



Drivers and barriers for the reduction of single-use plastics in the member countries of the Asia-Europe Meeting (ASEM)



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Established in 2003, the Asia-Europe Environment Forum (ENVforum) is a partnership of Asia-Europe Foundation (ASEF), Government of Sweden through the Strategic Collaborative Fund administered by Stockholm Environment Institute (SEI), Hanns Seidel Foundation (HSF), ASEM SMEs Eco-Innovation Center (ASEIC) and the Institute for Global Environmental Strategies (IGES).

Since its inception, the ENVforum has organised over 80 high-level international meetings, roundtables, conferences, and workshops, bringing together over 3,000 selected participants from civil society, NGOs, academia, governments, international organisations, and the private sector. The ENVforum has also produced research publications and policy briefs addressing key issues related to sustainable development and climate change in Asia and Europe

Acting as both facilitator and bottom-up promoter of wide-ranging initiatives, ENVforum provides an inter-regional platform for knowledge-sharing and capacity building for policy makers, businesses and civil society

from Asia and Europe on sustainable development. The aim is to contribute to the formulation of sound decisions across all sectors that are mindful of their environmental, social, and economic impacts and ultimately of generations to come.

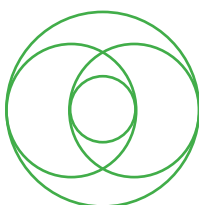
The 2030 Agenda for Sustainable Development

Today, the aims of the ENVforum are reflected in the 2030 Agenda's Sustainable Development Goals (SDGs). Since 2013, the ENVforum has been actively engaged in the global discussion surrounding the SDGs, which were adopted by the UN Member States in the UN Sustainable Development Summit in September 2015. The ENVforum was given its mandate by the ASEM Summit in Vientiane, Lao PDR in November 2012. Going beyond its traditional format, the ENVforum launched a program to contribute to the bottom-up process that supports the implementation and monitoring of SDGs by providing Asian and European countries with key insights into sustainable development planning. The program is based on three pillars:



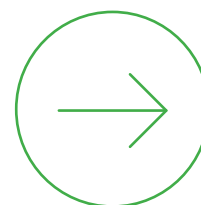
1.

It undertakes research on SDGs and their associated indicators, and climate change



2.

It organises knowledge-hub meetings of experts working on SDGs and indicators as well as on the Green Economy and climate change



3.

It disseminates the outcomes of its research and consultations to policymakers, civil society members and businesses

Multi-stakeholder cooperation between international organisations, governments, businesses and the civil society will be required to address a variety of implementation challenges to translate the SDGs into reality. The ENVforum provides a platform for such multi-stakeholder cooperation to take place and supports global discussions with insights gained from its research on SDGs and climate change.

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Key messages

The ASEM region plays a significant role in the global production and consumption of single-use plastics, with considerable economic, social and environmental impacts both in the region and beyond. Our review suggests that countries need to support a circular economy approach to address the single-use plastic waste challenge at a systemic level and expand projects and initiatives to multiple cities and sectors and potentially to other countries.

The Asia-Europe Environment Forum (ENVforum) embarked on a three-year research programme in 2018, aiming to study implementation experiences with the UN Sustainable Development Goals (SDGs 12) on Sustainable Consumption and Production (SCP) in the member countries of the Asia-Europe Meeting (ASEM). This paper presents the implementation experience with single-use plastic initiatives in the ASEM regions as part of this research programme. It explores the landscape of innovative projects and initiatives that aim to tackle the single-use plastic waste challenge across the ASEM Partner Countries and consider drivers that support or barriers that hinder such initiatives.

Emerging from this review, we propose five key messages to support these objectives:

Key message 1: There is a potential to create synergies if the single-use plastic waste reduction is coordinated across the supply chains

To systematically address the problem with single-use plastics, large-scale initiatives are needed to induce changes across the production and consumption supply chains. However, many efforts remain disconnected, and instead of creating momentum across different stages in the production-consumption system, some of the benefits were lost. Our analysis suggested that plastic waste management organisations often focused on various activities aiming at collecting, recycling and reusing plastic waste to reduce the amount of plastic waste generated. Still, these activities were often not coordinated across the production chains. Moreover, initiatives whose objective was the overall reduction (avoidance) of plastic use, thus targeting the highest objectives in the plastic waste management hierarchy, were often not involved directly in plastic waste management activities. Instead, they focused on awareness-raising, education, or developing alternative materials that could replace single-use plastic materials. This seemed to create a mismatch between raising awareness on plastic issues and developing larger-scale, systemic solutions for plastic production, retail and waste collection systems.

Key message 2: Innovation to tackle the plastic waste challenge are more likely to happen at the smaller organisational scale

Our review also found that the managing organisations of the identified projects or initiatives tended to be smaller, implying the need for scaling these up to achieve significant impacts. Projects operating at organisations employing less than 50 people were more common in European ASEM Partner Countries. In contrast, initiatives launched by mid-size organisations were more prevalent in Asian ASEM Partner Countries.

Most frequently, the studied projects developed product and process innovations to prevent the use of certain plastic materials, improve single-use plastic waste collection and recycling, and introduce cultural innovations to educate producers and consumers about single-use plastics (and their alternatives). In terms of regional differences, the identified European projects were somewhat more likely to focus on reducing the use of single-use plastics (thus focusing on consumption). At the same time, the studied Asian organisations more often

developed their initiatives around reusing or recycling (via managing the created plastic waste during the production cycle).

Key message 3: Business across ASEM has a crucial role in taking forward innovations to reduce single-use plastic, but policies are needed to support the scaling up of their activities

Our research concluded that businesses in ASEM have a high potential to deliver a product, process and infrastructural innovations for addressing the single-use plastic waste problem. Most of the identified single-use plastic waste initiatives were managed by for-profit organisations, such as recycling companies, retailers and distributors, plastic industry companies or social enterprises. At the same time, business-led projects identified by this research were led by small and medium-sized organisations with a local or national-level activity focus. They were also more likely to focus their activities on collection and recycling than plastic waste reduction.

Key message 4: Countries in the ASEM region will need to provide additional funds, improve access to technology and build capacities and commitment to support the expansion of the current scattered single-use plastic waste initiatives and trigger systematic change

To promote coordinated activities across the supply chain and support the upscaling of successful initiatives, a range of actions are necessary from governments in the ASEM region. Our analysis of the surveyed initiatives found that the most crucial implementation drivers included increased funding, technology development, capacity-building and commitment from all sides of society. Regulatory mechanisms, such as the extended producer responsibilities required by the European Union in the Member States, were found to promote a collaborative understanding of collecting recycled plastic waste. However, until now, they have had limited impact in terms of waste mitigation.

Key message 5: The COVID-19 pandemic also affected organisations in the single-use plastic supply chain

The COVID-19 crisis affected the plastic waste sector and those projects and initiatives that aim to tackle single-use plastic waste pollution in various ways. Some organisations changed their operation processes or changed production patterns, while others increased their social media presence to support their consumers. Our study found that most plastic waste management and collection companies continued to operate without interruption while following the necessary health measures. In some cases, they had to suspend their activities due to the pandemic temporarily. Manufacturers also responded to the COVID-19 crises by adapting their production to manufacture protective equipment and sanitisers for medical use. Education and awareness-raising initiatives moved many of their activities online. The message sent was to advise on how to maintain a sustainable lifestyle during the quarantine, share concerns about the post-COVID-19 era and arrange online sessions on topics of health and eco-lifestyles.



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1. Introduction

Single-use plastics, such as packaging and service ware, are made of petrochemicals and were designed to be disposed of immediately after their first use. Globally 150 million tons of single-use plastic is being produced (and then thrown away) annually, and the accumulation of such plastic waste places significant pressure on the health of the natural environment.¹ To tackle the single-use plastic problem, immediate action is required from all parts of society. Therefore, countries should consider introducing policies and legislation that support companies, social organisations, research institutions, and citizens to develop and implement solutions for moving away from a throw-away society and adopting circular economy approaches.

1.1 Research aims

This research sought to investigate the drivers and barriers of projects and initiatives that address the single-use plastics problem in the 51 partner countries of the Asia-Europe Meeting (ASEM) regions.



Figure 1: ASEM Partner Countries²

Our study aimed at taking stock of various business and non-governmental organisation (NGOs) initiatives across the ASEM Partner Countries, examining the factors that drive their implementation and discussing how governments can empower and upscale these

businesses to contribute to the reduction of single-use plastics pollution.

1.2. Research methodology

In the first stage of the research, between November 2019 and January 2020, we identified over 100 relevant initiatives across the ASEM region via online desk research and with the support of the ASEF alumni network. The research sought to study bottom-up initiatives, self-sustainable and operational for at least one year before the start of the study. We also aimed to identify at least one relevant project or initiative from each ASEM Partner Country. The total number of studied projects and initiatives varied from one to six per ASEM country.

In the second stage of the research, between February and April 2020, we approached the identified 106 single-use plastic waste reduction initiatives with a questionnaire that explored the drivers and barriers for implementing their projects. In total, 33 responses were received (14 European and 11 Asian). The detailed presentation of the respondents' profiles is included in Annex 2.

During the third stage of the study, the findings emerging from the desk research and results of the questionnaires were used to develop a general overview and review implementation drivers of single-use plastic waste initiatives across ASEM Partner Countries and formulate a set of recommendations to upscale existing good practices.

1.3. Report structure

Chapter 2 presents an overview of identified single-use plastic waste reduction initiatives across ASEM, including their aims, management set-up, scale and size, project activities and the types of innovations they delivered.

Chapter 3 provides an overview of implementation drivers and barriers of single-use plastic waste reduction initiatives, based on the questionnaire responses provided by over 30 projects.

Chapter 4 offers some findings concerning how the studied initiatives were affected by the 2020 COVID-19 pandemic.

Chapter 5 presents conclusions that emerged from the report.

1 Our planet is drowning in plastic pollution. (2021, July 09). Retrieved from <https://www.unep.org/interactive/beat-plastic-pollution>
2 Partners - ASEM InfoBoard. (2021, July 09). Retrieved from <https://www.aseminfoboard.org/about/partners>

2. Overview of initiatives and projects in ASEM countries that aim to reduce single-use plastic waste

During detailed desk research, we identified over 100 relevant initiatives and projects across ASEM Partner Countries that aim to tackle the single-use plastic waste problem with innovative solutions. These projects all focused primarily on tackling the problems of single-use plastics via practices of recycling, reusing or refusing. At the same time, the study of these initiatives and projects revealed that their scope, focus and type of activities, and the type and the level of innovation they delivered varied considerably. To present their approaches and solutions, this chapter provides an overview of the identified initiatives according to their objectives (section 2.1); the type of implementing organisations (section 2.2.); the size and scale (section 2.3); their implementation activities (section 2.4) and the type of innovation(s) they delivered (section 2.5).

The full list of these initiatives is presented in Annex 1.

2.1. Project objectives

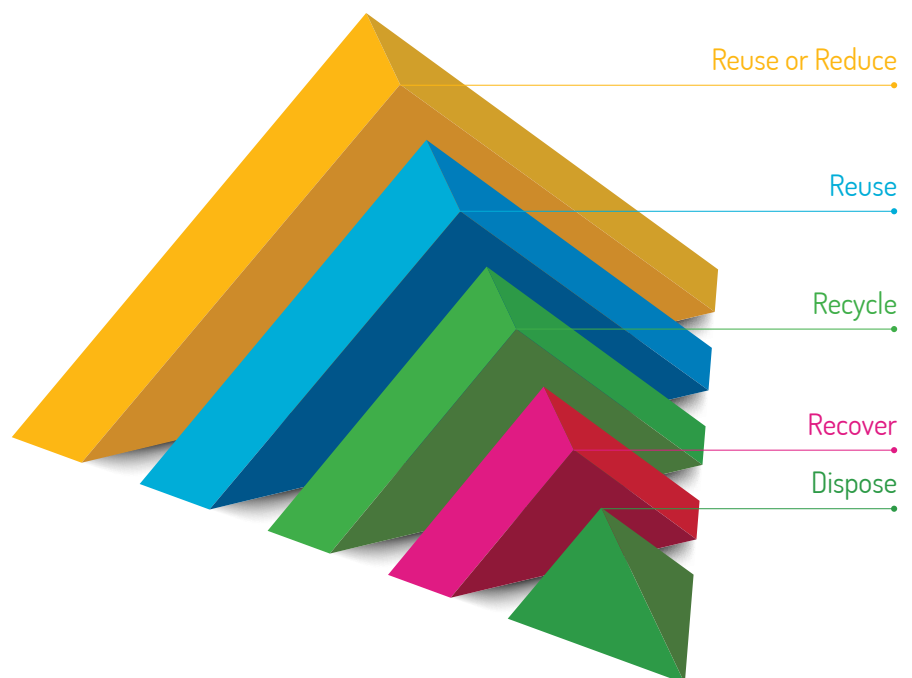
To strategically manage the single-use plastic waste problem, the zero-waste hierarchy can offer a helpful starting point. According to this hierarchy, the management of plastics should prioritise the rejection or the reduction of plastic material. If this is not possible, it should aim to reuse, recycle or, as a least preferred option, recover plastics to energy, to avoid the disposal of single-use plastics.

For the analysis, we distinguished five possible project objectives along the plastic waste management hierarchy. These included the following:

- » Reduction of use: activities that introduce either alternative materials to replace plastics or technological changes during the production processes of plastic. Awareness-raising and educational activities to change consumer behaviours were also considered.
- » Reuse: activities that produce new products from recycled materials (upcycling) or provide consumers with products that can be used more than once.
- » Material recycling: activities that convert single-use plastics into recyclable materials.
- » Collection: activities that collect recyclable materials and deliver them to a recycling point or factory.
- » Recovery: activities that generate energy during the primary treatment of waste or convert waste into a fuel source.

Our analysis found that multiple objectives could be identified along the single-use plastic waste management cycle for most of the initiatives. Approximately half of the initiatives

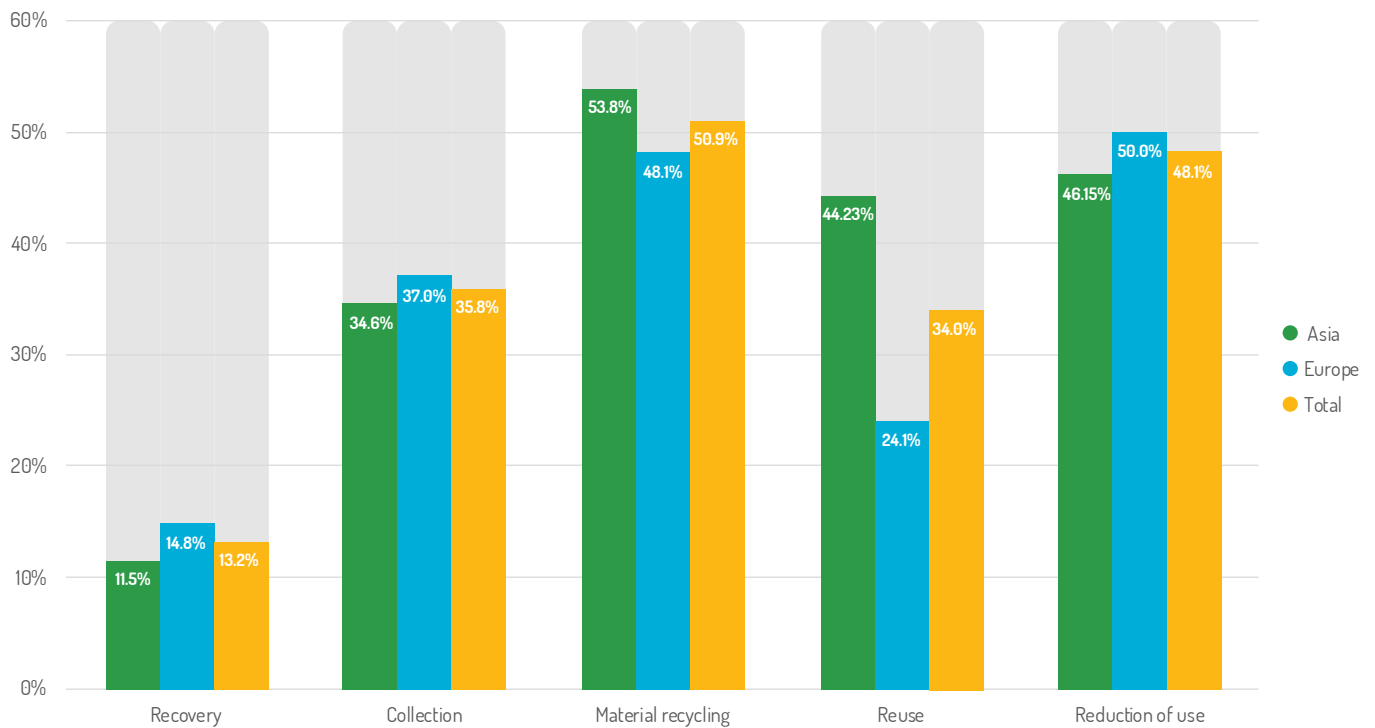
Figure 2: Single-use plastic waste management hierarchy



targeted reducing the use of plastic materials or aimed for material recycling. Around one-third of the initiatives focused on the collection, while one-fourth encouraged the production of reusable materials. Around 15% of the initiatives worked on recovering plastic materials or producing new materials from recycled products. Those organisations with the objective of material recycling often targeted this aim simultaneously as the collection of single-use materials or the production of new materials from recycled products (reuse). Organisations whose objective was to reduce use were less likely to identify additional objectives, suggesting that they were not involved directly in plastic waste management activities and focused instead on eliminating single-use plastics through awareness-raising, education or the development of alternative materials that could replace single-use plastic.

Regarding regional differences, the identified European initiatives were somewhat more likely to aim for the overall reduction of the use of single-use plastics. In contrast, Asian initiatives were more likely to focus their activities around reusing or recycling.

Figure 3: Objectives of the identified initiatives

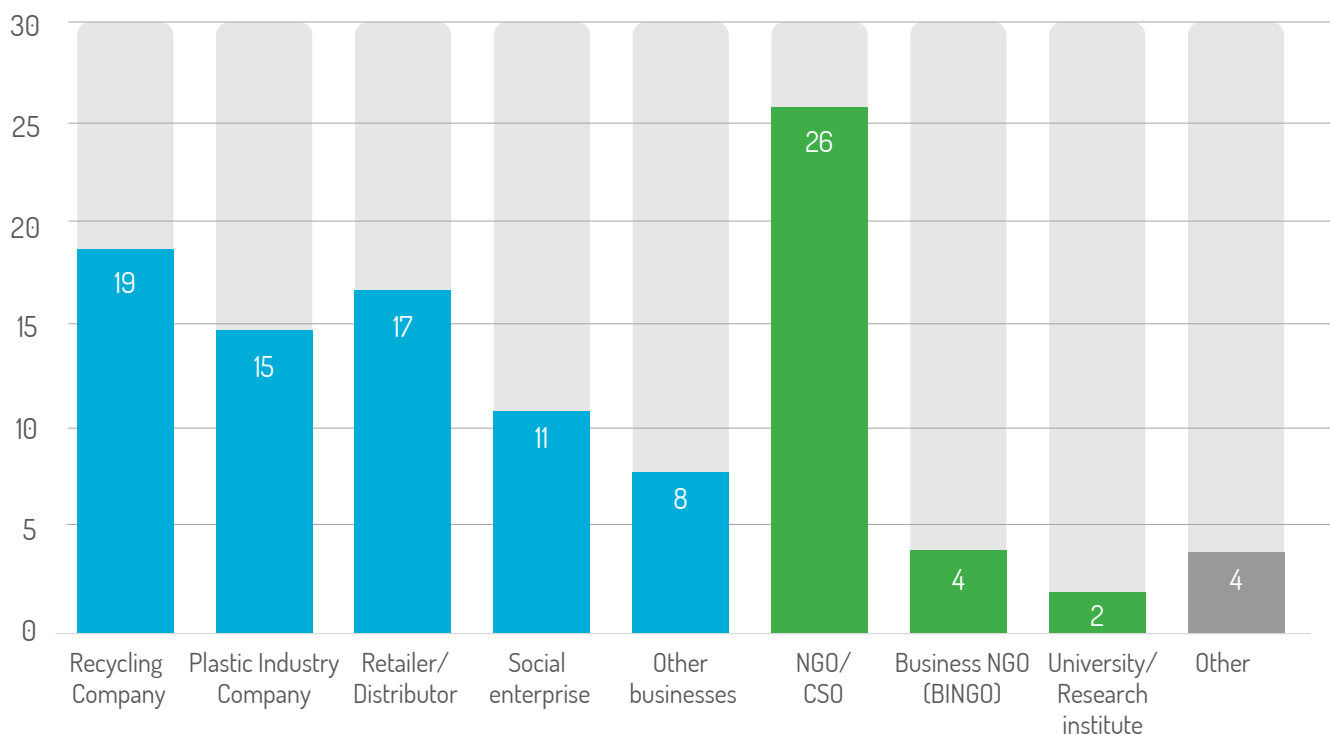


2.2. Managing organisations

During the desk research, we aimed to identify bottom-up initiatives developed and managed by various types of businesses, non-governmental or civil society organisations, think tanks and universities.

Our analysis found that two-thirds of the identified initiatives were managed by businesses, including recycling companies, plastic industry companies, retailers or distributors and social enterprises. In a few cases, the identified initiatives were managed by technology companies focusing on material innovations, business consultancies or insurance companies. Around 30% of the initiatives were led by not-for-profit organisations, mainly by non-governmental organisations (NGOs) or civil society organisations, but in a few cases by business NGOs (BINGOs) and research institutions. Lastly, in some cases, the initiatives and projects were owned by development or public agencies or by a consortium of organisations. (See Figure 4.)

Figure 4: Type of managing organisations of the identified initiatives



European initiatives were more likely to be launched by plastic industry companies and retailers in terms of regional distribution, while Asian were more frequently linked to recycling companies. In the Asian region, social enterprises' prevalence was more significant than Europe's, while initiatives from technology companies could only be identified in European ASEM Partner Countries. NGO and CSO initiatives were more frequently identified across Asian countries, while business NGOs seemed to play a more significant role in European countries. (See Table 1.)

Table 1: Regional distribution of managing organisations according to organisation type

	Recycling Company	Plastic Industry Company	Retailer Distributor	Social enterprise	Technology company	Business NGO	NGO / CSO	Research institute	Other
Total ASEM	17.9%	14.2%	16.0%	10.4%	4.7%	3.8%	24.5%	1.9%	5.7%
Asia	21.2%	9.6%	15.4%	13.5%	0%	1.9%	26.9%	3.8%	5.8%
Europe	14.8%	18.5%	16.7%	7.4%	9.3%	5.6%	22.2%	0%	7.4%

2.3. Scale and size of the initiatives

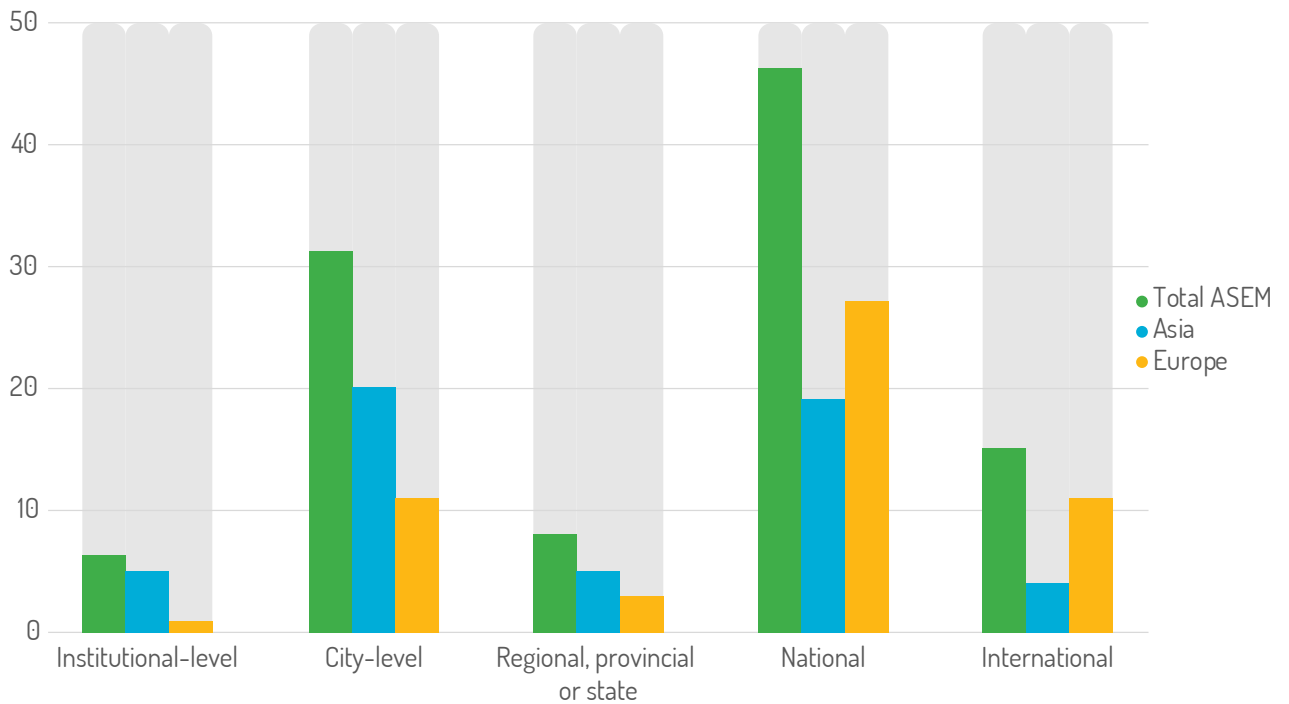
Almost 40% of the studied initiatives operate at the country level, while around 30% focus their activities in one or more cities. Approximately 15% of the initiatives indicated an international focus.

City and regional-level initiatives were more prevalent in the Asian countries of ASEM, while the European initiatives more frequently extended their activities to the national or even the international level. Our analysis also identified international activities within an additional 15 initiatives primarily focused on the city or national level. (See Figure 5.)

Our review also found that the managing organisations of the identified projects tended to be smaller, implying that the innovations to tackle the single-use plastic waste challenge are more likely to happen on a smaller scale. More than half of the initiatives

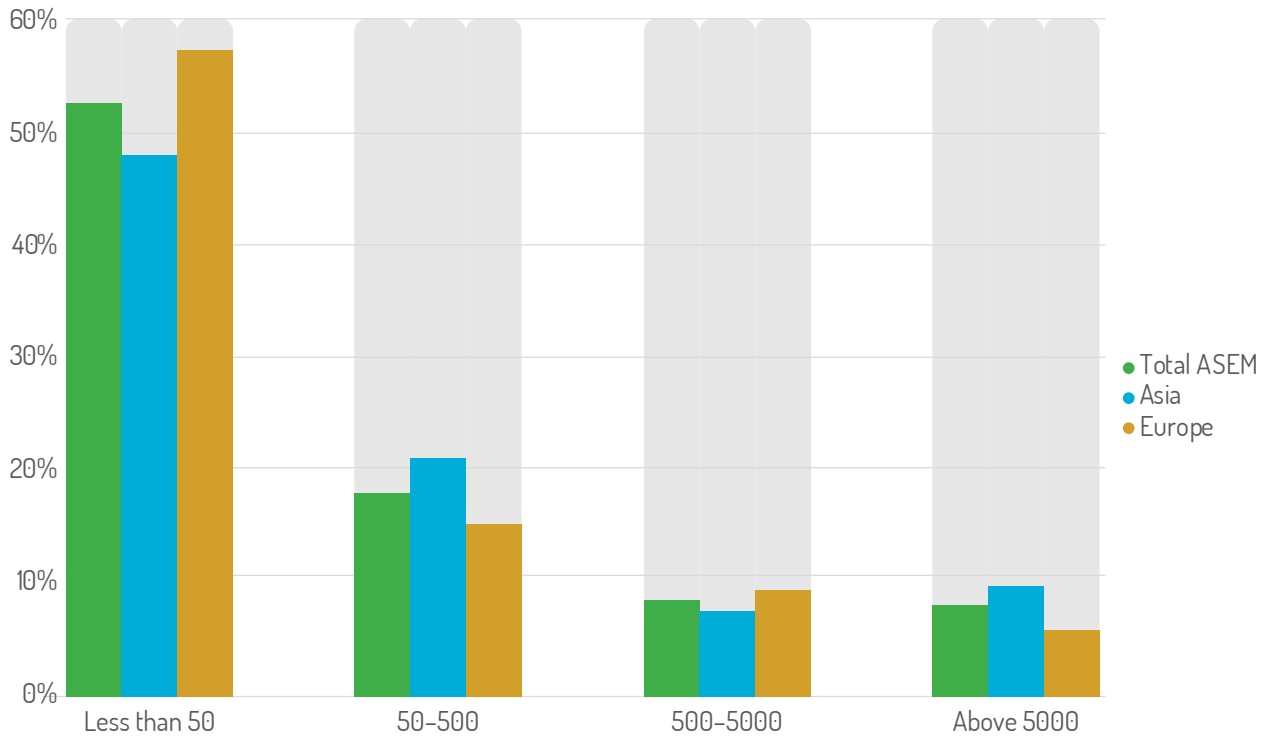
were developed by organisations employing less than 50 people. Around 20% of the projects belonged to mid-size organisations, with 50-500 employees, and these were mainly recycling companies or NGOs. Only 15% of the identified initiatives were developed by larger organisations that employed more than 500 people. These larger organisations were primarily retailers, distributors or plastic industry companies. In large companies with over 5,000 employees, the companies had only one to two product lines focusing on reuse or recycling activities. Initiatives operated by organisations employing less than 50 people were more common in European ASEM Partner Countries, while initiatives launched by mid-size organisations were more prevalent in Asian ASEM Partner Countries. (See Figure 6.)

Figure 5: Operational scale of the identified initiatives



“ City and regional-level initiatives were more prevalent in the Asian countries of ASEM, while the European initiatives more frequently extended their activities to the national or even the international level.

Figure 6: Organisational size of the identified initiatives



2.4. Project activities

Our review also aimed to explore the type of activities that the identified initiatives carried out to address the single-use plastic waste problem.

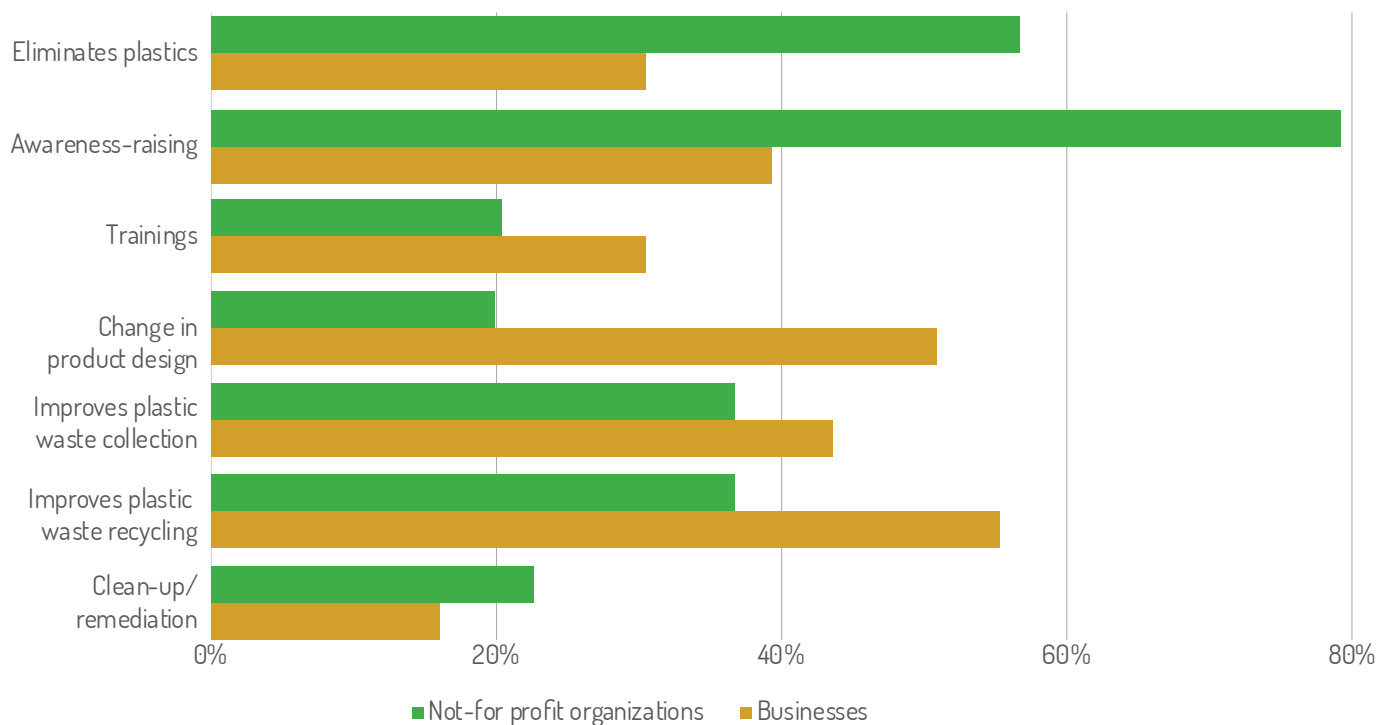
For initiatives, multiple parallel activities could be identified. The most frequently identified activity that the studied initiatives delivered was raising awareness (55 initiatives), closely followed by activities to improve plastic waste recycling (51 projects). Around 40 projects had activities that aimed to improve plastic waste collection, that delivered a change in product design, or that provided training or educational activities. Some 30 projects eliminated the use of certain plastics (i.e. by using alternative materials), and around 20 projects delivered clean-up or remediation activities. Some additional projects experimented with pricing the use of plastics or carried out policy-relevant research to support legislation or strategies. (See Figure 7.)

Figure 7: Frequency of activities to tackle the single-use plastic waste problem at the identified organisations



Although the most frequently implemented activity was awareness-raising, our analysis found that in most of the cases, awareness-raising was not the main focus of the initiative, but instead that these were delivered in parallel with other activities. This was especially the case for businesses and those focused on recycling and/or collection activities. (See Figure 8.) Our analysis also showed that plastic waste collection and plastic waste recycling activities were often carried out in tandem with awareness-raising activities. When organisations delivered a change in product design, this was often done together with the elimination of certain types

Figure 8: Project activities according to the type of management organisations



of plastic materials during the production processes.

In terms of regional differences, our analysis suggests that activities focusing on delivering changes in product design were more prevalent in European ASEM Partner Countries. In contrast, organisations working in Asian ASEM Partner Countries were more likely to concentrate their efforts on awareness-raising campaigns and delivering training or other forms of educational activities. (See Table 2.)

Table 2: Frequency of implementation activities according to regional distribution

	Total	Asia	Europe
Eliminates the use of certain plastics	29%	31%	28%
Price on plastics	3%	4%	2%
Delivers a change in product design	40%	29%	50%
Improves plastic waste collection	41%	40%	41%
Improves plastic waste recycling	48%	50%	46%
Delivers clean-up/remediation activities	18%	15%	20%
Delivers awareness-raising campaigns	52%	63%	41%
Trainings/formal education activities	39%	40%	37%
Other	8%	10%	7%

Figure 9: Frequency of implementation activities according to the type of organisation



The analysis also concluded that businesses were more likely to engage in plastic waste management activities (including product design, waste collection and recycling). At the same time, not-for-profit organisations focused more on awareness-raising and educational activities.

2.4. Type of innovation

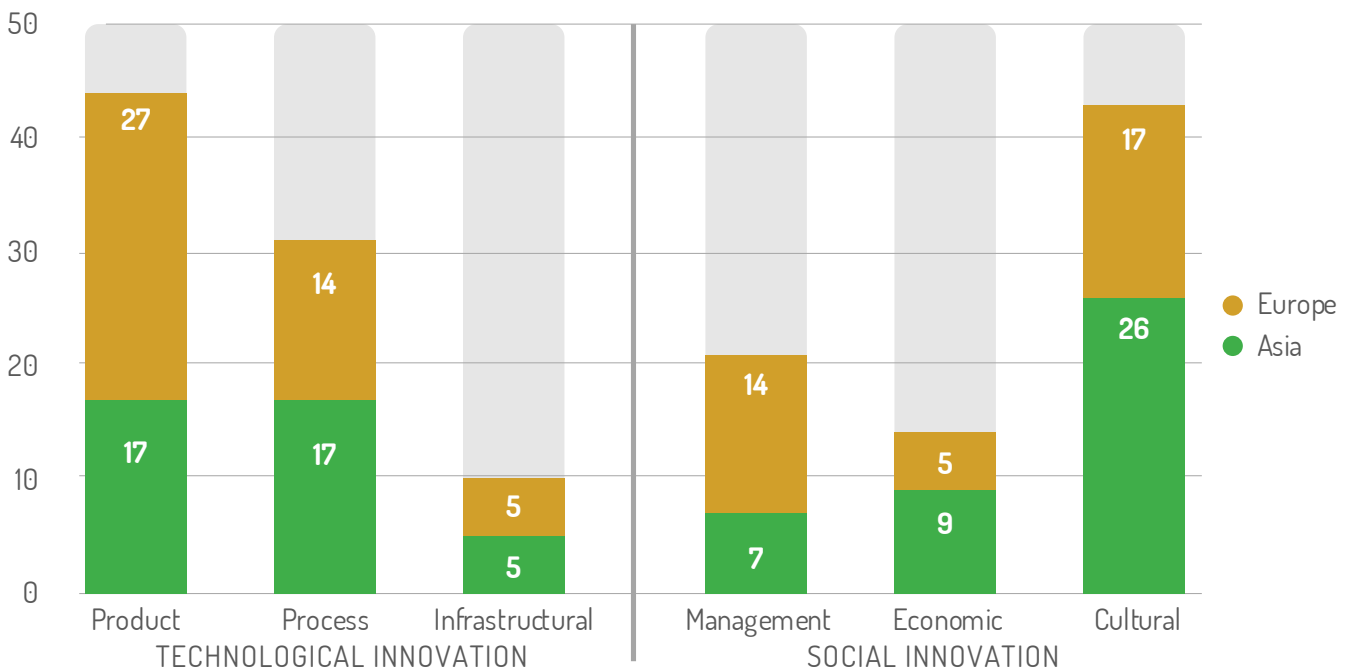
Our analysis suggested that all studied initiatives delivered some sort of innovation via the development of a new product, process or service to provide a more efficient or competitive solution for the problem of single-use plastic waste. In some cases, these innovations were entirely new to the world. In other instances, they were new to the country where the initiative operated. In other cases, they represented an innovation only to the organisation itself. In the following section, we will provide an overview of the different types of innovation that the projects delivered.

Initiatives or projects often delivered more than one type of innovation, and as a result, a total of 163 innovative

- solutions could be identified across the 106 initiatives:
- » Eighty-five innovations could be categorised as “technological” innovation, meaning that they delivered better product designs, improved technical processes or infrastructural solutions.
 - » Seventy-eight innovations were categorised as “social innovation”, meaning that they delivered innovations to develop more efficient management and economical solutions to tackle single-use plastics or sought improvements to services that target lifestyles and/or behavioural changes.

Although almost the same number of innovations could be identified in Asian and European ASEM Partner Countries, our analysis concluded that economic and cultural innovations were more frequently implemented by organisations in Asian Partner Countries, while product and management innovations were somewhat more likely to be delivered by European Partner Countries. (See Figure 10.)

Figure 10: Number of innovations according to innovation type across the studied initiatives



Our analysis also concluded that businesses and not-for-profit organisations were more likely to deliver technological innovations, focusing on products, processes and infrastructural changes. These included, for example, products from recycled plastics, plastic alternatives or new types of biomaterials; methods that aimed to improve waste collection and recycling processes or to advance recycling technologies; and upgrades to collection and recycling infrastructures.

2.4.1. Product innovations

Many of the studied initiatives developed new products to reduce the amount of single-use plastic materials in the production or the consumption phase.

Initiatives often developed products from recycled plastics, such as 100% recycled plastic bottles by the company VALVERT for Nestle Belgium; shoes from recycled materials by the Norwegian New Movements; or outdoor furniture made from recycled plastics by Australian manufacturer Replas. Other projects developed products from plastic alternatives, such as plastic-like bags made from jute by BMJC in Bangladesh or bamboo straws by BambooLao in the Lao PDR. Some initiatives focused on the development of a new type of raw bio-material, such as the Crafting plastics studio in Slovakia that created a new generation of bioplastic material called NUATAN. The Finnish company, Sulapac, developed a biodegradable, plastic-like material that is suitable for mass-production and can be used in the food, cosmetic and jewellery sectors³. The Chinese company, Waste2Wear, designed innovative fashion fabrics made from recycled materials. (See Box 1.)

Box 1: Innovative textiles made from post-consumer plastic

Waste2Wear is a China-based global company providing products from recycled polyester fashion fabrics instead of virgin polyester. It aims to reduce plastic waste by producing innovative textiles made from post-consumer plastics, which are fully certified and traceable using blockchain technology. Beside PET bottles, Waste2Wear can recycle fridges, air conditioners and food containers. The recycled polyester fabrics are used for different purposes, for example as fabrics, apparels, bags and accessories. Waste2Wear specialises in fashion, sportswear, workwear and uniforms. For the fashion industry, the company handles the complete process, from prototype and sales samples until final production of blouses, dresses, trousers, skirts, coats, jackets, t-shirts, sweatshirts and knitwear. Waste2Wear works together with a dynamic circle of waste collectors, companies, NGOs and governments. The company constantly experiments to invent new textiles. It is among one of the first companies in the world that created soft and silk-like fashion fabrics out of recycled polyester. In addition to the fashion and textile industries, it is entering other industries, like interior design and construction.

Source: Based on Waste2Wear⁴

The innovative features of these products were often recognised by external organisations as well. For instance, BambooLao won the 2018 Mekong Innovative Start-ups in Tourism (MIST) top prize.

2.4.2. Process innovations

Process innovations identified in the studied initiatives were mostly focused on improving the collection and the recycling of single-use plastic waste. For example, the Redgroup in Australia developed the RedCycle programme to introduce a new collection process that can enable the recycling of post-consumer soft plastics. The RedGroup collaborates with large retailers to collect soft plastics from consumers that they can't recycle at home. The collected plastic is then transported for initial processing at the company's facility before being delivered

3 Sulapac – Replacing plastic. (2021, July 06). Retrieved from <https://www.sulapac.com>

4 Innovative Textiles Made From Recycled Plastics - Waste2Wear. (2021, April 29). Retrieved from <https://www.waste2wear.com>

to manufacturers.⁵ The Plastic Flamingo (the Plaf), a Philippine-based social enterprise, established a collection process to reduce marine plastic pollution. First, it collects plastics from various organisations, for example, schools, universities, companies, stores, hotels and municipalities. After shipping and recycling, it creates post-consumer plastic products, such as construction material, boat decks, outdoor furniture and transitional shelters.

Other identified projects focused on advancing recycling technologies. The Estonian company Elegro Technology developed a patented technology that can support the recycling of mixed household plastics. The plastic packaging is transformed into feedstock, and afterwards, an extrusion method is used to produce various plastic profiles.⁶ An Amsterdam-based environmental and social initiative, Print your city by RAW, created a closed-loop plastic production and recycling process from recycled plastics by using a 3D printer to transform the plastic waste of cities into meaningful applications for the built environment.⁷

2.4.3. Infrastructural innovations

Some of the identified initiatives implemented infrastructural innovations, which focused mainly on upgrading or renewing the physical infrastructures that could support the recycling of single-use plastic waste. The Australia-based company Close-the-Loop established strategically located operation centres around the world to secure a recovery model for the collection and the recycling of single-use toner and cartridges, as well as other print consumables.⁸ Integra Plastics built a modern recycling plant in Bulgaria to create high-quality recycling materials to develop its product line, integrating various innovations and state-of-the-art technologies, along with five different production steps.⁹ Tomra, a Norway-based multinational company, developed innovative collection and sorting systems that are based on the principles of the circular economy.¹⁰ The Bangladesh Petrochemical Company Limited (BPCL) established the first Bottle to Bottle PET recycling plant in Bangladesh to enable the production of new PET bottles from collected post-consumer PET bottles.¹¹ (See Box 2.)

Box 2: Bangladesh Petrochemical Company Limited

BPCL started its operation in 2013 with the aim of producing optimum quality PET sheets and resins in Bangladesh. It started production and sales in early 2016 and has sold BDT 1 billion of PET resin and sheets and has redirected 15,000 tonnes of PET bottles away from landfills. BPCL's factory is in Rupganj, the head office is in Uttara, and there are three collection hubs (in Bailla Bazar, Mirpur and Hazaribag). The company has an in-house Quality Control laboratory, highly skilled and experienced machine operators and a valuable team of staff experienced in the plastic industry. The company imported its US FDA and European EFSA certified machines from Europe. Its operations are ISO: 9001:2008 certified and the food-grade resins are US FDA, and BCSIR approved.

Source: Based on questionnaire response

5 What To Redcycle – Redcycle. (2021, July 09). Retrieved from <https://www.redcycle.net.au/what-to-redcycle>

6 Elegro technology. (2021, July 09). Retrieved from <https://elegro.technology>

7 Print Your City. (2021, July 09). Retrieved from <https://www.printyour.city>

8 Close The Loop. (2021, June 02). Retrieved from <https://www.closeheloop.com.au>

9 Integra Plastics. (2021, July 09). Retrieved from <https://integra-plastics.com>

10 Asa, S. (2021, June 09). Recycling and sensor-based waste sorting. Retrieved from <https://www.tomra.com/en/sorting/recycling>

11 BJMC. (2021, August 09). Retrieved from <http://www.bjmc.gov.bd>

2.4.4. Governance and management innovations

Innovations could also be observed in the governance and/or management approaches of the studied initiatives. Such innovative approaches included the uptake of innovative management approaches or improved cooperation between various actors.

As for management approaches, we identified a number of initiatives that aimed to support the introduction of circular economy principles at companies operating along the plastic value chain. Vanden recycling established a plastic recycling chain to connect the supply and demand side of recyclable plastics by providing logistical, processing and marketing solutions.¹² The Croatian Plastic Free initiative developed a simple guideline for small and medium-sized companies to help them reduce single-use plastics in their offices. Companies that introduce the guideline recommendations earn a “plastic-free organisation” title.¹³ The Pakistan-based waste management company, Waste Busters, introduced customised services to support businesses in recycling activities.¹⁴ The municipal association, LIPOR of Greater Porto in Portugal, developed an integrated municipal waste management system to minimise the amount of waste sent to landfills, including single-use plastics waste. (See Box 3.)

Box 3: LIPOR – Intermunicipal Waste Management of Greater Porto

LIPOR is responsible for the management, recovery and treatment of municipal waste produced in the eight associated municipalities of Greater Porto. LIPOR was founded in 1982 as a municipal association, and it has implemented an integrated waste management system. Every year, LIPOR treats approximately 500,000 tons of municipal waste (MW) that about one million inhabitants produce. Based on modern MW management concepts, which advocate for implementing integrated systems and reducing waste disposal in landfills, LIPOR has developed an integrated strategy for the MW, based on prevention, recycling, and energy recovery (mixed waste). As a result, less than 5% of MW is sent to landfill annually. The motto of LIPOR’s strategy – Towards Sustainability – depicts a sustainable management approach that combines the three main principles of sustainable development and defines LIPOR’s current and future action. The company has an ambitious circular economy strategy in place and is also committed to collecting and recycling single-use plastics (as a signatory of national and international commitments). In 2019, more than 12,400 tonnes of packaging waste was collected and sent to recycling, which means an increase of 14% compared to the previous year.

Source: Based on questionnaire response

Our study identified initiatives that formed innovative public-private partnerships or consortia of research and not-for-profit organisations, which coordinated their plastic production and consumption chain activities. The Dansk Retursystem, a Danish not-for-profit organisation that collects and recycles the used bottles and cans across Denmark, works in conjunction with different supermarket chains.¹⁵ The Plastic Health Coalition brought together influential research institutions and NGOs to research the harmful effects of microplastics and advocate against them. The Korea Zero Waste Movement Network (KZWMN) researches waste management organisations in Korea and advises the government on how to develop and improve waste management policies. As a result of their activities, the Korean government implemented KZWMN’s suggestions for a deposit system for single-use plastic bags.¹⁶ The Philippine Alliance for Recycling and Materials Sustainability (PARMS) launched a zero-waste

12 Vanden Recycling. (2020, July 23). Retrieved from <https://www.vandenrecycling.com/en>

13 Plastic Free Croatia. (2021, July 09). Retrieved from <https://www.plasticfreecroatia.org>

14 Waste Busters – A Cleaner Tomorrow. (2021, July 09). Retrieved from <http://wastebusters.com.pk>

15 Dansk Retursystem. (2021, July 09). Retrieved from <https://danskretursystem.dk/en/dansk-retursystem-english>

16 Waste 21. (2021, July 09). Retrieved from <http://www.waste21.or.kr>

commitment for global and local actors in the plastics value chain.¹⁷ The Recyclate Initiative is a cooperative effort in Germany, aiming to improve the recycling processes through cross-industrial collaboration. The partners in the initiative upcycle household PET waste and produce post-consumer polyethene packaging and foodstuff-compatible PET packaging, among other activities. It also received the ECR Award in 2014 in the category “Management Cooperation Supply Side”.

2.4.5. Economic innovations

Initiatives and projects also experimented with the introduction of new business models to raise funds for their operations, influence consumers to adopt more sustainable behaviours or support start-ups aiming to address the single-use plastic waste problem.

The Soft Plastic Recycling Scheme in New Zealand is supported by manufacturers, retailers and service providers, and this support is regarded as essential to sustain its funding and continue the activities of the organisation. The scheme also seeks the help of other brands.¹⁸ The Technoj Business Innovation Centre in Ulaanbaatar, Mongolia, worked with start-ups to develop marketable products from recycled plastic. Selected items were designed by Tehnoj, and community groups were trained to produce them out of plastic waste.¹⁹ The Dansk Retursystem (see also section 2.4.4.) is financed from fees paid by the beverage companies when bottles are not returned (when the deposits are never collected).²⁰ Yoyo, an interactive community-based organisation in France, offers a waste sorting reward to citizens collecting their waste for recycling purposes. (See Box 4.)

Box 4: Rewarding waste sorting

The community of Yoyo aims to bring together multiple actors in urban areas of France to increase the rate of recycled plastic. Individuals can join the Yoyo community by signing up to the platform website. Volunteer sorters get a yellow recycling bag for free from the nearest coach location. Coaches not only offer a storage place for the collected waste, but they are also responsible for creating and maintaining the sorter community. After filling the bag with plastic bottles, sorters return it to their coaches. One full Yoyo bag contains 45 PET bottles for which sorters receive 125 points and coaches 25 points after each bag. The points can be exchanged for different kinds of rewards, like cinema tickets, recycled aluminium jewellery and free sports sessions at the online store of Yoyo. The reward system operates due to a wide range of partnerships with waste collection authorities, local governments, businesses, bottled water companies, retailers and services. Yoyo encourages businesses to become reward partners by guaranteeing increased visibility for their products, services and actions. For example, cinemas can profit by donating free tickets to the Yoyo community members since additional tickets are purchased by those accompanying them.

Source: Based on www.yoyo.eco²¹

17 Philippine Alliance for Recycling & Material Sustainability. (2021, July 09). Retrieved from www.parms.com.ph/about

18 Soft Plastics Recycling Scheme. (2021, July 09). Retrieved from <https://www.recycling.kiwi.nz>

19 UNDP in the Asia and the Pacific. (2021, July 09). Retrieved from <https://www.asia-pacific.undp.org/content/rbap/en/home/ourwork/development-impact/innovation/projects/mongolia-turning-garbage-into-gold.html>

20 Dansk Retursystem. (2021, July 09). Retrieved from <https://danskretursystem.dk/en/dansk-retursystem-english>

21 Yoyo - Plateforme de récompense collaborative du tri. (2020, August 31). Retrieved from <https://yoyo.eco>

2.4.6. Cultural innovations

Our analysis mainly identified cultural innovations in the educational or awareness-raising activities delivered by the studied initiatives, although a few aimed at teaching by actions.

Some manufacturers aspired to raise environmental awareness by involving individuals in their production process. For example, Thai Plastic Recycle organises visits to its factory to showcase the recycling process to children to increase their environmental awareness.²² BambooLao shares their expertise by arranging workshops for villagers to teach them how to make environmentally friendly bamboo straws and encourages them to start their social businesses. Similarly, Precious Plastic Shanghai and Rocket Plastic Almaty organise live recycling activities and public and private workshops.

Some businesses focus on triggering purposeful, eco-friendly changes in everyday practices by providing information in various forms. For example, the Plastic Free SEA offers education and consulting services to businesses and individuals to reduce plastic and become more environmentally conscious.²³ Other initiatives aim to make a difference by mobilising people to take concrete actions for sustainable change. The Sick of Plastic Campaign, a joint initiative led by Friends of the Earth Ireland and Voice Ireland, encourages people to demonstrate their commitment by avoiding plastic packaging in their everyday shopping.²⁴ Empower, a Norwegian NGO, developed a digital registration system to improve plastic waste recycling transparency and promote businesses that undertake recycling activities. (See Box 5.)

Box 5: Empowering companies to recycle

The Norwegian NGO Empower establishes plastic waste collection points worldwide to spread the Norwegian bottle deposit system. The system registers all the plastic digitally when deposited to create transparency and ensure that all plastic is recycled. It also collaborates with the extremely poor by providing them with an income for returned plastic bottles, and with companies, by offering them customised services to improve their environmental footprints. Businesses can be considered positive plastic companies by donating to the plastic waste collection every month. In return, they receive pictures of every kilo of waste their money helped to save from the ocean, which can promote their environmental commitments. An example of this type of collaboration is Empower's work with the New Movement, a Norwegian shoe production company cited earlier in this report in section 2.4.1.

Source: Based on www.empower.eco/²⁵

22 Thai Plastic Recycle: Selling and Buying Recycled Plastic. (2021, July 09). Retrieved from <https://www.thaiplasticrecycle.com/en>

23 Plastic Free Sea. (2021, July 09). Retrieved from www.plasticfreesea.com

24 The Sick Of Plastic Campaign | Friends of the Earth Ireland - Inspiring solutions for people and the planet. (2019, November 19). Retrieved from <https://www.foe.ie/sickofplastic>

25 Empower AS | The Future of Plastic is Circular. (2021, June 24). Retrieved from <https://www.empower.eco>

3. Implementation drivers and barriers of single-use plastic waste initiatives in ASEM

In the second stage of the research, we approached the identified initiatives with a questionnaire that explored the drivers and barriers for implementing activities that focus on single-use plastics in the ASEM region.

In total, over 30 initiatives responded to the questionnaire, both from European and Asian Partner Countries of ASEM (25 countries in total). Most of the respondents were from initiatives run by businesses, but responses were also received from NGOs, BINGOs and research entities. Small, medium-sized and larger organisations are represented in the sample of responses. The initiatives targeted various objectives, from recovering, collecting and recycling (in other words reusing) to reducing or refusing single-use plastics. (See Annex 2.)

The questionnaire results were used to develop a general overview concerning the implementation drivers and challenges for single-use plastic initiatives in the ASEM region, which is presented in this chapter.

3.1. Characterisation of the innovation that the initiative delivers

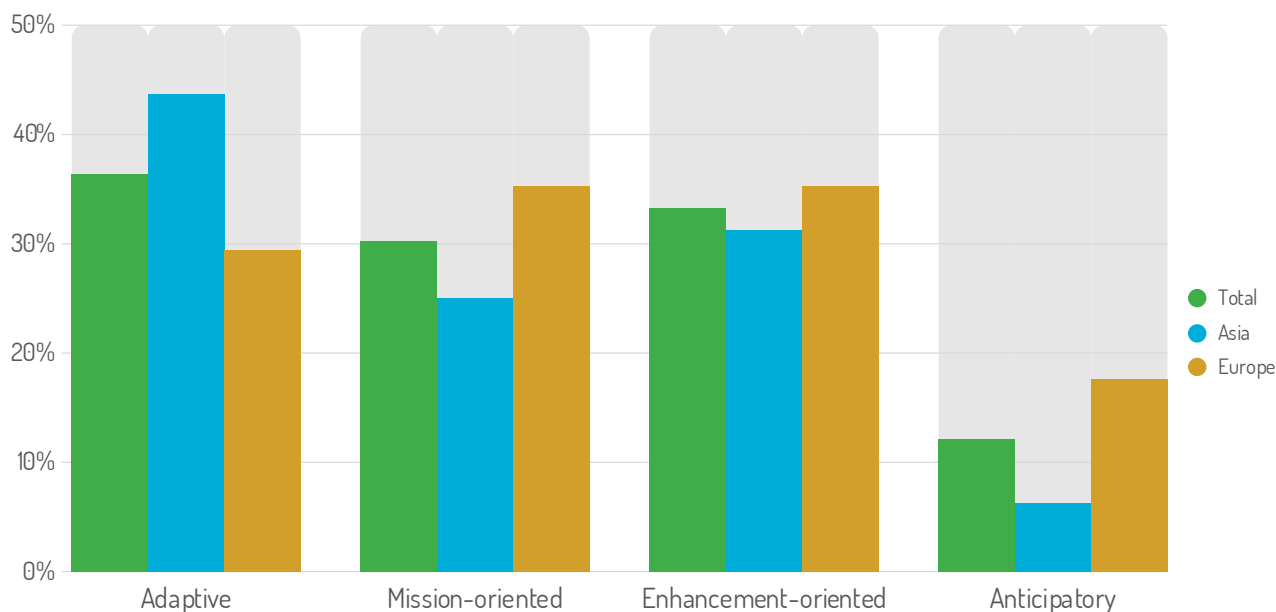
Based on the categorisation of the OECD Observatory

of Public Sector Innovation (OECD-OPSI)²⁶, respondents were requested to identify their motivation to seek or invent solutions that tackle the single-use plastic waste problem.

In total, 11 initiatives indicated that their activities are *mission-oriented* (aiming to achieve an explicit goal), and 11 initiatives characterised them as *adaptive* (endeavouring to test new approaches to respond to a changing operating environment). Another ten initiatives noted that their activities are driven by *enhancement* objectives (to do existing activities better). Four initiatives indicated that they work to explore emergent issues that might shape future priorities and commitments (also called *anticipatory* activities).

A few initiatives selected more than one driving force for innovation. Businesses were the most likely to select adaptive or enhancement-oriented innovation. Anticipatory types of innovation were mostly undertaken by BINGOs. In terms of regional distribution, projects operating in European ASEM Partner Countries were more likely to identify mission or enhancement-oriented innovation objectives.

Figure 11: Innovation drivers of the studied initiatives based on the categorisation of the OECD-OPSI



26 Innovation facets part 2: How different types of innovation lead to different types of change - Observatory of Public Sector Innovation. (2018, November 17). Retrieved from <https://oecd-opsi.org/innovation-facets-part-2-how-different-types-of-innovation-lead-to-different-types-of-change>

Initiatives in Asian ASEM Partner Countries more frequently developed adaptive innovations. (See Figure 11.)

3.2. Project outcomes

When available, the surveyed initiatives provided information about the primary (achieved) impacts of their activities. While the outcomes of their activities varied depending on the size of their initiative, the provided information indicates the range of their achieved impacts. (See Table 3.)

Table 3: Main achieved impacts of the surveyed initiatives

Type of impact	Range of achieved impacts
Tons of single-use plastic waste collected	15 to 73000 tons
Tons of single-use plastic waste reused	2.5 to 100 tons
Tons of single-use plastic waste recycling	5 to 50000 tons
Number of people informed/educated	100 to 250 million people
Number of businesses informed/educated	10-210 businesses
Number of businesses involved in single-use plastic waste reduction activities	5 to 100

Respondents of the questionnaire were also requested to self-evaluate the level of success of their initiative on a scale from one to five, where one is the least successful and five is the most successful. Five respondents suggested that their project was mostly successful, while most respondents answered that their initiative was somewhat successful. Two respondents indicated that their initiative was less successful, and eight respondents specified a medium level of success.

The projects that indicated a low or medium-level success hinted that their initiative remained small-scale, either due to the small market, limited funding, lack of government support, or lack of personal and technical capacities. The potential difficulties of moving towards a circular economy approach were also mentioned, and initiatives repeatedly outlined the need for and the importance of upscaling.

Projects that considered themselves successful based their evaluation on their customers or stakeholders (i.e. participants in educational workshops) or their capacity to involve other private or public sector actors in their plastic waste recycling or reduction activities. Some initiatives also received international innovation prizes as a recognition of their forward-looking activities.

3.3. Drivers of successful implementation

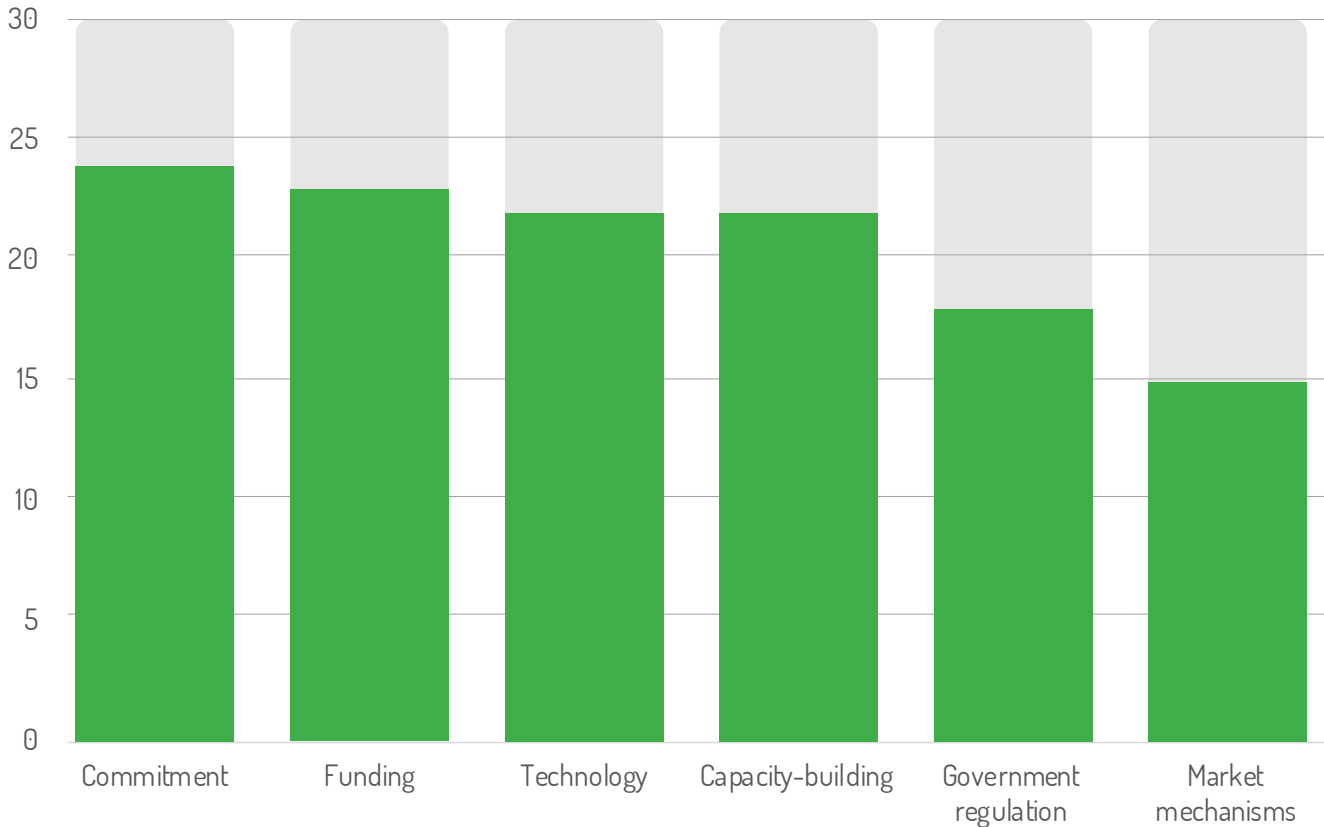
Respondents of the questionnaire were asked to evaluate the importance of several factors for successfully implementing initiatives aiming to tackle the single-use plastic waste challenge. The factors listed on the survey included regulatory measures, funding opportunities, market mechanisms, capacity-building and technological aspects, as well as commitment-related considerations.

The categorisation applied in this section follows the approach taken by the recent OECD working paper on policy approaches to incentives for sustainable plastic design.²⁷ Respondents assigned a certain level of importance to all success factors identified by the OECD working paper: four factors (including commitment, funding, capacity-building and availability of technology) were selected by over two-thirds of the survey respondents. The remaining two factors (government regulation and market mechanisms) were selected by around 50% of the respondents.

²⁷ OECD. (2019, July). Policy Approaches to Incentivise Sustainable Plastic Design. Environment Working Paper (No. 149). Retrieved from <http://www.oecd.org/environment/workingpapers.htm>

“ The projects that indicated a low or medium-level success hinted that their initiative remained small-scale, either due to the small market, limited funding, lack of government support, or lack of personal and technical capacities.

Figure 12: Implementation drivers selected by the survey respondents



In the following section, we provide an overview of and further details about each of the identified implementation factors.

3.3.1. Regulations

The chemical industry, which is responsible for the production of single-use plastics, is regulated by various instruments due to the safety and the environmental risks of the production processes and the produced materials.²⁸ Regulatory mechanisms range from international agreements and national legislation bans on certain chemical products or product standards.

Around 50% of the survey respondents indicated that government regulations are an essential implementation driver for their initiative. While no one type of regulatory instrument emerged as the most important, no initiatives or projects indicated that bans on chemicals (such as BPA) would influence the outcomes of their implementation activities. In terms of regional differences, European initiatives more frequently indicated that international agreements or national legislations supported or drove their activities.

Box 5: Sulapac

Sulapac is a Finnish start-up focused on circular designs that use materials that mimic nature, which they first applied to packaging and straws. Their main raw materials are wood chips and plant-based binders. Sulapac materials can be processed with existing plastic production machinery, yet they biodegrade into CO₂, biomass and water, leaving no microplastic behind. When the materials reach their end of life, they are compostable according to international standards. Sulapac has been successful in developing novel biocomposite materials and in awareness-raising. However, the number of products they have on the market is limited, and the company is currently focusing on scaling up its activities. Regulations developed by the European Union, as well as national legislation, are both considered essential drivers in influencing the implementation activities of the company.

Source: Based on questionnaire responses

28 *ibid*

3.3.2. Source of funding

Innovations in the development and testing phase and those in the initial stages of production often cannot be expected to be profitable. Smaller businesses or not-for-profit organisations may not be capable of self-financing such activities. In contrast, larger organisations may not be willing to take the potential risks associated with “new-to-the-world innovations”. Therefore, financing is considered essential in supporting innovation to phase out single-use plastic materials and shift towards circular economy approaches.

Initiatives can be supported by public and private funding to improve product design, ban the use of certain plastics, advance waste collection and recycling technologies, motivate businesses to implement sustainable production patterns and inspire consumers to make more sustainable choices when it comes to single-use plastics.

Accordingly, almost 70% of the questionnaire respondents highlighted that financing is an essential element of success. Private funding was considered to be a somewhat more prominent implementation driver. Many of the surveyed initiatives were businesses likely to use their financial sources to develop innovations. Accordingly, 15 initiatives used their funding sources or received funding from other private sources (e.g. banks), eight quoted government and three cited international funding sources (such as EU funding) as factors that support their activities. In terms of regional differences, the role of self-financing seemed to be more prevalent in the case of the European initiatives and the Asian initiatives more frequently underlined the importance of external funding.

Box 6: San-Orgio LLC, Mongolia

San-Orgiu LLC is a plastic recycling factory in Mongolia. The company has been operational since 2004 and has introduced innovative technologies for recycling plastic materials. It also produces street furniture. The company was supported by the Mongolian government and by other donor-funded projects. It took part in the Environmental Reform Project (NEMO II), a small grant programme of the World Bank that aims to enhance national and local environmental performance.

Source: Based on questionnaire response

3.3.3. Market mechanisms

Market-based mechanisms are considered useful tools to promote sustainable choices among businesses and consumers, and they can also contribute to raising public revenues collected from taxes. In this context, taxes, subsidies, or extended producer responsibility (EPR) schemes can be considered potential implementation drivers.

Survey respondents, however, did not necessarily consider these mechanisms to be crucial in enabling implementation. Only a few projects marked the importance of introducing taxes or using subsidies. Only eight respondents outlined the usefulness of EPR schemes, most of which were from the European region. The fact that EPR schemes were seen as being more useful for European initiatives could result from EU efforts to promote EPR schemes. (See Box 7.)

Box 7: EPR schemes in the European Union

The EU sets mandatory targets for waste collection and recycling, but it assigns management responsibilities to its member states. Each state is allowed to create its unique system while abiding by the requirements established by the EU directives. According to the legislation, both producers and consumers have responsibilities towards waste management. While consumers are responsible for separating their recyclable waste from residuals, the primary responsibility resides with the producers. As a principle, through EPR, producers in the EU are responsible for managing the life cycle of plastic wastes, including operational and financial responsibilities. In practice, for most EU countries, municipalities, producer responsibility organisations (PROs) and collection and recycling companies work together. Municipalities collect the waste from households, and the PROs organise and finance recycling, while collection and recycling companies work as contractors to the PROs.

3.3.4. Capacity-building

Implementing organisations need access to new technologies and solutions and develop capacities to establish, maintain, and scale successful initiatives. Awareness-raising and educational activities targeting businesses and organisations can support the initiatives in building lasting, self-sustaining, large-scale activities that can address the single-use plastic waste problem in the long term and systematically.

Around two-thirds of the initiatives indicated the importance of the educational and awareness-raising activities in addressing single-use plastic waste management challenges. The role of NGOs and international organisations in providing information and training seemed to be more prominent in European Partner Countries of ASEM. At the same time, government-organised capacity-building activities were more likely to drive project implementation in Asian ASEM Partner Countries, according to the survey respondents.

Box 8: Sunway University: Last Straw Programme

In July 2018, the Sunway Education Group in Malaysia set up water dispensers for its staff and students whilst working with the food and beverage committee to stop selling bottled drinks at Sunway University. The campaign is ongoing and more dispensers are being set up, and plastic straws are being taken off food counters. Furthermore, the institution conducts a metal straw giveaway for students to encourage them to use reusable straws as a daily habit. Awareness-raising and educational events organised by NGOs and international organisations supported the university to implement the programme.

Source: Based on questionnaire responses

The importance of international cooperation and research projects was also emphasised by 11 respondents, mainly from the European region.

Box 9: LIFE RECYPACK

LIFE RECYPACK is an EU-funded, international demonstration project that aims to focus on managing commercial plastic packaging waste (CPPW). The environmental problems stem from this waste management, currently deposited in standard municipal waste containers with household waste. The project is running in three countries – Italy, Hungary and Spain – and it tests four different solutions to managing CPPW in urban areas. The idea is to replicate the system in other EU countries.

Source: Based on questionnaire responses

3.3.5. Access to technology

The responses from the survey also highlighted the crucial role of the development, testing or adaption of innovative technologies that can support producers and consumers to reduce single-use plastics.

The role of research and innovation as a driver of implementation was mentioned somewhat less frequently by the surveyed initiatives. At the same time, the transfer and/or application of innovative technology was cited as a slightly more common activity. In each case, European initiatives more frequently mentioned research and innovation as potential drivers for implementing single-use plastic waste management.

Box 10: TOMRA

Tomra, a Norwegian multinational company, aims to educate all stakeholders in the plastic production and consumption chain about the technical and commercial feasibility of waste collection and recycling. The company offers advanced collection and sorting systems developed based on in-house innovations to achieve its mission. As such, research and innovation activities within implementation organisations were considered an important implementation driver for the company's success. To date, the company has established more than 6,000 sorting and recycling systems in 80 different countries.

Source: Based on www.tomra.com²⁹

29 TOMRA: Recycling and sensor-based waste sorting. (2021, July 09). Retrieved from <https://www.tomra.com/en/sorting/recycling>

“ Around two-thirds of the initiatives indicated the importance of the educational and awareness-raising activities in addressing single-use plastic waste management challenges.

3.3.6. Commitment

While businesses often have access to the technology and the knowledge to develop alternatives to single-use plastics, or at the very least be in a position to recycle them better, they often lack strong leadership or widespread support (from employees or governments, for example). Poor leadership and weak organisational and political supports can undermine even well-designed and feasible solutions to tackle single-use plastic waste.

The survey respondents gave the highest importance to commitment and support from the management within the implementing organisations, followed by the employees' support and dedication. Political support from national and local governments was identified less frequently as a factor of improved implementation. However, this latter finding may also be because most of the survey respondents were from the business sector. A few initiatives also highlighted the motivational force of international platforms and networks, especially those founded to promote the circular economy and propose solutions to the challenges presented by plastics (such as the Ellen Mac Arthur Foundation or the CE100 network). In a few instances, change agents were also recognised as drivers of implementation success concerning circular economy solutions.

Box 11: Erdal cleaning products of the Werner & Mertz company

As a member of the Germany-based Recyclate initiative, the Erdal cleaning products brand of the Werner & Mertz company have been using 100% R-PET bottles for their household cleaning products since 2014 and 100% R-PE bottles for food and cosmetics products since 2018. They have also started replacing coloured bottles and caps with transparent or white designs, which are more suitable for recycling. In addition, they have focused on refill pouches as alternatives to new bottles, saving about 75% of plastic material. The company suggested that their main driver is the strong commitment shown by the single owner of the family business, who backs the initiative financially, since government regulation and market mechanisms are not in favour of recycling and the waste fee system is not up to date.

Source: Based on questionnaire responses

Regarding regional differences, projects from European ASEM Partner Countries were more likely to prioritise the importance of organisational commitments (both from the leadership and the employees).

3.3.7. Additional implementation drivers identified by the survey respondents

Some initiatives quoted external factors as implementation drivers, such as increased (ocean) pollution from plastics. In this case, the public and media awareness of the problem leads to a demand for better solutions (e.g. solutions that address leaking microplastics and their accumulation in the environment).

A long-term, strategic vision and mission (of an organisation) was also mentioned as a potentially important implementation driver to improve the status quo of single-use plastic waste. Raduga LPP, one of the biggest producers of consumer goods in Kazakhstan, systematically collects and processes plastic waste, as it considers it an alternative source of raw material.

Zera, a Bulgarian company that works on reducing single-use plastic cups in kindergartens and at mass events by producing reusable alternatives, suggested that the *“best implementation driver would be a regulation on a pay-as-you-throw basis”* to incentivise *“consumers to throw less and also to help them understand the environmental consequences of creating waste”*.³⁰

Lastly, respondents mentioned the need for impact-oriented NGOs and investors and international competitions to inspire more ambitious, single-use plastics waste initiatives.

30 Quote from questionnaire responses.

“ The best implementation driver would be a regulation on a pay-as-you-throw basis” to incentivise “consumers to throw less and also to help them understand the environmental consequences of creating waste”

3.4. Prospects and barriers of upscaling existing initiatives

Questionnaire respondents were also surveyed about the scalability potential of their initiative. Results indicated that it is potentially more feasible to transfer initiatives to other cities rather than transfer them across sectors or countries. A total of 18 surveyed suggested that their activities could be easily transferred to another city. At the same time, only 12 initiatives saw the potential for replicating their project in another country, and 11 claimed that another sector could take over their project. (See Figure 13.)

The survey respondents identified several barriers to upscaling existing projects, such as the lack of:

- » Regulations and standards, or their limited availability

- » Tax incentives to reduce the costs of either manufacturing plastic alternatives or recycling
- » Public and private funding to support initiatives until they can become profitable
- » Collection and recycling infrastructure
- » Awareness, interest or commitment from consumers
- » Coordination along the plastic production chain, resulting in difficulties to collect sufficient amounts of plastic waste for recycling.

Technical limitations seemed to be considered less frequently. Moreover, although several respondents mentioned regulation and infrastructure as an essential barrier to upscaling, other initiatives thought these were the least important factors.

Figure 13: Scalability of projects to other sectors, cities or countries, on a scale of one to five, where one is the least and five is the most scalable

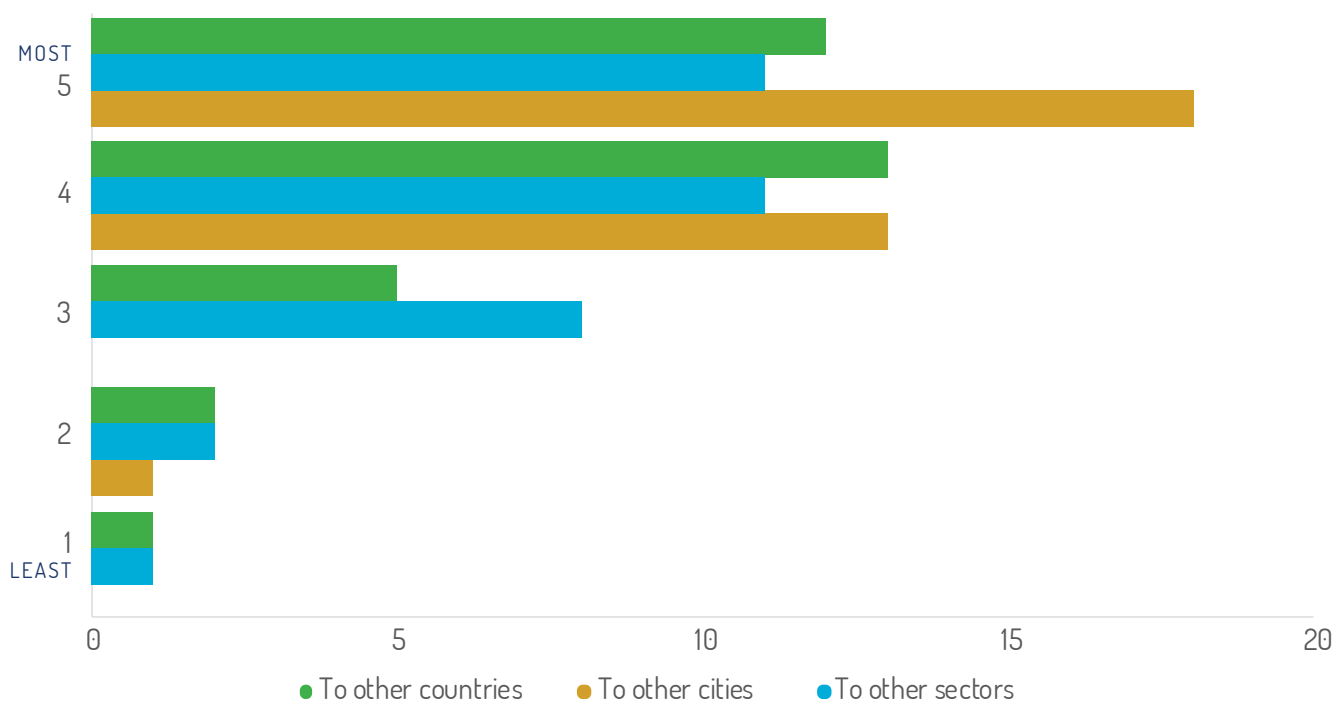


Table 4: Potential barriers to upscaling single-use plastic waste reduction initiatives

Type of impact	Range of achieved impacts
Tons of single-use plastic waste collected	15 to 73000 tons
Tons of single-use plastic waste reused	2.5 to 100 tons
Tons of single-use plastic waste recycling	5 to 50000 tons
Number of people informed/educated	100 to 250 million people
Number of businesses informed/educated	10-210 businesses
Number of businesses involved in single-use plastic waste reduction activities	5 to 100

4. Responses to the 2020 COVID-19 pandemic crisis

The COVID-19 crisis unfolded during this research. Therefore, this section aims to provide an overview of how the pandemic affected the studied initiatives and projects. Some organisations changed their operation processes or production patterns, while others increased their social media presence to support their consumers.

4.1 Shifts in the operation process

Eight out of the 106 organisations studied indicated that they temporarily had to suspend their activities due to the pandemic. Since India went into total lockdown, the German manufacturer Areapak has been stopped its India-based production for the foreseeable future.³¹ The Love NZ Soft Plastic Recycling Scheme stopped its operations until 11 May 2020 due to the COVID-19 induced lockdown in New Zealand.³²

A total of five of the 12 waste management companies operated with specific changes in their everyday practices. For example, the Portuguese LIPOR³³ and Sociedade Ponto Verde³⁴ companies announced adjusted urban waste management practices on their websites, which involved changing the management of waste coming from households with people who were infected or under surveillance since their waste could also be contaminated. Due to the COVID-19 crisis, Waste4Change indefinitely stopped receiving inorganic waste from individuals via their Dropbox programme.³⁵

Some of the enterprises made online shifts to their

business activities and continued their regular activities online. The Australian manufacturer Plastic Forests agreed with eBay Australia at the end of April. In just a month, the product of Plastic Forests became the number one selling raised garden bed kit on the platform.³⁶ Plastic Free SEA, the Australia-based consulting and training company, transferred its eco-classes to Zoom.³⁷

Most of the companies studied during this research continued to operate without interruption while following the necessary health measures. The Dutch LC Packaging announced on its website that it takes the pandemic situation very seriously and follows all measures recommended by the authorities in the countries where it is present.³⁸ Some employees of the company worked from home or stayed at the office while maintaining safe distances. On 31 May 2020, the Australian company Close the Loop stated that while safety will remain their priority while maintaining business continuity, they are not experiencing any changes to their business – they are receiving shipments. Their machines and production lines are working as usual.³⁹

4.2 Shift in production

A total of nine of the studied manufacturers have responded to the COVID-19 crises by producing protective equipment and sanitisers for medical use, even though it falls outside the scope of their profiles. The Bangladesh Petrochemical Company

31 Arekapak | Eco Packaging on Instagram: “#step3 Sorting & buffing. One month ago we visited our manufacturing partners who were just about to get our next order ready for packing...”. (2021, July 09). Retrieved from <https://www.instagram.com/p/B-zXoEkHnlg>

32 Love NZ Soft Plastics Recycling | Facebook. (2021, July 09). Retrieved from <https://www.facebook.com/softplasticrecycling/>

33 Urban Waste Management New habits to make when dealing with your Waste - Lipor. (2021, July 09).. Retrieved from <https://www.lipor.pt/en/awareness/about-covid-19/urban-waste-management-new-habits-to-make-when-dealing-with-your-waste>

34 Sociedade Ponto Verde Facebook. (2021, July 09). Retrieved from <https://www.facebook.com/SociedadePontoVerde/photos/a.296276817121118/2809637205785054>

35 Waste 4 Change Dropbox. (2021, July 09). Retrieved from <https://waste4change.com/dropbox/dropbox-program-temporarily-closed>

36 Plastic Forests Pty Ltd Facebook. (2021, July 09. Retrieved from <https://www.facebook.com/plasticforests>

37 Sarah’s Eco Classroom - Plastic Free Southeast Asia. (2020, May 25). Retrieved from <https://plasticfreecambodia.com/sarahs-eco-classroom>

38 LC Packaging newsroom. (2021, July 09). Retrieved from <https://www.lcpackaging.com/en/about-us/newsroom/lc-packaging-covid-19-update>

39 COVID-19. Close The Loop. (2020, March 18). Retrieved from <https://www.closeheloop.com.au/covid-19>

Limited (BPCL) provided the raw material for 200 face shields from recycled PET bottles.⁴⁰ The Chinese textile company, Waste2Wear, started to produce masks and disposable protective jumpsuits, shipping to Europe and the USA.⁴¹ The Myanmar manufacturer ChuChu and Swedish Trioplast created their protective equipment brands. ChuChu created Power Mask made by local sewers in Dala and distributed through a door-to-door delivery service.⁴² Trioplast started to produce 100,000 pieces of two different protective equipment per day for Sweden's healthcare and homecare personnel. TrioKlapp is a sleeveless protective apron, and TrioMummel is a protective apron with sleeves. The project started on 16 March 2020, and the large-scale production of TrioKlapp began on 8 April.⁴³ Minimum Waste (MIWA), the innovative Czech company promoting waste-free shopping using smart technologies, manufactured easily sterilisable face shields from one type of material using 3D printing.⁴⁴

The member organisations of the Precious Plastic Community all developed their versions of face shields to provide protective equipment to the volunteers, nurses and doctors working at their regional hospitals across Europe, although taking into account the high hygienic standards required during the pandemic, these products are manufactured from virgin plastic instead of recycled ones. Solutions and documentation of the production process are shared on the Precious Plastic community website to guide reproduction.⁴⁵

Replas, the Australian company, started to produce post-consumer hand sanitiser stations with a customisation option.⁴⁶ The German Werner & Mertz Group focused on disinfection products during the pandemic, primarily delivering them to nursing homes and hospitals.⁴⁷ The recycling company Plastikon CEE produced more than 100,000 face shields for health workers and people in need in Hungary.⁴⁸

1.3 Social contributions to mitigate the impacts of the pandemic

In examples beyond the manufacturing industry, the Indian Institute of Petroleum (IIP) also prepared 2,000 litres of hand sanitiser and delivered them to hospitals, police stations and relief forces. In collaboration with the "Ek Choti Se Rasoi" team, it also distributed 350 homemade masks to disadvantaged people in India.⁴⁹

The Indonesian not-for-profit organisation XSProject helped supply food, supplements and disinfecting soap for the trash pickers' families, sourced through donations. Moreover, XSEducation also supported children to access distance learning education during the pandemic.⁵⁰

Myanmar-based manufacturer, ChuChu emphasised on its Facebook page that the pandemic has a significant impact on vulnerable communities. Still, it is possible to help them by directly donating or

40 Bangladesh Petrochemical Company Limited – BPCL Facebook. (2021, July 09). Retrieved from <https://www.facebook.com/bpclbd/photos/pcb.2383209661976371/2383209531976384/>

41 Waste2Wear utilises its complete value chain to increase supply of protective masks and protection wear. Waste2Wear. (2020, April 22). Retrieved from <https://www.waste2wear.com/waste2wear-utilises-its-complete-value-chain-to-increase-supply-of-protective-masks-and-protection-wear>

42 Chu Chu Yangon Facebook. (2021, July 09). Retrieved from <https://www.facebook.com/ChuChuYangon/photos/a.823035047764299/3196341213766992>

43 Trioplast produces protective equipment. (2021, July 09). Retrieved from <https://www.trioworld.com/en/media/news/2020/we-produce-protective-equipment>

44 Miwa Facebook. (2021, July 09). Retrieved from <https://www.facebook.com/miwa.eu/photos/pcb.2768844423440653/2768833983441697>

45 Precious Plastic response to covid-19. (2021, July 15). Retrieved from <https://preciousplastic.com/covid-19.html>

46 Hand Sanitiser Station - Recycled Plastic Products. (2021, April 13). Retrieved from <https://www.replas.com.au/products/hand-sanitiser>

47 | Werner & Mertz - Presstext. (2021, July 18). Retrieved from https://www.werner-mertz.de/Presscenter/Presstext/Detail_8385.html

48 Plastikon CEE. APET Face Shield. (2021, July 09). Retrieved from <https://www.plastikon.hu/covid-19-aped-face-shield>

49 Garhwal Post. (2021, July 09). Retrieved from <https://garhwalpost.in/iip-produces-hand-sanitiser-for-use-by-staff-frontliners>

50 Give An Education To A Trash Picker's Child. (2021, July 09). Retrieved from <https://www.globalgiving.org/projects/give-education-to-a-trash-pickers-child/reports>

purchasing ChuChu products.⁵¹ During the COVID-19 crisis, ChuChu also donated masks for people in need.⁵² Moreover, the manufacturer worked with the International Labour Organisation of Myanmar to teach community groups to make their masks.⁵³

The Pakistani waste management company Waste Busters transformed itself to “Corona Busters” during the pandemic. Corona Busters are being placed in malls, hospitals, banks and outside ATMs, and they help people stay safe from COVID-19 by waiting in queues instead of them or doing their shopping.⁵⁴

1.1. Increased social media presence

Advising on maintaining a sustainable lifestyle during quarantine, sharing concerns about the post-COVID-19 era and arranging online sessions seemed to be increasingly frequent activities during the pandemic. As a result, most of the studied initiatives have been engaged in social awareness-raising and/or educational activities during the pandemic. The common aim of the initiatives was to emphasise that the COVID-19 crisis is not a reason to reject all efforts to preserve the environment, and this period can be used to take positive social, economic and ecological actions.

The French social enterprise Plastic Flamingo tested a DIY laundry detergent and motivated people to use their time in quarantine for this kind of activity.⁵⁵

Wasteupso, the Korea-based eco-friendly grocery store, shared zero waste hacks on its Facebook page, such as making protection masks more comfortable, tips on reducing waste during the pandemic, and a recipe for all-natural hand sanitiser.

Since the demand for food delivery has increased during the pandemic, No Plastic Japan’s website motivated people to bring their containers when using takeout food services. The organisation shared a list of restaurants that accept customers’ containers.⁵⁶

The Indonesian waste management company, Waste4Change, encouraged people on its website to segregate waste at home during the pandemic.⁵⁷

Online educational activities and events on healthy, eco-lifestyle related topics were organised as well. During the pandemic Common Seas, the UK-based not-for-profit enterprise

51 Kokkoya Organics Donate. (2021, July 09). Retrieved from https://kokkoyaorganics.com/collections/donate?fbclid=IwAROL9CBwjYJ9mOg7gybRdEBXPO7kQsldgoz-yDq-5zvgUd9wEBpvaW6f_0Y

52 Mayangone Red Cross Branch Facebook. (2021, July 09). Retrieved from <https://www.facebook.com/mayangoneredcross/photos/pcb.2570508699856844/2570507979856916>

53 Chu Chu Yangon Facebook. (2021, July 09). Retrieved from <https://www.facebook.com/Chu-ChuYangon/>

54 Waste Busters: Towards a Cleaner Tomorrow Facebook. (2021, July 09). Retrieved from <https://www.facebook.com/wastebusterspk/photos/pcb.2860677417319743/2860676770653141>

55 Zero Waste Quarantine with the Plaf Facebook. (2021, July 09). Retrieved from <https://www.facebook.com/watch/?v=225351265360992>

56 Zerowaste takeouts in Tokyo. (2021, July 09). Retrieved from <https://noplasticjapan.com/blogs/blog/zerowaste-takeouts-in-tokyo>

57 How to Manage Waste to Prevent the Spread of the COVID-19 Virus – Waste4Change. (2020, June 02). Retrieved from <https://waste4change.com/blog/how-to-manage-waste-to-prevent-the-spread-of-the-covid-19-virus>

participated in the World Ocean Day for Schools online festival, which provides free learning activities for kids about the ocean and marine plastic pollution.⁵⁸

The Czech manufacturer Minimum Waste (MIWA) arranged a public online event about minimalism and happiness with a well-known Czech minimalist, Alvin Korčák.⁵⁹

The British charity Surfers Against Sewage (SAS) launched its Digital Ocean School sessions during the pandemic.⁶⁰

Some projects organised online events to discuss the future of different sectors, such as recycling or biotechnology. During the COVID-19 pandemic, the Kazakhstan manufacturer Plastic Rocket arranged live streaming about the future of waste management on its Facebook page.⁶¹ UK-based Vanden Recycling took part in a public LinkedIn live session about the impact of COVID-19 on plastic recycling.⁶² The Italian bioplastic producer, Novamont, participated in the Ecomondo online event, which discussed the Italian bio-industry and the adaption needs to changing production patterns in crisis.⁶³

Box 12: COVID Collaboration Lab (“Covid Colab”) by Crafting Plastics Studio

As a response to the COVID-19 crisis, the Slovakian Crafting Plastics Studio cooperated with designer Vanda Gábrišová to create an online platform called COVID Collaboration Lab, which seeks to involve design students, research associates and teachers. Participants are invited to discuss the consequences of quarantine and coronavirus and solve local problems together in innovative ways. The two-month collaboration started in April 2020 and aimed to encourage young creative people to use their design thinking and empathetic ability to help people during a crisis. The project included lectures attended by international experts in materials design and social innovation, who joined the live sessions and commented on the students’ projects.

Source: Based on <https://www.craftingplastics.com/covid-colab>⁶⁴

58 Common Seas on Instagram: “For #WorldOceansDay, we’re working with partners from around the world to share knowledge on how we can promote #HealthySeas & end...”. (2021, July 09). Retrieved from <https://www.instagram.com/p/CBK1T48JDxx>

59 Minimalismem ke štěstí? Facebook. (2021, July 09). Retrieved from <https://www.facebook.com/events/220426849384106>

60 Surfers Against Sewage Facebook. (2021, July 09). Retrieved from <https://www.facebook.com/SurfersAgainstSewage/photos/a.65058536391/10158676271756392>

61 Rocket Plastic Facebook. (2021, July 09). Retrieved from <https://www.facebook.com/rocketplastic/photos/a.1916967571781150/2013696795441560>

62 Live with David Wilson, Managing Director of Vanden Recycling. Youtube. (2020, May 12). Retrieved from <https://www.youtube.com/watch?v=-99o-2UaBAM&t=6s>

63 La Bioindustria italiana per la rigenerazione territoriale e il green. (2021, July 09). Retrieved from <https://event.webinarjam.com/register/72/y1krva5l?fbclid=IwAR0ciuTel4p7cqM0Pbk0ixsIMpigkbtHHztopvD2BTwKD4YCqjoZfSQSCK4>

64 COVID COLAB: Crafting Plastics. (2021, July 09). Retrieved from <https://www.craftingplastics.com/covid-colab>

5. Conclusions

This research identified over 100 relevant initiatives across the Asia-Europe Meeting (ASEM) Partner Countries during a detailed desk review, aiming to tackle the single-use plastic waste problem using different innovative solutions.

5.1 Characteristics of single-use plastic waste initiatives in ASEM

Our analysis found that most of the identified initiatives targeted the reduction of plastic materials usage and/or recycling plastic waste. Accordingly, the studied initiatives were most likely to improve plastic waste recycling or waste collection, delivering a change in product design or eliminating the use of certain plastic types. Many projects also provided awareness-raising activities or training (often as a complementing activity).

Businesses managed over two-thirds of the initiatives (recycling companies, plastic industry companies, retailers or distributors, and social enterprises or technology companies). The remaining one-third of the initiatives were led by not-for-profit organisations (NGOs, BINGOs and research institutions). The projects were most likely to be operated at the (multi-)city or the national level, while international activities could only be identified in 15% of all studied cases. This may also be because more than half of the identified initiatives were developed by organisations employing less than 50 people. At the same time, only 20% of the initiatives were managed by mid-size organisations (50 to 500 people) and 15% by large organisations (with more than 500 people).

Our study also showed that, as a common characteristic, most projects delivered some type of product, process or service innovation to help to address the problem of single-use plastic waste. These innovations were, in some cases, entirely new to the world. At the same time, in other instances, they were new to the country where the studied initiative operated, or they represented innovation to the implementing organisation. In total, 163 innovative solutions could be identified across the 106 studied initiatives, out of which 85 were technological innovations (aiming for better product design, technical processes or infrastructures) and 78 delivered management, economic or cultural innovations to tackle single-use plastics waste.

5.2 Drivers and barriers to implementing single-use plastic waste reduction initiatives

From the surveyed initiatives in the second stage of the research (over 30 projects from 25 European and Asian countries), we discovered several potential drivers and barriers for implementing projects that focus on single-use plastics in the ASEM region.

Most respondents considered their projects successful or relatively successful and indicated that their project idea has high transferability potentials. It was specifically the case for other cities in their country of operations, but it was also likely for other countries and other sectors.

Following the categorisation of the OECD Working Paper on Policy Approaches to Incentives Sustainable Plastic Design,⁶⁵ the surveyed projects attributed significant importance to several areas, such as funding for project implementation, building technical and management capacities, accessing state-of-the-art technologies, and securing a commitment from the government and the management of the organisation. The majority of the respondents also attributed importance to introducing regulatory instruments and creating market mechanisms.

65 Policy Approached to Incentivise Sustainable Plastic Design Environment. OECD Working Paper nr 149. (2019, July 19). Retrieved from [https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP\(2019\)8&docLanguage=En](https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP(2019)8&docLanguage=En)

Concerning barriers to upscale existing projects, the survey respondents identified the following challenges: the lack, or limited availability, of regulation and standards; the lack of public and private funding; the poor collection and recycling infrastructure; the little awareness, interest or commitment from consumers; and the limited coordination along the plastic production chain (resulting in difficulties to collect sufficient amounts of plastic waste for recycling).

The COVID-19 pandemic crisis also affected many of the studied initiatives, although not necessarily negatively. Some organisations changed their operation processes or production patterns, while others increased their social media presence or social welfare contributions to support their consumers.

5.3 Future research needs

During the research, several topics emerged that could be studied in more detail to support a more comprehensive understanding of how single-use plastic waste initiatives could be upscaled.

Our research showcased the potential to create synergies among various initiatives if single-use plastic waste reduction activities are coordinated across the supply chains. The means that governments have available to support the move towards circular economy approaches in this sector could be studied more closely. Although the surveyed initiatives did not consider regulatory instruments and market mechanisms the most important drivers for launching new projects, they were cited as significant barriers to upscaling existing initiatives. In connection to this, more analysis could be conducted on 1) what type of activities governments in ASEM Partner Countries are undertaking to drive and stimulate innovations in the plastics sectors, 2) which sectors they are or should be prioritising, and 3) which aspects of their activities could be improved further. It would also be helpful to explore government roles in supporting the upscaling of existing initiatives, especially regarding their procurement activities and their cooperation efforts with plastic producers and retailers.

“ The COVID-19 pandemic crisis also affected many of the studied initiatives, although not necessarily negatively. Some organisations changed their operation processes or production patterns, while others increased their social media presence or social welfare contributions to support their consumers.

ANNEX 1:

Projects and initiatives to tackle the challenges of single-use plastic waste

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
Plastic Free July	Starting in 2011 as a local initiative of the Western Metropolitan Regional Council in Western Australia, the “Plastic Free July” campaign encourages citizens and businesses to change their behaviour to avoid single-use plastics and reduce plastic waste. The initiative has rapidly grown into a global movement engaging millions of people in more than 170 countries worldwide.	https://www.plasticfreejuly.org/	Australia	
Replas	Replas, is a Victorian manufacturer, which uses plastic waste collected in Australia to produce a range of outdoor products such as fitness circuits, outdoor furniture, bollards or signage. The plastic waste is managed via the REDcycle Program. After initial processing at the RED Group’s facility, it is delivered to Replas. Replas has developed a world-leading technology to reprocess Australia’s waste by mixing different plastic polymers to create complex three dimensional and colourful outdoor products.	https://www.replas.com.au/recycling/	Australia	
Redcycle	The REDcycle Program collects post-consumer household plastic, such as plastics bags or packaging, which otherwise can’t be recycled at home. Consumers can leave their soft plastics at the nearest REDcycle collection bin at participating supermarkets all around Australia. The collected plastic is returned to RED Group’s facility for initial processing, then delivered to manufacturers that create new products from recycled materials.	https://www.redcycle.net.au/what-to-redcycle/	Australia	
Close the Loop	Close the Loop® is an innovative materials recovery company specialising in collecting and recycling single-use toner and inkjet cartridges, toner bottles, and other print consumables, such as disposable ballpoint pens. It aims to help companies minimise waste and work towards a circular economy by transforming items normally in landfills and oceans into valuable commodities that can be returned to the supply chain.	https://www.closestheloop.com.au/	Australia	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
Plastic Forests	Plastic Forests transforms used soft plastics into resin for use by the plastics industry or reprocesses it into sustainable recycled products, including garden beds, garden edging, underground cable cover, mini wheel stop, air-con mounts, dunnage and root barrier. The company can recycle a wide range of soft plastics, even those contaminated with food residues, ink, liquids, hay, from many different actors such as companies, councils or small scale family agricultural customers. Plastic Forests manages the recycling process without water since it developed a dry-cleaning method and commercialized it globally the first time. In addition to this, the company also have a range of partnership on the reprocessing level.	https://plasticforests.com.au/	Australia	
Bangladesh Petrochemical Company Limited (BPCL)	Bangladesh Petrochemical Company Limited (BPCL) specialized in transforming post-consumer bottles into high-quality resins suitable for food-related and non-food related usage. The company has a standard for the plastic bottles that they will accept, such as there cannot be any glue from a label, traces of aluminium or evidence of long-standing storage of food. Three types of products - food-grade, fibre grade items and PET flakes - are produced. Previously, the PET industry of Bangladesh entirely relied on imported PET resins. Currently, BPCL is addressing 3% of the local market demand. BPCL has also installed a 10-kilowatt solar panel system.	www.bpcl.com.bd	Bangladesh	
Bangladesh Jute Mills Corporation (BJMC)	Bangladesh Jute Mills Corporation (BJMC) is the world's most significant state-owned manufacturing and exporting organisation of all kinds of jute goods. In line with the current global awareness of the harmful effect of synthetic fibres, the jute sector of Bangladesh makes an effort to develop and produce diversified products. The Research Division of BJMC is responsible for introducing innovative, sustainable jute goods with high market demand. Some are Jute garbage bags, alternative nursery sapling pots of jute fabrics, jute photo albums, food-grade jute bags, and jute slippers. Under the umbrella of international public-private partnership and using FDI, BJMS aims to commercialise one of its innovations, the plastic-like jute Sonali Bags. It would function as the green counterpart of a throw-away plastic bag.	http://www.bjmc.gov.bd/	Bangladesh	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
Plastic Bottle Free Initiative	The “Plastic Bottle Free Initiative”, launched in 2018, is the most recent chain of the public awareness-raising project of the government of Brunei. It aims to reduce plastic waste generation from 1.4 kg/person/day to 1 kg/person/day by 2035. During the ten years of plastic waste related social responsibility campaigns, participating stores increased from 18 to 50. By avoiding buying plastic bags, some stores could save \$2,000 to \$3,000 per month.	http://afeo.org/wp-content/uploads/2019/02/PUJA-Environment-WG.pdf	Brunei Darussalam	
Plastic Free SEA	Plastic Free SEA helps individuals, schools and businesses through consulting and training services to reduce single-use plastic and creating environmentally sustainable practices. Currently, individuals are the central focus of the company. They are encouraged to engage with an eco-friendly lifestyle by taking simple steps. The company provides one on one mentoring, group membership and eco classroom as a sustainable living coach.	https://www.plasticfreesea.org	Australia	Cambodia
Refill Not Landfill	Refill Not Landfill is a global campaign to reduce single-use plastic drinking bottles and other single-use plastic waste. Businesses and organizations can join the movement by agreeing to appear on the Refill world map and supplying clean drinking water to anybody presenting a reusable or refillable water bottle. Another way of cooperation is purchasing customised refillable water bottles, individual artworks made from aluminium or stainless steel. Prevaillingly, South Asian tourism groups, hotels, restaurants, NGOs, hospitals, schools, and cafés joined the initiative.	https://refilltheworld.com/	Cambodia	
Precious Plastic Community	Precious Plastic is a global community project providing a boost to plastic recycling. It aims to inspire people to set up recycling businesses. They design and develop machines to recycle plastic and help people for free to replicate them worldwide. A wide range of recycled plastic products like modular structures, construction materials and furniture are shared to trigger business ideas. At the online academy, everybody can get detailed information on transforming plastic waste into the desired product. Concerning the financial side of the business, Precious Plastic developed business tools that are available online as well. The Precious Plastic Bazaar functions as a marketplace to buy and sell machines, moulds, raw materials, and new community products.	https://preciousplastic.com/	The Netherlands	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
Precious Plastic Shanghai	<p>Precious Plastic Shanghai is part of the Precious Plastic Community. It is a social enterprise that provides brand partnerships, consultancy, educational activities and public workshops in Shanghai. The company aims to create awareness about plastic waste in China by manufacturing art products from recycled plastic. In terms of brand partnership, the services include design, customisation and production. The products - such as jewellery, tote bag, key chain, wallet - are displayed at art exhibitions. Besides the business clients, Precious Plastic Shanghai intends to build dialogue with people through interactive events. The live recycling demonstrations aim to present the complete recycling process and give simple tips to change consumption habits. Furthermore, Precious Plastic Shanghai offers “Plastic Shifu training” (Shifu in Mandarin means master) to encourage people to explore and develop their projects while learning to use its machines. They are active on Chinese social media platforms and organise action campaigns like zero waste challenges.</p>	<p>http://preciousplasticshanghai.com/</p>	China	
Waste2Wear	<p>Waste2wear is a China-based global company providing products from recycled polyester fashion fabrics instead of virgin polyester. It aims to reduce plastic waste by producing innovative textiles made from post-consumer plastics that are fully certified and traceable using blockchain technology. The recycled polyester fabrics are used for different purposes such as fabrics, apparel, bags and accessories. Every client of Waste2wear is informed about the specified number of plastic bottles recycled, water and energy saved during the production.</p>	<p>https://www.waste2wear.com/</p>	China	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
The Plastic Flamingo (The Plaf)	Plastic Flamingo - aka the Plaf - is a French social enterprise with a pilot project in the Philippines. It aims to catch post-consumer waste before it reaches the ocean and finds the best recycling alternatives for plastics that cannot be recycled in the Philippines, such as PET. Plastic Flamingo developed a replicable solution to reduce marine plastic pollution in emerging countries, especially in Asia. It collects waste from its network, including schools, universities, companies, stores, hotels, beaches, municipalities, etc. After managing the shipping and recycling process, creates post-consumer plastic products like construction material, boat decks, outdoor furniture, and transitional shelters.	https://www.theplaf.com/	France	Philippines
Indian Institute of Petroleum (IIP)	The Indian Institute of Petroleum (IIP) is one of the Council of Scientific and Industrial Research constituent laboratories. It aims to create sustainable and cost-effective technologies to induce India's economic growth by meeting the requirements of the ever-growing energy sector. The present management considers the institute as the corporate R&D centre of the entire petroleum industry to solve their short and long term challenges in the area of refining, petrochemicals and energy. Since 1960, the IIP has developed more than 50 technologies in petroleum refining, natural gas, petrochemicals and utilization of petroleum products. In 2014, IIP invented converting plastic waste like polyethene and polypropylene to either gasoline or diesel. The technology makes it possible to convert 1 kg of plastic to 750 ml of automotive-grade gasoline.	www.iip.res.in	India	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
Plastic Waste Management Programme (Coca Cola, Unilever, UNDP)	United Nations Development Programme (UNDP) India collaborates with Hindustan Coca-Cola Beverages Private Limited (HCCBPL) and Hindustan Unilever Limited (HUL) in reducing plastic waste in India. The partnership focuses on sustainable plastic waste management practices through collection, segregation and recycling in 50 cities between 2018 and 2024. It also aims to institutionalise the government-initiated Swachhta Kendras (Clean India) project and improve the socio-economic conditions of waste pickers. In the frame of Swachhta Kendras, a pilot has been set up in every city with the support of the City Municipal Corporation. After establishing the local cooperation, waste pickers collect all types of multilayered and styrofoam plastic waste. Participants of the initiative like waste collectors, recyclers, citizens and municipalities are connected by apps, and the whole waste flow is tackled by GPS and QR codes. The recycled products are available for sale on apps as well.	https://www.undp.org/content/dam/india/docs/human-development/HCCB.pdf	India	
Evo & Co.	Evo & Co. is a group of Indonesian brands that focuses on reducing plastic pollution by creating campaigns and offering a range of sustainable alternatives to single-use plastic items. It consists of three brands; Evoware, Evoworld, and Rethink. Both Evoware and Evoworld produces biodegradable, compostable and edible products such as seaweed-based packaging, bio bag, sugarcane food container and rice straw. Rethink is a collaborative movement of individuals, communities and businesses that creates campaigns to raise awareness on the plastic waste issue. Rethink Kit is reusable products like bottles, cutlery, straw, and bags to replace single-use plastics in daily activities.	https://rethink-plastic.com/	Indonesia	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
XSProject	XSProject is a non-profit, social and environmental organisation in Indonesia focused on transforming consumer and corporate waste into products with innovative design. Its goal is to improve the lives of low-income families living in Jakarta's trash picker communities. The organization buys non-biodegradable plastic consumer trash from Jakarta's waste collectors but also seeks corporate donations of waste materials such as used highway billboards, advertising banners, flags and auto upholstery, then converts these into a wide range of handy off-the-shelf designs like a recycled plastic laptop bag, cosmetic pouch, pencil case, shopper tote, wallet and customizes products for bulk orders as well. It also conducts workshops on the process of upcycling and teaches techniques for creative waste reuse too. In addition to this, the organisation has social projects for supporting the education, health and well-being of the trash picker families.	https://xsproject-id.org/	Indonesia	
Waste4Change	Waste4Change is a social enterprise in Indonesia, giving a wide range of services in waste management. It provides customer-oriented solutions for companies, buildings and businesses, including inorganic waste collection, brand-labelled waste, customized waste bin etc. The waste recycling system of the company is integrated with web and mobile applications. Individuals can also cooperate with the company through personal waste management services. Furthermore, Waste4Change researches to develop the tailored system and programs for the customers and offers public and private waste management-related training.	https://waste4change.com/	Indonesia	
MS & AD Insurance Group	MS&AD Insurance Group is a global insurance and financial services provider incorporating the SDGs into its business strategy. One of the sustainable aims of the company is decreasing ocean pollution by reducing the use of plastic. The company replaced plastic cups and straws in employee cafeterias and set up faucet-connected water stands for encouraging employees to use their bottles. Moreover, MS&AD Insurance Group also provides education for its team on the issue of marine plastic waste.	https://www.ms-ad-hd.com/en/csr/quality.html#050	Japan	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
No Plastic Japan	No Plastic Japan aims to reduce virgin plastic straw by providing stainless steel straw as an alternative. Many businesses use eco-friendly straws with their cleaning brushes and drawstring bags in Japan. They are available at the online shop of No Plastic Japan too. The packaging is also plastic, making up cardboard, newspaper, reused papers, and biodegradable washi tape.	www.noplasticjapan.com	Japan	
Mymizu	Mymizu, a free Japanese water refill app, aims to reduce the need for plastic bottles by globally helping people access free refill points. The app shows the nearest water fountain or eco-friendly cafe offers free refills. Through guiding people to sustainability-conscious businesses, it also aspires to increase consumption at green cafes and restaurants. In addition to this, Mymizu produces its products such as stainless steel bottles, organic cotton T-shirts and vinyl stickers. According to the company's concept, people automatically join the Ocean Loop initiative by purchasing at Mymizu store. Mymizu, collaborating with companies and volunteers, collects 1 kg of rubbish from rivers, beaches, parks and oceans for every item sold online.	https://www.mymizu.co/home-en	Japan	
Japan Plastic Industry Federation (JPIF)	The Japan Plastics Industry Federation (JPIF) aims to advance and develop the Japanese plastics industry and promote the common interests of the member companies. In the frame of voluntary control action program, legislation preparation, surveys, and environmental standardisation, JPIF contributes to reducing, reusing and recycling plastics and stopping fly-tipping plastics on beaches. At the legal level, it works for labelling selective collection and information on plastics materials of plastics goods. To target waste reduction, JPIF collects information from plastic processing companies, including plastic waste as by-products.	http://www.jpif.gr.jp/english/profile/activities.html	Japan	
Paketamnet	Paketamnet is a Kazakhstan based manufacturer which aims to replace everyday plastic products with reusable eco ones. At the company's online store, zero waste goods such as bamboo toothbrushes, biodegradable bags, steel straws, and tin can flower pots are offered delivery options to Kazakhstan and Russia. Paketamnet also promotes a sustainable lifestyle through conferences, online eco-school and masterclasses.	https://www.instagram.com/paketamnet/ Webpage: https://paketamnet.kz/about_us	Kazakhstan	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
Eco-Network	Eco-Network is a Kazakh branding, marketing and PR agency specialised in eco-image creation. The company offers customised waste collection schedules for its clients. Eco-Network gives training to the employees on waste segregation and its importance. Then it installs the waste and recycling containers. Eco-Network collects information on the sorted waste to provide feedback on the environmental impact and promote the new eco-brand. It translates it into the number of saved trees, etc. After completing the waste management part, it starts to promote its client's social responsibility and sustainability. From 2020 the company works for a more comprehensive goal by bringing the eco-brand to zero waste business brand further.	https://www.econetwork.kz/	Kazakhstan	
Rocket Plastic Almaty	Rocket Plastic is part of the Precious Plastic Community, a global initiative that motivates recycling startups. The company produces post-consumer products with its own-built plastic recycling machines and arranges public workshops in Kazakhstan. Rocket Plastic manufactures simple items like clothespins, wall clocks, bowls and vases, but it plans to create furniture by combining recycled plastic and wood.	https://www.facebook.com/rocketplastic	Kazakhstan	
Raduga LLP	Raduga LLP is one of the biggest producers and distributors of consumer goods in Kazakhstan. It manufactures a wide range of products from snacks to ironing boards and plays a significant role in the national plastic market. Raduga LLP manufactures 350 plastic products and plans to add other items like plastic film, packing bags, plastic pipe and household metal-plastic products. Although most of them are from virgin plastic, there are also post-consumer goods. Raduga LLP collects, separates and recycles industrial and domestic waste of plastic films and produces secondary polyethylene granules.	http://kdr.kz/ https://www.instagram.com/za_chisty_gorod/	Kazakhstan	
Korea Zero Waste Movement Network	Korea Zero Waste Movement Network (KZWMN) is a non-government organisation that helps domestic grassroots organisations to focus on waste problems and encourage a zero-waste society. It also plays a mediator role between the government and the citizen communities. KZWMN's national network consists of 180 various organisations, including environment, customer, woman citizen movements.	www.waste21.or.kr	Korea	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
Wasteupso	<p>Wasteupso is a zero-waste, community-based grocery store that provides unpackaged fresh produce, dry food and biodegradable home goods. Its primary goal is to be plastic-free by encouraging people to bring their bags and containers to shop. Customers and members also donate jars and containers to keep costs low and access high for locals. Wasteupso packages the products in donated and sterilised glass jars or paper bags for easy reuse or recycling in online purchases. Considering eco-friendly community building, the company holds classes, events, create video content to teach DIYs, highlight eco-conscious companies in Korea and offers education and consulting services available for schools, offices and individuals. Furthermore, it cooperates with governmental and non-governmental organisations to make the movement more inclusive.</p>	<p>https://www.wasteupso.com/</p> <p>http://pacificrootsmagazine.com/zero-waste-shop-feature-wasteupso-korea/</p>	Korea	
Greenpeace Korea	<p>Greenpeace Korea aims to reduce disposable plastics and stop the illegal export of plastic waste by organizing awareness-raising campaigns, conducting research, and pushing legal policy reforms. It created a map of eco-friendly grocery stores for giving people the option to shop without plastic. The organisation also established online community platforms to change everyday habits, such as using plastic straws instead of reusable ones. Through direct actions and press conferences, Greenpeace Korea demands regulations from the Ministry of Environment regarding illegal plastic waste incineration. It also investigated and disclosed the unlawful export of plastic waste from Korea to the Philippines in cooperation with Greenpeace Philippines.</p>	<p>https://www.greenpeace.org/korea/project-plastic/</p>	Korea	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
BambooLao	BambooLao is a social initiative that aims to reduce single-use plastic straws with bamboo alternatives produced by local villagers in Lao. The company uses indigenous bamboo varieties and a proprietary natural treatment process. Hotels and resorts across Asia purchase reusable bamboo straws and other bamboo utensils. In addition to this, BambooLao also gets orders from Europe, especially from Germany. It offers customized products, such as graved bamboo straws for special events or bamboo straw gift bags for the hospitality industry. By training both Lao-tian and Cambodian villagers on making bamboo straws and natural papers, BambooLao inspires them to start their businesses.	https://www.worldbank.org/en/news/feature/2019/05/31/meet-the-innovators-battling-plastic-waste-in-laos-aroundthay-khoungkhakoune/	Lao PDR	
The Last Straw	The Last Straw campaign is an environmental project of the Malaysian Sunway University. It aims to promote a sustainable lifestyle on the university campus by replacing single-use plastic water bottles with introducing water refilling stations. Furthermore, the institution conducts a metal straw giveaway for students to encourage using reusable straws daily.	https://university.sunway.edu.my/sustainability#TheLastStraw	Malaysia	
Turning Garbage into Gold (TG2G)	Technoj Business Incubator Center is an Ulaanbaatar-based, non-governmental organization that supports small business owners and start-ups. Technoj developed and executed Turning Garbage into Gold (TG2G) for decreasing urban poverty and environmental pollution. The NGO designs recycled products like brooms, chairs, foot covers, picnic mats, containers and teaches low-income communities in Ulaanbaatar's outer districts how to make them. TG2G helps disadvantaged people to set up their own segregated waste collection chain in their neighbourhoods and sell their recycled household goods. Moreover, many of them set up their green initiatives through project support and accessed a government loan.	facebook.com/NogoonSanaachlaga/ https://www.asia-pacific.undp.org/content/rbap/en/home/ourwork/development-impact/innovation/projects/mongolia-turning-garbage-into-gold.html	Mongolia	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
San-Orgiu	San-Orgiu LLC is a small company that recycles waste and plastic bags. San-Orgiu LLC, the first recycling company of Mongolia, produces fences and street branches from recycled plastic bags in Darkhan. It also supports eco-education for children through video content and takes part in international environmental forums such as the Workshop on Environment Technology Co-Development and Transfer in Korea. The company buys plastic waste from businesses and individuals for providing the raw material of its products.	https://www.facebook.com/pages/category/Business-Service/San-Orgiu-LLC-plastic-recycling-365024870672822/	Mongolia	
ChuChu Design	ChuChu is a Myanmar social enterprise that manufactures handcrafted household goods and accessories from reused or recycled waste materials. It grew into a self-sustainable business from the initiative of Cesni, an Italian NGO. ChuChu works to address major problems in Myanmar, such as unemployment and waste pollution. The production process is eco-friendly and family-based since the electricity and water consumption is minimum, and women can work from home or in workshops. ChuChu cooperates with NGOs, national and international companies. In addition to this, it is engaged in donation activities for supporting disadvantaged people.	https://www.crafttalk.org/chuchu	Myanmar	
Love NZ Soft Plastic Recycling Scheme	Love NZ Soft Plastic Recycling Scheme is a New Zealand company producing post-consumer plastic products from soft plastic. It supplies recycled soft plastic for Future Post and Second Life Plastics to make plastic fence posts and ducting products. The company collects its raw material with the engagement of people and private companies. The Love NZ Soft Plastics Recycling bins are available at supermarkets and retail premises in New Zealand. The partner businesses provide collection facilities and encourage customers to bring back soft plastics to the store by putting the soft plastic “recycle at store” logo on their packaging.	https://www.recycling.kiwi.nz/solutions/soft-plastics/about/	New Zealand	

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Waste Busters	Waste Busters is a Pakistani company specialised in waste management, recycling and janitorial services such as door-to-door collection, debris removal and restaurant waste handling. It aims to help businesses go green by providing high quality, cost-effective and customized services across Pakistan. Moreover, Waste Busters runs multiple waste projects, including making furniture from recycled plastics and contributing to initiatives that promote an eco-friendly lifestyle.	http://wastebusters.com.pk/	Pakistan	
Gul Bahao	Gul Bahao, based in Karachi, is Pakistan's first research centre on waste management, providing practical solutions for low-cost housing, water sanitation, and recycling. Chandi, an innovative plastic recycling method of Gul Bahao, makes it possible to construct shelters from plastic waste. Besides mobile homes, Gul Bahao produces a wide range of products with Chandi technology such as furniture, mobile toilets, carpets and water reservoirs. It has been building shelters from plastic waste for people in need since the 2005 earthquake. Along with producing affordable and effective Chandi products, the NGO organizes social campaigns. It inspired the cottage industry, junk dealers and the informal economy to segregate their waste through the "You give us garbage, we give you Gold" campaign.	https://www.facebook.com/gul.bahao.ngo/	Pakistan	
The Plastic Solution	Plastic Solution is an environmental initiative started by the Circle Hostel chain consists budget-friendly eco-hostels in the Philippines. It is part of the global eco-brick movement that originated in Guatemala. The program aims to raise awareness about plastic trash by encouraging people to create eco-bricks by stuffing plastic bottles with non-biodegradable waste. The plastic bottles can be made into construction materials with cement or a basic support structure of posts, wire mesh, and bamboo. People can leave their eco-bricks off at one of the partners drop off points or directly bring them to Circle hostels. Plastic Solution utilises eco-bricks in various builds and offers seminars to teach how to make and build them.	https://observers.france24.com/en/20170608-plastic-bottles-become-building-bricks-philippines-hostel-stuffitchallenge	Philippines	

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Villar Sipag project	Villar SIPAG is a non-profit organisation that focuses on improving the quality of life of underprivileged Filipino communities. It contributes to developing solid waste management in Las Pinas City by organizing the house to house education campaign on waste segregation and conducts zero waste management training for the city government employees, barangay leaders, public school faculty members, administrators and residents. Plastic bags, plastic bottles, soda cans and other non-biodegradable materials were collected from the Las Pinas-Zapote Rivers in a river rehabilitation program. In response to the school chair shortage in Metro Manila, Villar SIPAG started to produce chairs from plastic waste. The local community collect, segregate and process plastic waste, which helps them to generate income.	https://www.villarsipag.org/index	Philippines	
Envirotech Waste Recycling	Envirotech Waste Recycling Inc. (EWRI) is a recycling company in the Philippines that promotes zero waste in landfills. EWRI produces durable products from biodegradable and non-biodegradable waste with innovative thermal heat technology. The company collects mixed plastic from businesses, individuals, and the Mindanao Municipality. Then it makes out of it school chairs, picnic tables, benches, and lounge chairs. In addition to this, EWRI aspires to address the housing problem by producing plastic houses.	https://www.facebook.com/pg/envirotechphil/about/?ref=page_internal	Philippines	
Ban The Bag	Ban The Bag is an environmental campaign that aims to mobilise citizens against single-use plastic bags. The objective is to encourage communities to get engaged and take action against the use and distribution of plastic bags in their areas. Four retailers joined the campaign in Russia, such as Azbuka Vkusa, Vkusvill, Ashan and a Russian branch of Spar. By charging 5 rubles per bag, Azbuka Vkusa reduced plastic bags leaving their stores threefold. LavkaLavka replaced plastic with paper and introduced a discount scheme for customers who purchase food in reusable containers. Moreover, its further goal is to ban plastic from its shops by 2021.	https://av.ru/about/social/ https://lavkalavka.com/p/koop/	Russian Federation	

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Sibur	Sibur is Russia's largest integrated gas processing and petrochemicals company. It collaborates with the energy, automotive, construction, fast-moving consumer goods and chemical industry. Additionally, Sibur is part of the Operation Clean Sweep program to prevent the loss of plastic granules such as pellets, flakes and powders.	https://www.sibur.ru/en/	Russian Federation	
Dront	Dront is an environmental NGO that aims to protect the landscape of the Nizhny Novgorod region. It works to prevent the ungreen public and private projects by raising social awareness on environmental rights. The NGO informs people about their environmental rights and encourages them to use and advance them. Besides providing teaching aids, Dront conducts researches, treats sick birds, organises eco-seminars and social movements. After taking part in Green Weekend, the initiative of Greenpeace Russia, Dront started to run the Recycling of Waste campaign, focusing on arranging workshops regarding waste collection, sorting, recycling and production of post-consumer paper and plastic products.	https://dront.ru/	Russian Federation	
Waste-To-Value Centre	Waste-To-Value Centre is a Singapore-based initiative targeting to bring together public actors, industries and communities to reduce plastic use, recycle plastic waste and create local waste management solutions in Southeast Asia. The Centre works on influencing decision-makers by producing policy-relevant research. Moreover, it develops downstream and upstream processes to commercialise plastic waste chemical recycling to accelerate clean technology implementation.	www.wvcentre.com	Singapore	
Gee Hoe Seng	Gee Hoe Seng is a Singaporean company that specialised in tailored industrial recycling collection services and waste management solutions. The services consist of collection, segregation, transportation, reuse and recycle of industrial waste. It also provides environmentally friendly packaging materials, open-top containers, recycling bins and trolley cages.	https://www.ghs.sg/recyclables/plastic-recycling/	Singapore	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
Thai Plastic Recycle	Thai Plastic Recycle is a social enterprise that produces post-consumer products from plastic waste and markets them in Malaysia, Taiwan, China and Hongkong. The company buys used PET bottles as the raw material and manufactures plastic flakes scrap from them. By teaching the plastic recycling process to children and youth, it aims to promote social awareness of recycling at an early age.	https://www.thaiplasticrecycle.com/en/about-us	Thailand	
Big C Vietnam	Big C Supercenter is a Thai retail business operating stores in Vietnam, Thailand, Argentina, Uruguay, Brazil, Colombia, France, Madagascar and Mauritius. There are 24 Big C supermarkets in Vietnam. Big C Vietnam supermarkets try to change shopping patterns to reduce plastic use. Instead of plastic boxes, they installed the scheme to wrap vegetables in banana leaves and eggs in the paper. In addition to this, Big C Vietnam replaced plastic bags with biodegradable bags made from corn. The supermarkets also offer environmentally friendly products such as paper straws, and food boxes originated from sugarcane waste.	https://www.facebook.com/BigCVietnam/	Thailand	Vietnam
SPAR Austria	Spar is a global franchise that manages independently owned and operated food retail stores. Spar Austria aims to reduce plastic use through variable actions. The supermarkets sell unpackaged fruit and vegetables and offer paper or compostable bags instead of plastic ones. Moreover, Spar Austria allows customers to bring their containers for purchasing fresh products. They stock beverages in reusable bottles and provide return empty bottle service for online delivery. The supermarket chain offers cosmetics and care products that are free of solid microplastics. By increasing labelling such as made from 100% recycled plastic, it aims to support eco-friendly shopping.	https://www.spar.at/nachhaltigkeit/produkte/verpackungen	Austria	
Valvert	Valvert, a Nestlé water brand, is a Belgian bottled water producer. In the frame of Nestlé's worldwide initiative to make its packaging 100% reusable or recyclable by 2025, Valvert replaced virgin plastic bottles with recycled PETs in 2019. By shifting to sustainable packaging, it aims to stimulate a bottle-to-bottle circular economy.	www.valvert.be	Belgium	

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Do Eat	Do Eat, based in Belgium, is the first company to manufacture edible and home compost fitting tableware and packaging, including food containers and cupcake holders. It aims to contribute to a circular economy by providing an alternative to reduce plastic use. Do Eat products made with potato starch are gluten-free and suitable for vegetarians. They can be baked in the oven, frozen, used in microwaves, then directly eaten or made compost.	http://www.doeat.com/	Belgium	
Zera	Zera is a Bulgarian company that works on reducing the use of single-use plastic cups in kindergartens and at mass events by producing customized, reusable alternatives. It makes stainless steel cups that have a unique graphic symbol for each child in the group. This project generates savings and educates children to reuse their utensils. The Zera reusable party cups are available at festivals, where bar owners can sell drinks by requesting a deposit for a reusable cup or by selling the cup along with the drink.	https://www.zera.bg/detska-gradina , also https://ecovarna.info/project/mission/	Bulgaria	
Fountains in Bulgaria	Fountains in Bulgaria is an online map that enables people to stop using disposable plastic bottles and save money by giving them information about the sources of free tap water near them and its quality. Along with public fountains, it features cafes and restaurants which serve tap water and provides users with tips and resources for a more sustainable lifestyle.	Zerowastesofia.com/watermap	Bulgaria	
Integra Plastics	Integra Plastics is a Bulgarian company that focuses on polyolefin recycling. By establishing a modern recycling plant, it aims to manufacture high-quality recycled material that closely matches virgin polymers. It produces low-density polyethylene, high-density polyethylene and polypropylene granules in different colours from post-consumer films.	https://integra-plastics.com/	Bulgaria	

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Plastic-free Croatia	Plastic-free Croatia is a social initiative that helps businesses reduce their dependence on disposable plastic by providing a guide including “plastic waste-free” behaviours. The list aims to bear achievable and realistic goals such as easing single-use plastic straws in the office and motivating employees to use refillable water bottles. By implementing the rules, the company earns the status of a “plastic-free organisation”.	https://www.plasticfreecroatia.org/	Croatia	
AKTI Project and Research Centre	AKTI Project and Research Centre is a non-governmental, non-profit organisation based in Nicosia to raise environmental awareness and promote sustainable development. It conducts environmental research, provides awareness-raising activities in partnership with local authorities and universities, focuses on Integrated Coastal Zone Management and organises campaigns. Every year, the NGO takes part in or arrange projects to reduce marine plastic pollution. The Responsible Beach Bars Initiative aims to engage beach bars, snack shacks and beach restaurants to take ownership of “their” stretch of beach to minimise plastic waste. The Beyond Plastic Litter Champion award ceremony recognised sustainable practices implemented by beach bars and beach restaurants. Moreover, AKTI also contributed to the EU-funded Sealive project, which aimed to develop innovative business models for advanced bio-based plastics.	http://www.akti.org.cy/our-projects/	Cyprus	
Minimum Waste (MIWA)	Minimum Waste (MIWA) is a Czech company that aims to make globally widespread waste-free shopping in regular shops and supermarkets. It created a circular system of reusable capsules, which are well adaptable for supermarket chains using smart technology. The smart, reusable capsules keep the content safe, clean and hold information about the product. The smart cups are dishwasher safe, reusable packaging that transfers product information to the app. They share information about the purchased product during shopping, and the customer pays on the MIWA app. Currently, Minimum Waste is available in Switzerland and Czech Republic.	www.miwa.eu	Czech Republic	

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Pond	Pond, based in Denmark, is an innovative biotech company that produces solid and durable bio-resin products such as polymer fibre, granulate and mat. They are suitable to bind many types of natural fibres, including flax, hemp, pineapple, palm leaves, cotton, banana and jute. The Pond bio-resin products are recyclable and can substitute traditional crude oil resins in the automotive, wind power, aeroplane, textile, construction, bottling and plastic packaging industry.	https://pond.global/	Denmark	
Dansk Retursystem	Dansk Retursystem is a non-profit organisation that collects and recycles the used bottles and cans of the Danes in the frame of a public-private partnership. The system makes it possible for nationwide cooperation to reduce plastic, aluminium and glass waste. Producers, importers and breweries contribute by selling bottles and cans. Individuals return their used tins and buckets and shops, offices, cafés and restaurants by keeping them until Dansk Retursystem manages the collection. After the segregation process, the organisation separate and send the waste to specialised recycling plants.	https://www.danskretursystem.dk/en/	Denmark	
Elegro Technology	Elegro Technology is an innovative Estonian company specialised in recycling mixed plastic generated by households. The manufacturing process is zero waste and water-free. The Elegro products such as boards, beams, planks and posts are watertight, recyclable and UV resistant. Besides up-cycling household polymers, the company also provides various services, including engineering, construction, installation, training, marketing support and technology updates.	http://elegro.technology/	Estonia	
Sulapac	Sulapac is an innovative Finnish company that aims to reduce plastic waste by manufacturing compostable plastic packaging materials and straws. Sulapac material is the first mass-producible biodegradable packaging material in the world. A wide range of industries, including food, cosmetics, and jewellery, use Sulapac products consists post-consumer polymer and wood.	www.sulapac.com	Finland	

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Suomen Uusiomuovi Oy (The Finnish Plastics Recycling)	Suomen Uusiomuovi Oy (The Finnish Plastics Recycling) is a non-profit producer responsibility organisation that promotes the recycling of used plastic packaging in Finland. It provides stations, collection terminals and recycling for the packaging industry and household waste. After sorting the generated plastic packaging waste, the companies can take it to the nearest terminal, which accepts it free of charge.	http://www.uusiomuovi.fi/	Finland	
MariMatic Oy	MariMatic Oy is an innovative Finnish company that provides smart waste management services worldwide. It produces two types of automatic waste collection systems. Taifun is applicable for industrial biowaste, and MetroTaifun is designed for solid municipal waste, including commercial and household garbage. The automated waste collection system conveys the waste via underground pipelines to the waste transfer terminal. The pipelines can extend up to 4 km from the waste collection point, and the technology can be applied from residential blocks to entire areas of a city.	http://www.metrotaifun.com/automatic_solid_waste_collection_system/en/references/selected-references/654-zhuhai-reference.html	Finland	China
Yoyo	Yoyo is an interactive community that aims to implement an innovative and efficient solution to optimise the waste collection in France. It focuses on the local level and currently operates on a daily basis in six French cities. It encourages people to become eco-citizens by joining the community, sorting recyclable household waste in the Yoyo bag and bring it to the collection points. The members get points for the amount of sorted waste which is exchangeable to environment-friendly products from the Yoyo shop. Those, who want to take part more intensively in the initiative, can provide a storage place that serves as a waste terminal.	https://yoyo.eco	France	
Lactips	Lactips is an innovative French company that produces water-soluble and biodegradable thermoplastic pellets based on milk protein. The milky pellets are biodegradable and can replace plastic as a raw material for thermoforming, film or any kind of application. The company develops a new recycling industry for milk that is unfit for human consumption, so it does not have a negative impact on the dairy industry.	http://lactips.com/en/about-lactips/	France	

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Share	Share is a social enterprise based in Berlin, encouraging people to help the disadvantaged by purchasing Share products. With every purchase, the company distributes an equivalent good to a needy person. Share provides organic nut bar, bottled mineral water, recycled fibre toilet paper and hand soap, among others. Furthermore, Share is the first bottled mineral water producer in the German market that uses recycled polypropylene for packaging beverage products.	https://www.share.eu/recyclat/	Germany	
Luang Prabang Handle With Care	Luang Prabang - Handle with Care is a multi-stakeholder initiative that aims to develop and promote sustainable tourism products in Luang Prabang. The project adapts ASEAN sustainable tourism standards to local conditions and assists the private tourism sector in applying them. By bringing the public and private sector together, it focuses on the responsible utilization of natural resources, the protection of cultural heritage and the promotion of inclusive economic participation. In the frame of the movement, local hotels started to use bamboo straws, glass bottles, install water refill stations and recycling bins.		Germany	Lao PDR
Recyclate Initiative	The Recyclate Initiative is a cooperative effort involving companies from different industries which encourage effective and innovative waste management in Germany. The recycling process is aimed to be improved through cross-industrial collaboration. Recyclate Initiative partners upcycle household PET waste, produce post-consumer polyethylene packaging and foodstuff-compatible PET packaging, among others.	https://www.wir-fuer-recyclat.de/en/	Germany	Austria
Tomra	Tomra is an innovative, Norwegian multinational company that provides technology-led solutions for the advanced collection and sorting systems. The services of the company consist of pick-up, transportation and processing of used beverage containers. In addition to this, Tomra produces reverse vending machines for collecting aluminium cans, glass and plastic bottles.	www.tomra.com	Germany	Norway

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Schwarz Group	Schwarz Group is a German retail group that owns and operates the Lidl and Kaufland brands. The company aims to promote a circular economy by collecting, sorting and recycling reusable materials, which are indispensable for transport and packaging in food retail. Under the umbrella of Reset Plastic strategy, Schwarz Group established GreenCycle to recycle within the company and PreZero to offer consultation, logistics, sorting and recycling services for external businesses.	https://despre.kaufland.ro/responsabilitate/plastic.html#reset-plastic https://reset-plastic.com/en/	Germany	Romania
Frosch	Frosch is the brand of the German manufacturing company Werner & Mertz specialized in cleaning, care and conservation products for both industrial buyers and consumers. Along with its ecological orientation, Frosch uses post-consumer recycled plastic for bottle packaging. Since Werner & Mertz is also the co-founder of Recyclate Initiative, it encourages other companies to adopt its recycling technology to induce an environmentally friendly circular economy in the long run.	https://frosch.de/Nachhaltigkeit/Saubere-Meere-2.html	Germany	
Arekapak	Arekapak, based in Germany, is a sustainable packaging enterprise using Areka palm leaves as raw material. The company aims to commercialize India's rural packaging methods by cooperating with small Indian producers and creates modern designs. Arekapak manufactures functional, aesthetic and compostable alternatives to plastic packaging.	https://arekapak.de/	Germany	
Plastikon CEE	Plastikon CEE is a Hungarian manufacturer which produces PET film from recycled bottles for the packaging industry. The company's products, such as mono and multi-layer polymer films, are applicable for consumer and food packaging. Plastikon CEE mainly cooperates with the horticulture and the food sector.	https://www.plastikon.hu	Hungary	
Sick of Plastic Campaign	Sick of Plastic is a joint initiative led by Friends of the Earth Ireland and Voice Ireland. It aims to empower communities to pressure industry and decision-makers to take action on single-use plastic. The Loose4Less action encourages people to take photos during shopping and show examples of where a loose product costs more than the packaged option and post it on social media. Furthermore, the Shop and Drop campaign suggest customers leave their unwanted packaging behind to protest and show the supermarket they need to do more.	https://www.foe.ie/sickofplastic/	Ireland	

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No Home for Plastic	Voice of Irish Concern for the Environment is a green non-government organisation focusing on reducing waste and move Ireland towards a more circular economy. No Home for Plastic, a VOICE initiative that aims to raise awareness of plastic use in Irish homes. The project works with individuals, households and schools to examine their plastic use, take part in a plastic use audit to monitor the plastic in their lives and make small changes to reduce their plastic footprint. In addition to this, No Home for Plastic uses citizen science to tackle plastic consumption in homes and schools across the country.	https://voiceireland.org/project-work/no-home-for-plastic.php	Ireland	
Novamont	Novamont is an innovative Italian company specialised in developing biochemicals. By manufacturing bioplastics and bio-based products, it aims to protect ecosystems and natural capital. The biodegradable and compostable bioplastics are used in many different sectors such as agriculture, packaging, large scale retail distribution, food service and waste management.	https://www.novamont.com/eng/	Italy	
Ouni	Ouni is Luxembourg's packaging-free, organic grocery store, which aims to provide all the food and non-food products necessary for everyday life in an environment-friendly way. The products are local and sold in bulk or reusable packaging such as glass jars on deposit. The customers are encouraged to bring their reusable containers. Moreover, Ouni also acts as a community hub, with a café space, regular workshops and events on a range of environmental topics, such as waste prevention, recycling, repair and DIY.	https://ouni.lu/en/	Luxembourg	
Valorlux	Valorlux, based in Luxembourg, is a waste management company that provides sorting, collecting and recycling services for individuals, municipalities and businesses. The Valorlux bags are suitable for collecting packaging waste such as plastic bags, bottles and containers, metal packaging and beverage cartons. They are picked up every other week at the doorstep and transported to the sorting centre, where the content is separated into its different fractions, which are then brought to recycling.	https://www.valorlux.lu/en	Luxembourg	

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Wasteserv	Wasteserv is a Maltese enterprise that provides waste management services, including minimisation, collection, transport, sorting, reuse, utilisation, recycling, treatment and disposal of solid and hazardous waste. By establishing and maintaining an innovative waste management infrastructure. It aims to promote waste minimisation and recycling as a daily habit. The company also coordinates the export of waste to destinations outside the Maltese Islands.	https://www.wasteservmalta.com/recyclablewaste	Malta	
Reroot	ReRoot is a zero-waste, low impact lifestyle store in Iklin, Malta. It aims to reduce and eliminate unnecessary waste by providing eco-friendly and sustainable alternatives to everyday shopping such as a wide range of homeware essentials, beauty products, toiletries, cleaning items and dry food goods. ReRoot also organizes events like vegan cheese and wine tasting.	https://www.rerootmalta.com/	Malta	
Plastic Free Pledge	Friends of the Earth Malta, as part of the world's largest grassroots environmental network, is a non-government organisation that focuses on social and ecological issues by engaging the public directly through a wide range of diverse projects and activities. In the early 1990s, the organisation ran many campaigns to promote alternatives to plastic bags, such as distributing informational material and free calico shopping bags in supermarkets. Friends of the Earth Malta continues to lobby and raise public awareness to establish sustainable waste management policies. The Plastic Free Pledge initiative was launched in 2017 as part of the European Week for Waste Reduction (EWWR). It inspires people to reduce plastic waste daily by sharing information on Maltese plastic-free shopping facilities	https://foemalta.org/our-campaigns/resource-use/plasticfreepledge/	Malta	

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Plastic Health Coalition	Plastic Health Coalition is a campaign of Plastic Soup Foundation, which is a non-profit organization against plastic pollution in the Netherlands. The campaign brings together scientists and organizations that share the concern of the adverse health effects of plastics. The initiative aims to raise attention to the risks regarding the omnipresence of plastics and help people reduce them in their daily lives. In the plastic test lab, the coalition tests various products to check if they contain plastics or dangerous plastic additives and share the results with the public. Besides providing scientific information about plastic in relation to health, the Plastic Health Coalition gives tips on making a difference in individuals' plastic consumption.	https://www.plastichealthcoalition.org	Netherlands	
IKEA	IKEA is a multinational company that provides kitchen appliances, furniture and home accessories worldwide. As a global contribution to reducing plastic pollution, it eliminated all single-use plastic products from its home furnishing range, including straws, plates, cups, freezer bags, garbage bags, plastic-coated paper plates and cups. In the long run, IKEA aims to become a circular business with further eco-actions like planning to produce its products and packing materials from recycled materials by 2030.	www.ikea.pl/dlaplanety	Netherlands	Poland
Vallon	Vallon is a Dutch manufacturer which produces classic-looking eyewear made for sports. The company collaborates with the Norwegian NGO Empower to reduce plastic waste to protect nature and wildlife from its harmful effects. The Vallon sustainable approach ensures its customers that by buying a pair of sunglasses, they contribute to collecting and recycling one kg of plastic waste.	https://www.vallon.store/pages/about-us https://empower.eco/	Netherlands	
Print Your City!	Print Your City! is an Amsterdam-originated social and environmental initiative that uses large-scale 3D printing to transform cities' plastic waste into meaningful applications for the built environment. The recycled plastic products can be easily customized in shape or function and integrate personal messages or logos. Thus it is possible to create a different design for each neighbourhood. The project aims to involve local communities in the plastic waste collection and the designing process as well.	https://printyour.city/	Netherlands	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
GreenBANGLA initiative by LC Packaging	LC Packaging is a Dutch packaging company that is also engaged in sustainable goals. In collaboration with its Bengali partners, the enterprise initiated the GreenBANGLA waste recycling project. It aims to collect used plastic from the FIBC production location or buy it from local companies to recycle and process it into value-adding products such as PP granulates, the raw material of polypropylene bags. Moreover, LC Packaging cooperated with the local partner Grambangla and ChildHope UK to design a skill development training programme for the waste pickers in Bangladesh.	https://www.lcpackaging.com/en/about-us/newsroom/first-its-kind-waste-recycling-project-bangladesh/	Netherlands	Bangladesh
New Movements	New Movements is a Norwegian-based lifestyle brand that designs collections made to last and leaves no trace. The company uses raw materials like laces made of recycled plastic bottles, insole made of waste and recycled rubber. The packaging is managed plastic-free by using paper shoe boxes from post-consumer cardboards. Moreover, together with the Norwegian NGO Empower, New Movements supports ocean clean-ups and encourages plastic recycling by giving financial rewards in return for a plastic waste deposit.	https://newmovements.com/	Norway	
Empower	Empower is a Norwegian NGO that focuses on reducing plastic waste worldwide. By setting up collection points around the world, it aims to spread the Norwegian bottle deposit system, which is based on motivating people to retake their plastic waste through exchange it for money. Empower registers all the plastic digitally when deposited to ensure their reuse and recycling. The NGO also organises plastic clean-up events that provide income for disadvantaged people and are funded by businesses and individuals.	https://empower.eco/	Norway	
Plastic Tides	Plastic Tides is a Filipino non-profit organisation that aims to reduce plastic waste by promoting a zero-waste lifestyle and environmentalism. Besides organising clean-up events, it brings together poor coastal communities with social enterprises. Thus their collected plastic waste can serve as the raw materials of the companys' recycled plastic products such as stand-up paddleboards. Moreover, Plastic Tides helps marketing the products by introducing them to local government, researchers, rangers and marine watchers.	https://plasticides.org/	Philippines	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
Project Second Chance program by PARMS	The Philippine Alliance for Recycling and Materials Sustainability (PARMS) is a multi-stakeholder coalition with members across the waste management value chain. It develops and implements a holistic and comprehensive program to increase resource recovery and reduce landfill dependence in the Philippines. In the Project Second Chance program frame, seven elementary schools in Parañaque got education regarding how to collect flexible plastics and turn them into more usable forms.	https://parms.com.ph/about	Philippines	
Lipor	LIPOR is a Portuguese waste management company specialised in municipal waste. It collaborates with eight municipalities such as Greater Porto Area: Espinho, Gondomar, Maia, Matosinhos, Porto, Póvoa de Varzim, Valongo, and Vila do Conde. LIPOR aims to transform waste into new resources through the implementation of innovative and circular practices.	https://www.lipor.pt/en/	Portugal	
Sociedade Ponto Verde	Sociedade Ponto Verde is a private, not-for-profit organisation focused on promoting the selective collection, take-back and recycling of packaging waste in Portugal. It was established by a group of companies that place packaged products on the market. According to the law, they are also responsible for managing packaging waste. Sociedade Ponto Verde collects the used packaging waste of the customers and sells it to recyclers. In addition to this, the organization funds municipal councils' waste collection and maintenance of recycling drop-off containers.	https://www.pontoverde.pt/en/quem_somos.php	Portugal	
Crafting Plastics Studio	Crafting Plastics Studio, based in Berlin and Bratislava, is an innovative manufacturer that uses bioplastic as its products' raw material, such as biodegradable eyewear. In collaboration with the Slovak University of Technology and Panara company, Crafting Plastics Studio created a new generation of bioplastic material called Nuatan that is durable, aesthetic and leaving no microplastics behind.	https://www.craftingplastics.com/nuatan	Slovakia	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
Bert Vending Machine	Ljubljana's Reuse Centre, the eighth of its kind in Slovenia, is an international reuse centre network. Besides offering work for disadvantaged persons, it provides segregated waste collection facilities and organises flea markets. Ljubljana's Reuse Centre featured the Bert vending machine that sells local organic cleaning supplies and shampoos to encourage zero waste shopping habits. Customers with their reusable packaging can also purchase several varieties of vinegar and oil.	https://www.vokasnaga.si/aktualno/obvestilo-o-nedelovanju-brezembalaznega-avtomata-bert	Slovenia	
Life Recypack	The Life Recypack project aims to implement a new public-private waste management model for commercial plastic packages according to the circular economy criteria. Spanish, Italian and Hungarian private companies, research centres and public institutions joined the initiative. It concentrates on recycling expanded polystyrene and polyethylene waste of shopping centres, business and urban commercial complexes, distribution companies, and professional small and medium-sized enterprises. The recycled material is used to manufacture new plastic products.	https://liferecypackproject.eu	Spain	
Altais Nova	Altais Nova, based in Spain, is an innovative, sustainable packaging company that proposes alternatives to hard to recycle plastic laminates with green chemistry. In partnership with R&D firm Andaltec, it developed recyclable and compostable novel plastic that is resilient and has significant barrier properties. In addition to this, the products are magnetic, making them accessible and cheap to recover at treatment plants or rubbish tips.	www.altaisnova.com	Spain	
Envac Optibag	Envac Optibag is a Swedish waste management company that develops and designs optical sorting plants. It manages the sorting and collection process efficiently and cost-effectively by easing sorting stations and reducing transports. In the frame of the Optibag system, the households sort their waste in different coloured bags at home, then all bags are thrown into a single bin, which is emptied by a regular waste collection truck. At the optical sorting plant, the bags are sorted by colour to the correct container and recycling.	https://optibag.nu/en/optibag/	Sweden	

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
Trioplast	Trioplast is a Swedish industrial group that specialised in innovative and cost-efficient packaging solutions based on polyethylene film. The company manufactures sustainable products like the Triogreen stretch hood, made of bio-allocated polyethylene and designed to pack different pallet sizes with only one film. Moreover, in partnership with Stena Recycling, it aims to manufacture 90% of its carrier bags from recycled plastic.	https://www.trioplast.com/en/	Sweden	
Il Bio Locale	Il Bio Locale is a Swiss, eco-friendly grocery store that provides a wide range of local organic products such as dry foods, dairy goods, oils and vinegar, cosmetics and cleaning items. For promoting a zero-waste lifestyle and reduce single-use plastic, the customers have to bring their reusable containers from home. It helps to keep the prices low since there is no additional packaging cost. In addition to this, Il Bio Locale also functions as a coffee shop, offers pickup service and an online shop for home delivery.	https://www.ilbiolocale.ch/	Switzerland	
Common Seas	Common Seas, based in Bristol, is a not-for-profit enterprise that researches, designs and implements practical project-based solutions to reduce plastic waste. By tackling plastic waste at its source, delivering new ways to manage and re-use plastic, it aims to reduce the leakage into rivers, seas and oceans. Through a participatory co-design approach, Common Seas brings together an international team of scientists, policy experts and behaviour change professionals and work at all levels of economies and societies.	www.commonseas.com	United Kingdom	
Unforgettable Bag Campaign by Tesco	Tesco is one of the world's largest retailers of consumer goods, from food to fashion. Malaysia Tesco introduced the "Unforgettable Bag" campaign to help reduce single-use plastic bags. The supermarkets offer new reusable bags in three unique designs featuring endangered sea creatures. By purchasing them, the customers get 20 sen rebates on their total purchase.	https://tesco.com.my/Our-Little-Helps/Introduction/	United Kingdom	Malaysia

Name of the project/initiative	Description	Website	Headquarter	Operation (if different)
Plastic Free Communities by SAS	Surfers Against Sewage (SAS) is British marine conservation and campaigning charity that inspires, unites and empowers communities to take action to protect oceans, beaches, waves and wildlife. It organises beach clean events, encourages groups to avoid single-use plastic and offers an education program for children such as the Plastic Free School. SAS founded the Plastic Free Community network that aims to reduce single-use plastic by tackling it from the beach back to the brands and businesses that produce it.	https://www.sas.org.uk/plastic-free-communities/	United Kingdom	
Vanden Recycling	Vanden Recycling is a British waste management company that provides integrated logistics, processing and marketing solutions from waste generation to finished product. It aims to become the critical link between plastic waste producers and those that use recycled plastics. The enterprise collects post-industrial and post-production plastic waste from manufacturing, distribution and retail businesses across the UK. After recycling it to reusable regrinds, Vanden sells it to various industries as a raw material.	https://www.vandenrecycling.com/en/	United Kingdom	
Recycling Technologies	Recycling Technologies is a UK-based chemical recycling company that transforms waste plastics into feedstock for new plastic production. It developed the RT7000 modular machine to increase plastic recycling rates and reduce costs. RT700 utilises advanced thermal cracking technology to convert residual plastic waste into Plaxx, a recycled oil that can be used to produce new plastic.	https://recyclingtechnologies.co.uk/about/#vision	United Kingdom	
CupClub	CupClub is a British company that provides returnable packaging services designed to hold both hot and cold drinks. By making drinks-on-the-go more sustainable, it aims to reduce single-use plastic packaging and promote zero-waste habits. CupClub partners with brands, businesses and retailers to service across retail cafes, in-house cafes, canteens, restaurants, coffee and tea points, self-serve stations and drinks vending machines.	https://www.clubzero.co	United Kingdom	

ANNEX 2:

Profile of the questionnaire respondents

Country coverage:

Europe:

- » Austria
- » Belgium
- » Bulgaria (2)
- » Croatia
- » Czech Republic
- » Germany (2)
- » Finland
- » France
- » Netherlands
- » Norway
- » Poland
- » Spain (2)
- » Portugal
- » United Kingdom

Asia:

- » Bangladesh
- » Cambodia
- » India
- » Japan (3)
- » Kazakhstan
- » Lao PDR
- » Malaysia
- » Mongolia (2)
- » Philippines (2)
- » Singapore
- » Thailand

Type of organisation:

Business organisation	18
BINGO	4
NGO	5
Research institution	2
Other	4

Size of the organisation (number of people employed):

Less than 5	10
5-50	10
50-500	6
500-5000	6
More than 5000	1

Project objectives:

Collection	9
Reuse	9
Recycling (Material Recycling)	15
Reduction of use	13
Recovery (Waste to Energy)	2
Other*	1

The Asia-Europe Environment Forum (ENVforum) Consortium



The Asia-Europe Foundation (ASEF) promotes understanding, strengthens relationships and facilitates cooperation among the people, institutions and organisations of Asia and Europe. ASEF enhances dialogue, enables exchanges and encourages collaboration across the thematic areas of culture, education, governance, economy, sustainable development, public health and media.

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