



ONLINE WORKSHOP SERIES
On Circular Plastic Use
Innovate & Change to Close the Loop

**TACKLING THE CHALLENGE
OF SINGLE-USE PLASTIC
WASTE IN ASIA AND EUROPE**



Summary

The Asia-Europe Environment Forum has embarked on a 3-year research program 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). As part of this research programme, we decided to study the single-use plastic problem of ASEM (see section 1); to explore the landscape of innovative projects, focusing on the single-use plastic waste challenge across the ASEM member countries (section 2) and understanding which factors can potentially support to systematic upscaling of promising initiatives (section 3). This brief provides an overview of our findings and conclusions.

1. The single-use plastics challenge in ASEM

In 2015, the world produced more than 400 million tons of plastic, with the largest proportion being designed for immediate disposal. The overconsumption of single-use plastics¹ and the mismanagement of its waste has led to an estimated 12 billion tons of plastic litter in landfills and the natural environment and, as a result, a series of local and transboundary environmental problems.

In 2018, Asian ASEM member countries produced more than half of the world's plastic, with China dominating the market². Although European ASEM member countries accounted for less than a quarter of global plastic production in 2018 (see Figure 2), they produced almost twice the amount of plastic waste compared to the Asian partners.

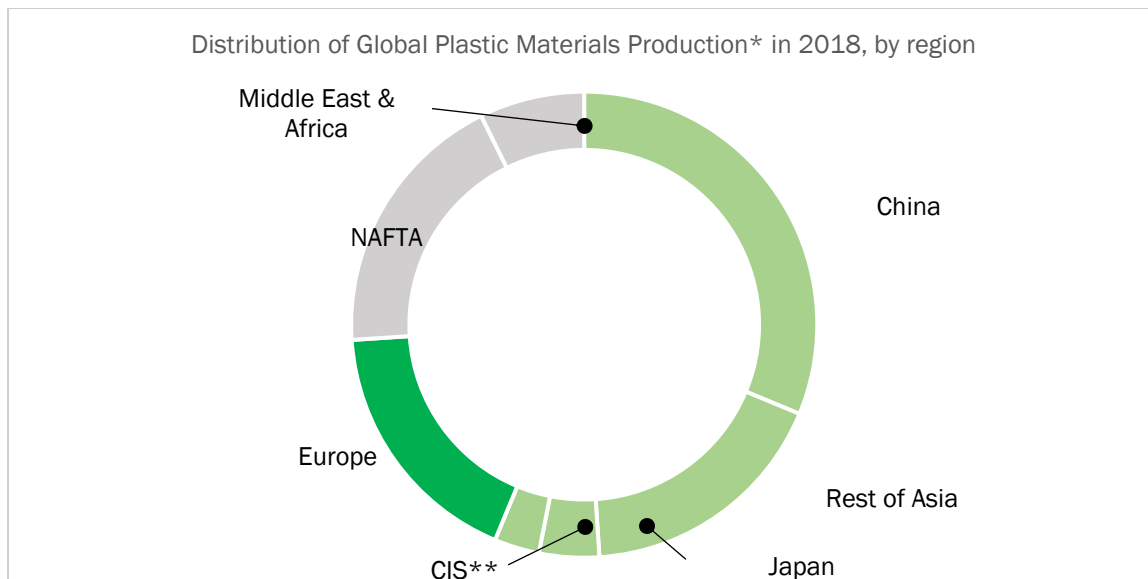


Figure 1: Distribution of Global Plastic Materials Production* in 2018, by region

Source: Statista, 2020

¹ **Single-use plastics**,¹ commonly referred to as disposable plastics, are **items that intended to be used only once** before being thrown away or recycled (e.g. PET bottles; plastic straws; plastic disposable cups and cutlery; Styrofoam)

² Based on Statista, 2020. ² Assuming the proportion of types of plastic produced are spread evenly among countries, we can assume that Asian ASEM Partners contributes to more than half of the world's packaging plastic.

Moreover, although European ASEM member countries are performing local plastic waste management more efficiently, they exported almost 4.6 million megatons of plastic waste and scraps globally in 2018,³ more than twice the amount exported from Asian partners. With the recent banning of plastic imports in China, most of the waste has been diverted to other developing countries in Asia, with less efficient waste management capabilities.

In spite of the scale of the challenge, as of 2018, 22 out of 30 European ASEM member countries and 11 out of 21 Asian ASEM member countries had national and/or sub-national policies on single-use plastics to help regulate nationally produced plastic waste.⁴ While efforts of the European member countries were coordinated by relevant directives of the European Union (EU), in their Asian counterparts, various policy gaps and/or inconsistencies could be observed among the approved national policies.⁵

To address the single-use plastic challenge at a systemic level, countries need to introduce policies and legislations that support companies, social organisations, research institutions and citizens to develop and implement solutions to move away from a throw-away society and to adopt circular economy approaches. Applying the concept of circular economy to single-use plastics requires innovation and redesign of products to reduce, or altogether eliminate, their consumption in different applications. Where single-use plastic is still being used, it should be designed to be reusable, recyclable or compostable, and free of hazardous chemicals. Its consumption needs to be decoupled from the use of non-renewable resources. The health, safety, and rights of all people involved in its lifecycle need to be protected.

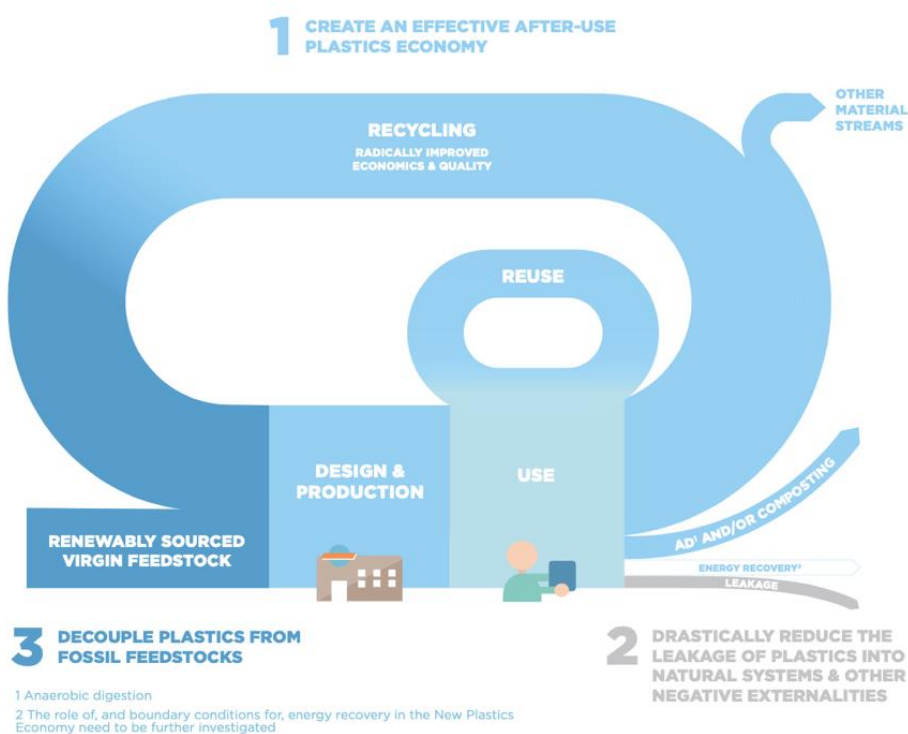


Figure 2: Circular economy approach to single-use plastic waste management
Source: Ellen MacArthur Foundation, 2016 (adapted from Project Mainstream analysis)

³ UN Comtrade, 2020. <https://comtrade.un.org/data>

⁴ The number is expected to increase due to the 2015 and 2019 EU directives on single-use plastics. EU Member states must ensure that no more than 90 lightweight bags are consumed per person per year by the end of 2019. By the end of 2025, the number should be reduced to no more than 40 bags per person per year.

⁵ UNEP, 2019. <https://www.unenvironment.org/resources/report/role-packaging-regulations-and-standards-driving-circular-economy>

2. The landscape of single-use plastic waste reduction initiatives across ASEM

To understand what type of approaches exist to address the single-use plastic problem, our research decided to study relevant projects and initiatives across ASEM member countries. During the course of a detailed desk review, we identified over 100 relevant Asian and European initiatives, which aim at tackling the single-use plastic waste problem with different innovative solutions. We sought to study projects, which were bottom-up initiatives, self-sustainable and has been operational for at least one year before the start of the research in 2019. We also intended to identify at least one relevant projects or initiatives from all ASEM member countries.

Our analysis found that:

- the majority of the identified were most likely to work on improving 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 trainings (often as a complementing activity);
- over two-thirds of the initiatives were managed by businesses (recycling companies, plastic industry companies, retailers or distributors, as well as social enterprises or technology companies), and the remaining one-third of the initiatives were led by not-for-profit organisations (NGOs, BINGOs and research institutions);
- more than half of the identified initiatives were developed by organisations employing less than 50 people, while only 20% of them were managed by mid-size organisations and 15% by large organisations, employing more than 500 people;
- the projects were most likely to be operated at the (multi-)city or at the national level, while international scope could only be identified in 15% of all studied cases.

Our study also showed that, as a common characteristic, most projects delivered some type of product, process or service innovations in order to help to address the problem of single-use plastic waste. These innovations were, in some cases, entirely new to the world. In other instances, they were new to the country where the studied initiative operated or 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 innovations were delivered management, economic or cultural innovations tackle single-use plastics waste. See Figure 3 with the distribution of different type of innovations across Asian and European ASEM member countries.

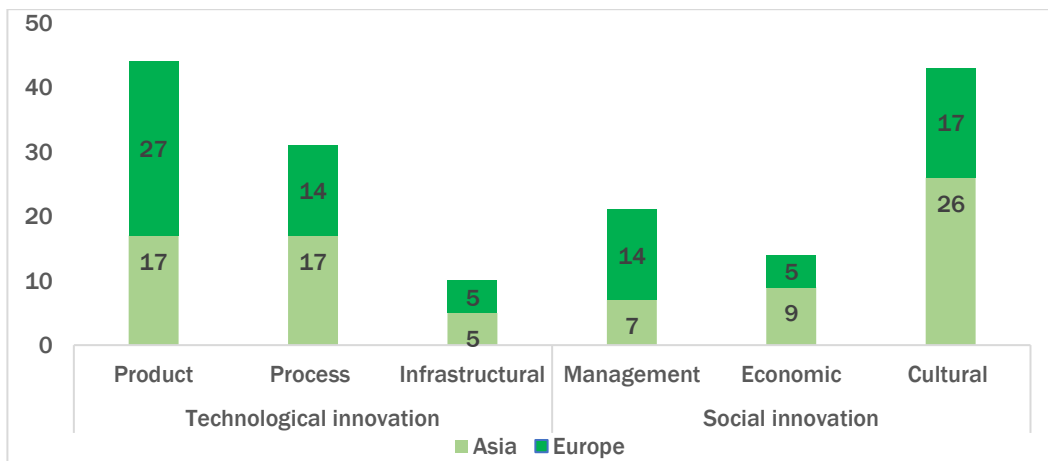


Figure 3: Number of innovations according to innovation types across the studied initiatives in ASEM

3. Drivers and barriers of upscaling existing single-use plastic waste reduction initiatives

In order to explore potential drivers and barriers for implementing projects that focus on single-use plastics in the ASEM region, we surveyed over 30 projects from 25 European and Asian member countries. The majority of the respondents considered their projects successful or rather successful and indicated that their project idea has high transferability potentials, especially to other cities in their country of operations but likely to other countries and other sectors as well.

Following the categorisation of a recent OECD working paper on policy approaches to incentives sustainable plastic design⁶, the surveyed projects attributed significant importance to receive funding for project implementation (until scalability and thus profitability is reached), building technical and management capacities, accessing to state-of-the-art technologies and securing commitment from the government and the management of the organisation. The majority of the respondents also attributed importance to the introduction of regulatory instruments and the creation of market mechanisms.

Table 1: Examples of implementation drivers of the reviewed single-use plastic waste management initiatives

Funding	San-Orgiu LCC is a plastic recycling factory in Mongolia. The company has been operational since 2004 and has introduced innovative technologies to recycling plastic materials. It also produces street furniture. The company was supported by the Mongolian government and by other donor-funded projects, such as the Environmental Reform Project (NEMO II), a small grant program of the World Bank.
Capacity-building	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 water and drinks at Sunway University. The campaign is ongoing, with more dispensers being set up and plastic straws being taken off food counters. Awareness-raising and educational events organised by NGOs and international organisations both supported the university to implement the program.
Technology development	Tomra, a Norwegian multinational company, aims is to educate all actors along with the plastic production and consumption chain about the technical and commercial feasibility of waste collection and recycling. To achieve its mission, the company offers advanced collection and sorting systems developed based on in-house innovations. As such, research and innovation activities within the implementation organisations were considered as an important implementation driver for the company's success.
Commitment	The Erdal cleaning products brand of the Germany-based 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. Concerning implementation drivers, the company suggested that their main driver is the strong commitment by the single owner of the family business who backs the initiative financially.
Regulations	Sulapac is a Finnish start-up, which designs circularity with materials that mimic nature with first applications in the fields of packaging and straws. Their main raw materials are wood chips and plant-based binders. When the materials reach their end of life, they are compostable according to international standards. Regulations developed by the European Union and national legislation are both considered important drivers influencing the implementation activities of the company.

Concerning barriers to upscale existing projects, the survey respondents indicated somewhat more frequently the lack of or limited availability of regulation/standards; public and private funding to support; collection and recycling infrastructure, as well as the lack of or limited awareness, interest or commitment from consumers and limited or lacking coordination along the plastic production chain (e.g. resulting in difficulties to collect sufficient amounts of plastic waste for recycling).

⁶ [www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP\(201: 9\)8&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP(201: 9)8&docLanguage=En)

The COVID-19 crises also affected the plastic waste sector and those projects and initiatives that work on tackling single-use plastic waste pollution in various ways. Some organisations made changes to their operation processes or changed production patterns, while others increased their social media presence or their social contributions in order to support their consumers. Our study found that most plastic waste management and collection companies continued to operate without any interruption while following the required health measures, although in some cases, they had to temporarily suspend their activities due to the pandemic situation. Manufacturers also responded to the Covid-19 crises by shifting production and starting to produce protective equipment and sanitisers for medical use. Education and awareness-raising initiatives moved many of their activities online by giving advice on how to maintain a sustainable lifestyle during the quarantine, sharing concerns about the post-Covid era and arranging online sessions on healthy, eco-lifestyle related topics.

Conclusions and future research needs

Our research showcased that there is a potential to create synergies among various initiatives if single-use plastic waste reduction activities are coordinated across the plastic production and consumption chains. The policymakers could consider moving towards streamlining the circular economy approach. Although regulatory instruments and market mechanisms were not considered by the surveyed projects as the most important drivers for launching new projects, they were indicated as potentially major barriers for upscaling existing initiatives. In connection to this, examined what type of activities governments in ASEM member countries are undertaking to drive and stimulate innovations in the plastics sectors, which sectors they are or should be prioritising and which aspects of their activities could be improved further. Policies can also be further analysed in regards to green procurement and the coordination mechanisms to encourage plastic producers and retailers to coordinate greening supply chains. The importance of bottom-up innovations especially looking into holistic project life cycle design and promoting enabling mechanisms to scale up such initiatives, should be acknowledged.



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Partner Organisations



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