 million), over 50% of packaging still fails to meet the target. In addition, bans on certain single-use plastics and the 10p carrier bag charge have addressed low-hanging fruit, while the UK Plastics Pact, covering 85% of packaging, influenced government policy despite some unmet targets.

Another important policy is the Extended Producer Responsibility (EPR), introduced last year, which aims to shift end-of-life packaging costs to producers, with modulated fees incentivizing recyclable design. Upcoming important measures to improve collection and material quality include:

- The Simpler Recycling scheme will require households (from March 2025) and small businesses (from 2027) to separate plastic bottles, pots, tubs, and trays.
- Deposit Return Scheme for drinks containers will launch in 2027, covering metal cans and PET bottles, but excluding glass.

Looking ahead, the UK Emissions Trading Scheme will cover energy-from-waste facilities from 2028, creating pressure to divert fossil-based plastics from incineration. Meanwhile, the UK Circular Economy Task Force is developing recommendations for a transition to a circular economy, prioritising plastics and chemicals. However, Hudson highlighted significant infrastructure gaps: the UK needs an additional 1 million tonnes of sorting

capacity and 500,000 tonnes of recycling capacity over the next decade, requiring £1 billion investment, with much recycled content still imported. Currently, 65% of recycled content used in UK packaging comes from overseas rather than domestic reprocessing. The plastic recycling sector is experiencing difficulties, with several high-profile company closures occurring when more infrastructure is needed.

Hudson stressed that effective waste management (ensuring universal collection) could prevent 77% of macro plastic emissions to oceans and eliminate 90% of open burning globally, emphasising that production controls must be paired with proper infrastructure.

UK and Malaysia Household Research Comparisons

Professor Alex Skandalis and Dr. Ooi Pei Boon session on household insights made comparisons between the two countries in the context of plastic food packaging consumption and recycling. Research was conducted with 10 households in Malaysia and 27 households in the UK exploring plastic food packaging behaviour and daily interactions with food packaging.

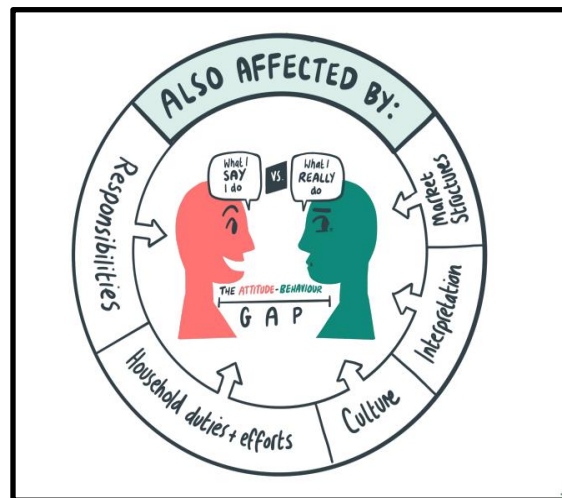


Figure 1: What affects consumer behaviour

© Lancaster University Management School PPIPL Project. Designed by Nifty Fox Creative Ltd, 2024

The analysis (see Figure 1) highlights that sustainable behaviour at household level cannot be reduced to imbalances between people's attitudes and behaviours, but depends on circumstances, resources, activities, and constraints which shape how households consume and recycle. The overwhelming presence and overconsumption of plastic food packaging in households was noted in both countries.

In the UK, household members' relationships with plastic packaging are situated within wider contexts related to work, study, and transit. The diversity of interactions with plastic

food packaging stretch far beyond the domestic environment and require further critical exploration across different countries, cultures, demographics, and infrastructures.

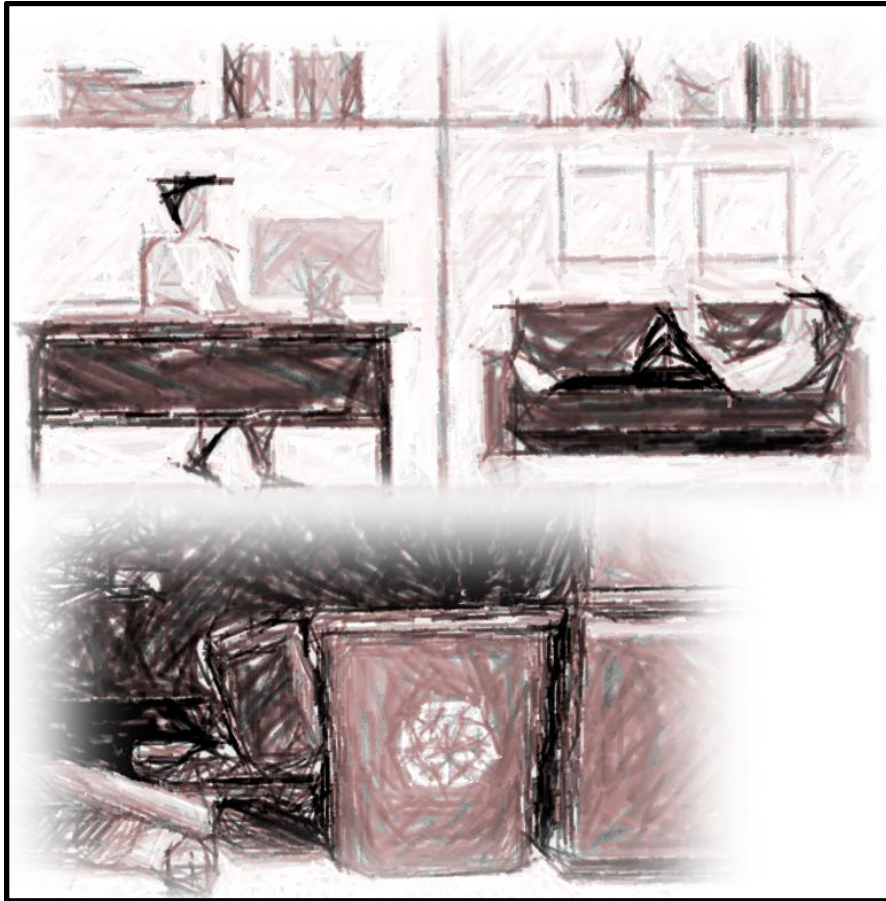


Figure 2: Workplace and home practices influence disposal practices
© Lancaster University Management School PPIPL Project. Designed by Dr Ooi Pei Boon, 2025

Across both Malaysia and UK, households prioritise their own judgements of what can and should be recycled which are often not aligned with managerial and council definitions. The perceived lack of clear guidance from authorities leads to 'wishcycling' (disposing questionable waste in recycling bins hoping it will be accepted/processed), placing pressure on waste management infrastructures and resulting in more inefficient recycling systems.

In Malaysia, recycling services and facilities are not universally available, and there exists general uncertainty and scepticism regarding the recycling system from households. The method of household waste separation largely depends on the preferences and requirements of local waste collectors, with many households adjusting their separation practices to align with these collectors, influencing the quality of materials collected and determining where the waste ends up.

UK and Malaysia Waste Management Research Comparisons

Comparative waste management insights were shared through presentations by Dr Lenka Brunclikova and Dr Lai Ti Gew, who presented research examining the consumer attitude–behaviour gap from the perspective of the waste sector, aiming to understand how household practices influence plastic waste management, affect those working in the sector, and shape the potential for material recovery. The study adopted a dual-country approach: a pilot study in Malaysia across eight locations, covering formal, semi-formal, and informal waste management organisations, and carried out 24 interviews with managers and workers. In the UK, we investigated post-consumer plastic packaging and its effects on waste management, gathering insights from 128 professionals across 65 organisations spanning the entire value chain, from collection to recycling.

To contextualise the findings and discussions, Dr Brunclikova outlined the different material, and people flows in both countries, highlighting for participants the contrast between Malaysia and the UK.

- **Malaysia** (General plastics – Figure 3): An examination of the process up to the sorting phase was undertaken in the pilot study. Households are generally not required to separate waste and place bags outside their doors. Collection schedules vary and are handled by formal or semi-formal organisations. Workers manually recover valuable plastics through “tailgate recycling,” selling them to recycling centres. Source-separated plastics may be reused at home, collected formally or informally, or dropped off at community points. At recycling centres, materials undergo further sorting, with quality monitoring varying by facility.

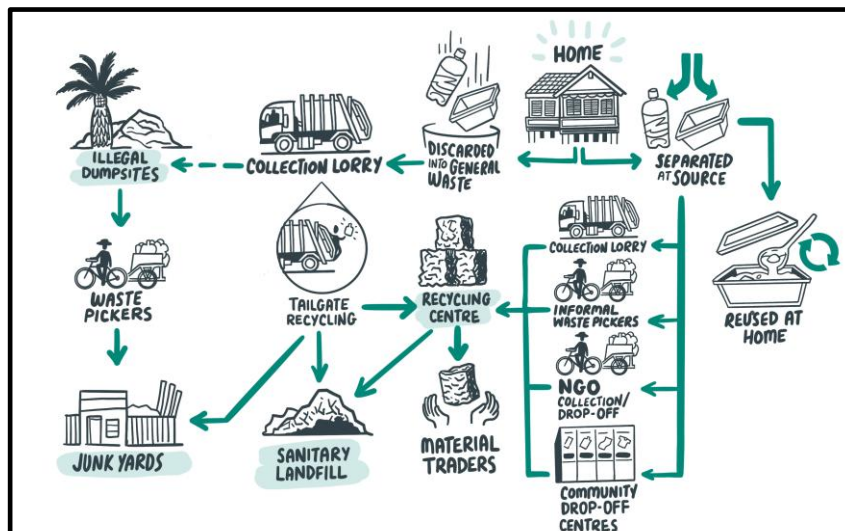


Figure 3: Selangor mapping of household plastic reuse and disposal practices.

© Lancaster University Management School PPIPL Project. Designed by Nifty Fox Creative Ltd, 2025.

- UK (Milk Bottle Example, HDPE – Figure 4):** In the UK, recyclables are collected kerbside. Milk bottles are transferred to waste transfer stations, sorted into material streams, and sent to Material Recycling Facilities (MRFs). Plastics are then baled as transparent “HDPE natural” or coloured “jazz bales,” some sold via contracts or the open market. At Polymer Reprocessing Facilities, transparent bottles undergo additional manual sorting, granulation, washing, and conversion into food-grade pellets, while coloured and white HDPE is used for non-food applications. Colour separation is important, as transparent HDPE commands higher market prices.

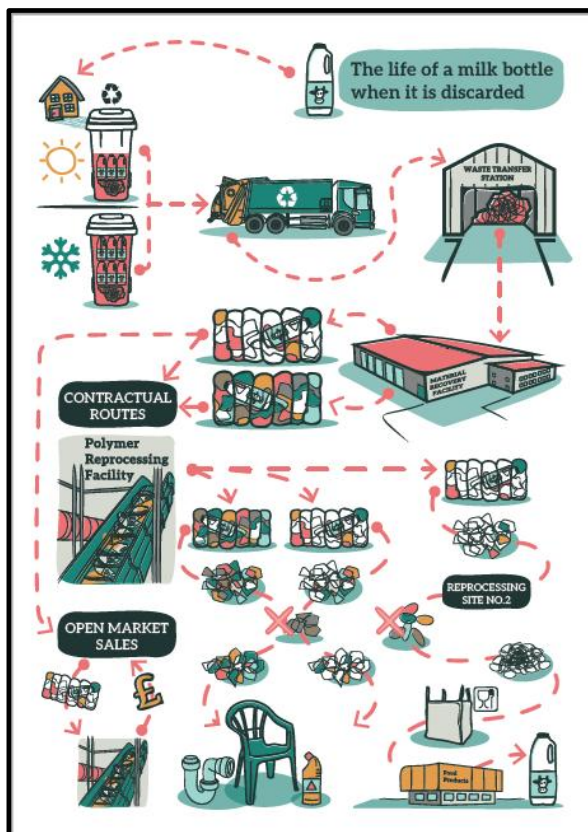


Figure 4: Discarded milk bottle's (HDPE) recycling trajectory
 © Lancaster University Management School PPIPL Project. Designed by Haley Alter, 2024

From this overview, recycling systems in both countries are complex, and are shaped by household practices and organizational roles. Comparing Malaysia and the UK reveals both shared challenges and valuable opportunities for cross-learning.

Three key research themes emerged from the research presentations and subsequent discussion:

Infrastructure and Collection System Challenges for Plastic Recycling

Collection infrastructure poses challenges in both Malaysia and the UK. In Selangor, Malaysia, household recycling is hampered by fragmented systems, unclear separation

requirements, and reliance on local waste collector preferences. Confusing labelling, inconsistent information, and educational gaps further reduce proper disposal, even when households are willing to recycle.

In the UK, similar issues exist with inconsistent collection systems and confusing labels across councils. While initial assumptions suggested consumers drive recycling changes, much of the process occurs behind the scenes. Recycling companies rarely engage directly with households, and contamination remains high despite support programs. As a result, recyclers increasingly focus on improved packaging design, smarter sorting technology, and value-chain partnerships to create closed-loop systems.

Capturing Material Quality

Both Malaysia and the UK identify HDPE, PET, LDPE, and PP as the most valuable plastics, but capturing high-quality material differs across systems. In Malaysia, smaller formal recycling centres prioritise quality, educating consumers and carefully checking recyclables, while larger informal centres accept all plastics regardless of condition. Tailgate recycling (removing packaging from household waste during collection), contamination, multilayered materials, and bioplastics often reduce material quality, and waste contractors' limited control over where materials go creates disparities between sites. Formal managers emphasise Extended Producer Responsibility (EPR) to shift some accountability to brand owners.

In the UK, similar challenges exist. Household recyclables can become “contamination” if sorted incorrectly or sent to the wrong facility, creating a constant tension between collecting higher volumes and maintaining material quality. Contamination impacts the entire recycling chain, often requiring costly re-sorting or long-distance transport. Accessing high-quality recyclable materials and preventing contamination highlights just how challenging it is to make recyclability work in practice. It represents a hidden value that everyone recognises but few manage to fully capture.

Navigating the Responsibility for Plastic Recycling

Plastic recycling responsibility is complex in both Malaysia and the UK, shaped by regulatory frameworks, voluntary initiatives, and market realities. In Malaysia, policies have evolved from the 1993 3Rs framework to the current 2021–2030 circular economy approach, which introduces Extended Producer Responsibility (EPR). While ambitious voluntary targets exist—such as 100% recyclable packaging and 25% post-consumer recycling by 2025—gaps in infrastructure, funding, and coordination with the informal sector limit effectiveness. Inefficient processing leads to the loss of 81% of the value from key plastics, representing untapped revenue potential.

In the UK, recycling is regulated under the 1990 Environmental Protection Act, with new

measures including a Plastic Packaging Tax and upcoming EPR requirements. Voluntary efforts, like the UK Plastics Pact, have made progress in eliminating problematic packaging and increasing recyclability, but not all recycled content targets have been met. The market is made up of 6,200 companies employing 180,000 people, yet with only 16 reprocessors handle household plastic packaging. Fragmentation in collection and processing creates uneven recycling outcomes and reliance on exports.

Both countries are making significant efforts to manage plastic waste, but challenges remain. Malaysia struggles to integrate formal and informal systems and maximise material value, while the UK faces fragmentation and capacity limitations. Coordinated action across the value chain is essential to improve efficiency, increase recycling rates, and unlock economic and environmental benefits.

Overall, Malaysia and the UK face similar challenges in plastic recycling, including contamination that reduces material quality and economic value, consumer confusion caused by unclear labelling and inconsistent collection systems, and difficulties in managing complex or multilayered packaging despite a shared focus on high-value plastics. Key differences include (a) regulatory structures, (b) the prominent role of the informal sector in Malaysia compared with the UK's reliance on fully licensed operators, and (c) the approach to public education, which in Malaysia is shared among multiple stakeholders but in the UK places a heavier burden on consumers.

Recommendations for future areas of research

Future research under the International Communication Platform (ICP) should focus on understanding consumer attitudes, implementing circular economy practices, and developing digital monitoring of material flows to enhance plastic waste reduction strategies and cross-cultural policy research. Collaborative partnerships among manufacturers, recyclers, policymakers, and academic institutions are essential to pool expertise and drive effective solutions. Aligning funding with ICP objectives will support the long-term sustainability of plastic packaging and waste management initiatives.

Consumer behaviour and infrastructure interface research

The household research presentations highlighted a key gap between consumer understanding and technical definitions of recyclability. Both research studies and the knowledge exchange discussions showed that households often rely on their own judgments about what can be recycled, typically based on the characteristics of plastic packaging rather than official guidance. This underscores the need for research into how consumers make disposal decisions and how recycling infrastructure can be designed to align with these habitual processes.

An experiential approach was recommended to understand recycling practices that considers people's unreflective and taken-for-granted heuristics when disposing of plastic packaging waste, examining how judgements shaped by household assumptions about the "touch" and "feel" of packaging materials rather than local council or local municipalities definitions. Research should aim to identify simple, practical, and convenient recycling protocols that work effectively across diverse cultural contexts.

Economic models and circular economy implementation research

The Malaysia Knowledge Exchange highlighted cost barriers, with sustainable packaging reported as 30–40 times more expensive than conventional alternatives—a critical area for research. Similarly, UK experts noted that manufacturers often pay plastic packaging taxes rather than use recycled content, suggesting current economic incentives may be insufficient to drive behaviour change. Research on Extended Producer Responsibility (EPR) could explore how fee structures can better incentivise packaging innovation while funding collection infrastructure. Comparative studies between Malaysia's integration of informal sector operations and the UK's reliance on fully licensed operators could be designed to offer new and valuable insights for policy design.

Technology integration and digital monitoring research

Digital monitoring systems offer opportunities for optimization, building on KDEB's IoT-based tracking, which enhanced collection efficiency. Research could explore how such technologies can be scaled across contexts and integrated with existing infrastructure to improve material flow tracking and reduce losses.

Contamination challenges observed in practices such as "Trash for Cash" highlight the need to design incentives that maintain material quality while encouraging participation. Future research should investigate alternative incentive structures that minimise contamination and remain accessible across different income levels.

Cross-cultural policy research

The contrasting regulatory approaches in Malaysia and the UK present opportunities for comparative policy research. Malaysia's flexible informal partnerships and the UK's standardised data systems each offer unique strengths that could be adapted (or aspect could be adapted) across contexts. Research could explore how Malaysia's informal partnerships might support innovation in the UK, while the UK's standardised data systems could help strengthen Malaysia's fragmented framework. Such insights could advance stronger producer responsibility systems in both countries and help close gaps in their plastic packaging and waste management infrastructures.

Funding landscape and implementation opportunities

Extended Producer Responsibility (EPR) Funding

EPR funding is essential to shift some of the financial responsibility for waste collection and recycling to manufacturers. Malaysia is introducing EPR with ambitious voluntary targets, while the UK EPR system is generating revenue through modulated fees.

Government Infrastructure Investment

- Malaysia: Act 673 (Solid Waste and Public Cleansing Act) funds can be leveraged to improve waste management infrastructure. State and federal funds provide opportunities for infrastructure development.
- UK: Infrastructure investment requirements of £1 billion were identified for additional plastic sorting and mechanical recycling capacity, representing substantial opportunities for research partnerships.

Private Sector Responsibility Programs

Private sector companies' corporate responsibility programs offer opportunities aiming to promote sustainability. Companies identified during stakeholder mapping (Petronas, MAREA, Nestlé, Coca Cola, Innovative Shield Sdn Bhd) represent potential research partners.

International Funding

Contributions from developed countries can provide financial and technical assistance to support Malaysia's climate and waste management efforts. Drawing inspiration from international policies, such as the UK landfill tipping fee system, can help design innovation government initiatives.

Conclusions

The ICP Knowledge Exchange events successfully identified critical research gaps in plastic waste management and outlined concrete pathways to address them through coordinated research programs. Discussions highlighted the complex interplay of consumer behaviour, infrastructure design, economic incentives, and policy frameworks, factors that must be aligned to achieve effective plastic waste reduction.

Emerging research priorities include understanding how to align consumer behaviour with system capabilities, designing economic incentives that drive desired outcomes without unintended consequences, and optimizing technology integration to improve system performance. Malaysia's experience with informal sector integration and the UK's standardised data systems offer potential opportunities for cross-learning and policy adaptation.

Long-term sustainable plastic waste management requires multisector collaboration, policy reform, and active public engagement. By connecting policymakers, academics, businesses, and consumers, the ICP initiative provides an inclusive framework to reduce plastic waste, enhance recycling systems, and support sustainable practices for future environmental preservation.

Author and speaker Biographies

Dr Ooi Pei Boon is an Associate Professor in the Faculty of Medical and Life Sciences at Sunway University and a registered counsellor with the Board of Counsellors (Malaysia). Her research primarily focuses on psychological well-being, cyberbullying, student experiences, health-related knowledge, attitudes, and practices (KAP), and the development of health intervention programmes targeted at vulnerable groups. She also plays a key role in inter-institutional collaborative initiatives, serving as Co-Investigator for the PPIPL Pilot Project Malaysia and the International Communication Platform on Food Plastic Packaging.

Dr Lenka Brunclikova is a Researcher and Teaching Associate at Lancaster University Management School, UK. She participated in Plastic Packaging in People's Lives Pilot project conducting the field research in Malaysia in collaboration with colleagues from Sunway University, Malaysia. Her research interests include human and waste interaction, informal economic models, local schemes of self-sufficiency and dealing with climate change challenges, and migrant workers' strategies during the Brexit transition. Outside of academia, she participates in the *South Lakes Action on Climate Change*, Kendal, where she volunteers at the *Waste into Wellbeing* project focusing on strategies to tackle food waste.

Professor James Cronin is a Professor in Consumer Culture Studies and the Director for the Centre of Consumption Insights at Lancaster University Management School. His scholarly interests include collective forms of consumption, marketplace ideologies, consumer subjectivity, sustainability, and readings of marketing informed by cultural theory. His research has been published in a wide range of leading academic journals across the social sciences and business & marketing disciplines. He is the lead author of *The Little Book of Plastics in Everyday Life* and has written about the 'passengerial' role of plastics within consumer culture. James currently supervises several PhD researchers funded by the ESRC's Northwest Social Science Doctoral Training Partnership, focusing on topics centred on consumption, markets, and society.

Dr La Ti Gew is an Associate Professor at the Sir Jeffrey Cheah Sunway Medical School, Sunway University. She earned her PhD in Chemistry from the University of Malaya and is actively engaged in research aligned with the United Nations Sustainable Development Goals (SDGs), particularly in green chemistry and sustainable practices. Her work focuses on addressing pressing environmental issues, with a strong passion for tackling plastic pollution through policy advocacy and social transformation towards a sustainable future.

A key milestone in her career was the discovery of microplastics in edible sea salt in 2019, which received widespread media coverage. Dr. Gew's impactful research has been published in leading journals and supported through national and international collaborations and grants.

Dr Alexandra Harrington is the chair of the International Union of Conservation of Nature's World Commission on Environmental Law Agreement on Plastic Pollution Task Force and is a lecturer in environmental law at Lancaster University. She advises governments and international organizations on treaty negotiations and environmental law issues.

Mr Richard Hudson is the Technical Manager at the Chartered Institute of Waste Management (CIWM), provided an overview of UK environmental and sustainability policies affecting plastic packaging. CIWM, established in 1898, is a professional body supporting the resource and waste management sector with 8,000 members worldwide. Mr Hudson has over 35 years of experience in plastic-related roles and 20 years specifically in plastic recycling and waste management.

Mr Jonathan Pun Yung Jian is currently pursuing a BA (Hons) in Communication at Sunway University, where he has been actively involved in student leadership through the Sunway Union Council. With a strong interest in communication, public engagement, and community development, Johnathan brings both academic training and hands-on experience into his role. He completed an internship with SLPR Worldwide, a leading public relations agency in Kuala Lumpur, where he honed his skills in professional communication, strategic messaging, and media engagement. Johnathan is passionate about global and local issues, having accumulated over five years of Model United Nations (MUN) experience and participated in multiple public speaking competitions.

Dr. Intan Nadia binti Ghulam Khan is a Senior Lecturer (Pensyarah DS52) in the Faculty of Syariah and Law at Universiti Sains Islam Malaysia (USIM), Negeri Sembilan. Her research expertise is expansive, focusing notably on Waste Management Law, Constitutional Law, International Environmental Law, and Islamic Family Law. Over the past five years, she has earned three research awards and holds five professional memberships, demonstrating her active engagement in scholarship and professional communities.

Ms Jen Uyin Lee is a dedicated member of the Subang Jaya City Council (Majlis Bandaraya Subang Jaya – MBSJ), representing Zone 16, which encompasses Taman Mutiara Puchong,

Lake Edge, Pusat Bandar Puchong, Puchong Batu 12, and Bandar Puteri, Malaysia. In her capacity as councilor, she plays an active role in multiple key committees, namely Finance; Business Control; Infrastructure, Transportation & Public Facilities; Services & IT; Urban Planning; and the One-Stop Center (OSC) for Planning & Development—reflecting her multifaceted contributions to urban governance and community well-being.

Ms Yee Xuan Low is a Research Assistant on the International Communication Platform for Food Plastic Packaging project as part of the Sunway University (SU) Team. With a background in psychology, she has a strong interest in understanding the theories behind human behaviour and how they shape real-world decision-making. She is especially intrigued by how psychological principles, such as behavioural norms, motivation, and decision-making processes, influence day-to-day habits.

Mr Ammar Ehsan Bin Omar currently leads the Special Projects Unit within KDEBWM's Project Delivery Division, where he oversees the end-to-end planning, execution, and delivery of strategic projects aimed at enhancing innovation, operational efficiency, and sustainable solid waste management. A certified Green Project Manager (GPM-b), Ammar has played a key role in spearheading high-impact initiatives, including the development of digital operational applications and the establishment of Recycling Centers across Selangor, such as the Cyberjaya Community Recycling Centre—a flagship model for community-driven sustainability. He has been involved in many policy discussions with Government agencies at both the Selangor State and federal level, with a focus on circular economy, sustainable green technology and waste management.

Professor Hwai Chyuan Ong is a Chartered Engineer (CEng) registered with the Engineering Council, UK. His research interests are energy & fuel, waste management, biomass energy, environmental sustainability and bio-circular economy. He is listed as Highly Cited Researcher (Engineering) by Clarivate Analytics in 2019-2022. He also named as Australia's top early career researcher in sustainable energy in 2021. Currently, he is Associate Editor Alexandria Engineering Journal, Carbon Research and e-Prime.

Professor Maria Piacentini is a Professor of Consumer Research and serves as Associate Dean for Research at Lancaster University Management School. Her research focuses on consumer vulnerability, and she is concerned with the strategies employed by consumers in difficult consumption contexts and situations. Maria's research has been funded by UKRI (NERC; ESRC); the British Academy, Barnardo's, and the European Foundation for Alcohol Research. She has published her work in leading international refereed journals in

social sciences and marketing/management journals. She is co-editor of *Consumer Vulnerability: Conditions, Contexts and Characteristics* (Routledge, 2016) and co-author of *Consumer Behaviour* (Oxford University Press, 3rd Ed. 2022). Along with Emma Banister, Kathy Hamilton and Sue Dunnett, she is co-chair of the Academy of Marketing's Consumer Research with Impact for Society (CRIS) Special Interest Group.

Professor Alexandros Skandalis is Professor in Marketing and Consumer Culture at Lancaster University Management School. His research interests revolve around consumer behaviour, consumer culture, and cultural sociology. Alex's interdisciplinary work has been published in leading international journals such as *Sociology*, *Journal of Travel Research*, *Journal of Business Research*, and *Marketing Theory*, amongst others. His work has been funded by external research bodies such as UKRI and The British Academy. Alex was a co-Investigator in the Plastic Packaging in People's Lives Project, co-leading the Consumer Insights theme.

Dr Alison Stowell is a Senior Lecturer in the Department of Organisation, Work and Technology, Lancaster University, UK. She is a qualitative social science researcher whose work focuses on societal, organisational and management responses to waste. Alison has collaborated and led on numerous interdisciplinary projects funded by UKRI (NERC, EPSRC, ESRC, ISPF), WEEE Fund and REPIC Ltd, focusing on e-waste organisation; e-waste flows and fates; organic electronics benefits, barriers and opportunities; plastic and circular economy, and littering. She co-led the Plastic Packaging in People's Lives Project, leads the spin-off projects, and is a co-investigator on a sustainable digital research infrastructures project examining virtual waste and e-waste. Well-equipped to speak across disciplines, Alison has been published in management and organisation, environmental studies, material science and ethnography journals and she has co-edited, co-authored books and book chapters.

Linda Kim Lian Tan is the Director of Facilities at Malaysia's leading private institution Sunway Education Group (SEG). She oversees the Facilities management for buildings under SEG. Her role involves resources and space planning, sustainability initiatives & reporting, building technology & services, asset management, capital building projects and campus renovations. She leads a diverse team of human resources from cleaners, technicians, executives and managers. With over 34 years of experience in the education industry, Linda is a resilient leader who believes in nurturing talent, continuous improvement & innovation and delivering efficient solutions.

Ms Yee Yee Yau is an undergraduate student pursuing a BSc (Hons) in Psychology at Sunway University. She currently serves as a Research Assistant for the International Communications Platform (ICP) for Food Plastic Packaging event - SU Team. With a strong interest in environmental sustainability and human behaviour, she is dedicated to exploring the psychological factors influencing waste management practices. She aims to gain insights into food plastic packaging from various perspectives, including those shared by people from different fields.

PPiPL Resources

The PPiPL presentations were based on the following:

Resources	Links
Rethinking the Attitude Behaviour Gap	https://zenodo.org/records/10839740
Mapping the Plastic Packaging Landscape	https://zenodo.org/records/10839758
Infographic – Rethinking the Attitude Behaviour Gap	https://zenodo.org/records/15051945
Plastic Packaging in People’s Lives Malaysia Pilot	https://zenodo.org/records/14659428
Infographic – Plastic Packaging in People’s Lives Malaysia Pilot	https://zenodo.org/records/15052105
Sustainable Packaging Innovation: Hampered by the Consumer Attitude-Behaviour Gap	https://zenodo.org/records/10839787
Household Recycling: Managing Plastics at the Home and Hearth	https://zenodo.org/records/10839795
Moral Subordination of Plastic Waste to Food Waste	https://zenodo.org/records/10853201
Waste (Resources) Matters	https://zenodo.org/records/10839761
UK Knowledge Exchange Event Recordings	https://www.lancaster.ac.uk/ppipl/events/past-events/kte-2025/
See here for additional resources	https://www.lancaster.ac.uk/ppipl/ppipl-resources/
<p>We would love to hear your feedback on our resources, please fill in our 3-questions survey:</p> <p>https://lancasteruni.eu.qualtrics.com/jfe/form/SV_9LatQU0VQxVA5mK</p>	