

# Towards a Zero-Waste Europe: Innovative Strategies and Best Practices for Managing Plastic Waste

The European Union (EU) has developed a strategy for plastics in a circular economy[1][3][4]. The strategy aims to transition to a new plastics economy where the design and production of plastics and plastic products fully respect reuse, repair, and recycling needs. The EU's goal is that by 2030, all plastic packaging placed on the EU market is either reusable or can be recycled in a cost-effective manner[2]. The strategy also aims to develop more sustainable materials[1][4].

According to information from the European Commission, about 29.1 million tonnes of plastic waste accrue in Europe annually, with less than 30% of this waste being collected for recycling[4]. Plastic waste from various sources leaks into the environment, generating significant economic and environmental damage. It is estimated that plastic accounts for over 80% of marine litter worldwide, with 150,000 to 500,000 tonnes of plastic waste entering the oceans every year in the EU alone[4].

The EU's strategy presents key commitments for action at the EU level. However, mobilization from the private sector, national and regional authorities, cities and citizens will also be necessary. International engagement will also be necessary to drive change outside Europe's borders[3].

The EU Plastics Strategy is a set of regulations adopted by the European Union in 2018 to reduce the environmental impact of plastic products. The strategy includes several key measures, including:

- A target of 55% of plastic packaging being recycled by 2030.
- A ban on certain single-use plastic products, such as cutlery, plates, and straws, starting in 2021.
- A reduction in the overall consumption of single-use plastics, such as through extended producer responsibility schemes and measures to support the use of alternatives to single-use plastics.
- A requirement for 90% of plastic bottles to be collected for recycling by 2025 and for 20% of plastic used in bottles to be from recycled plastic.
- Companies must cover the costs of waste management and clean-up of litter from plastic products.
- A requirement for member states to monitor the presence of microplastics in products and to take measures to reduce their release.

The EU Plastics Strategy is intended to help reduce the amount of plastic waste in the environment, promote sustainable alternatives, and increase recycling rates. The EU also aims to promote innovation in the plastics sector and to create a circular economy for plastic products.

The EU has also introduced several economic incentives to encourage the recycling of plastic waste. This includes establishing a "plastics tax" on non-recycled plastics, as well as funding for research and development of new recycling technologies.

These include:

## *A "plastics tax" on non-recycled plastics:*

Several countries are implementing or considering a "plastics tax" on non-recycled plastics. In the UK, the Plastics Tax penalizes the use of plastic packaging with less than 30% recycled content [1]. Italy plans to implement a similar tax where single-use plastic packaging items or non-recyclable plastics packaging are taxed at a rate of €0.45/kg and paid by manufacturers, sellers, purchasers, or importers[3]. The implementation of this tax is currently delayed until 2023[1]. Belgium is considering integrating the plastic levy into existing EPR fees[1]. In the US, one of the Senate's proposals to pay for the Build Back Better Act is a federal excise tax on virgin

plastics, which are plastics that are not reprocessed or recovered. The tax would be \$0.20 per pound of virgin plastics used to make single-use plastic products<sup>[2]</sup>. However, this proposal has been criticized for being regressive and having a narrow tax base<sup>[2]</sup>. The EU has also introduced a "plastic tax" as part of its Green Deal to reduce consumption of raw materials and waste and promote a circular economy. The tax is an own resource to the 2021-2027 EU budget and applies to non-reusable plastic packaging produced or imported into the EU. The tax rate is EUR 0.45 per kilogram<sup>[4]</sup>. Plastics taxes aim to incentivize companies to use more recycled content in their products and reduce waste. However, there are concerns about how these taxes will be implemented and enforced, as well as their potential impact on businesses and consumers<sup>[5]</sup>.

### *Funding for research and development:*

The European Union (EU) has waste policies and laws that aim to contribute to the circular economy by extracting high-quality resources from waste as much as possible<sup>[1]</sup>. The European Green Deal aims to promote growth by transitioning to a modern, resource-efficient, and competitive economy<sup>[1]</sup>. EU funds have provided grants to support environmental investments in low-income regions, including those for waste management strategies<sup>[2]</sup>. For example, EU funds supported separate collection of municipal solid waste (MSW) in Estonia<sup>[2]</sup>. The 7th Environment Action Program (EAP) saw the emergence of the circular economy concept and its implementation in EU policymaking<sup>[3]</sup>. The 7th EAP was coupled with the 1st Circular Economy Action Plan (CEAP) introduced in 2015 and aimed at accelerating the transition towards a circular economy<sup>[3]</sup>. Waste treatments that add value to the production system may contribute to achieving a more circular economy<sup>[4]</sup>. In terms of funding for research and development on waste management strategies in the EU, there is no specific information available. However, it is noted that several OECD countries have used external public financing for waste investments, and EU funds have provided grants to support environmental investments in low-income regions<sup>[2]</sup>. It is possible that research and development on waste management strategies could be funded through these channels.

### *Incentives for producers:*

The European Union (EU) has implemented Extended Producer Responsibility Schemes (EPR) to finance proper waste management<sup>[1]</sup>. EPR is recognized worldwide as an efficient waste management policy that helps improve recycling and reduce landfilling of products and materials<sup>[3][5]</sup>. EPR schemes do not provide sufficient incentives for moving towards reuse, but there are third parties with potential interests to access the PRO-controlled waste streams, such as reuse and refurbishing companies, municipalities, social enterprises, non-profits, repairers, and reuse organizations<sup>[4]</sup>. Fee modulation is another economic incentive that can provide producers with stronger design incentives in collective EPR schemes<sup>[2]</sup>. Modulated fees change the fees paid by producers based on product design. This approach can encourage producers to design products that are easier to recycle or repair<sup>[2]</sup>. The EU's Circular Economy Action Plan aims to make sustainable products the norm in the EU market. The plan includes measures such as eco-design requirements for products, a common charger for electronic devices, and a right to repair rules for electronics and appliances. These measures aim to reduce waste generation and increase recycling rates while creating new jobs and boosting economic growth<sup>[1]</sup>.

### *Eco-design regulations:*

The European Union's Ecodesign for Sustainable Products Regulation (ESPR) is a proposed framework that would impose eco-design requirements on products intended for sale on EU markets<sup>[1][3]</sup>. The ESPR would extend the scope of the existing Ecodesign Directive 2009/125, which focuses on energy-related products, to a broader range of goods<sup>[3][4]</sup>. The ESPR aims to make all products placed on the EU market more durable, reusable, repairable, recyclable, and energy-efficient<sup>[2][4]</sup>. It also seeks to reduce municipal waste in Europe by 2030 and halve it by 2050<sup>[4]</sup>. The ESPR will require companies placing products on the market in the EU to meet certain

ecodesign requirements. These include making products more durable, reliable, reusability, upgradability, reparability and recyclable<sup>[1]</sup>, as well as improving their energy efficiency<sup>[2][3]</sup>. SMEs may be given some leeway with regards to these requirements and an exemption may be granted for health reasons<sup>[5]</sup>. If adopted by the European Commission, the ESPR will form the bedrock of the SPI (European Sustainability Initiative)<sup>[3]</sup>.

## *Campaigns*

The EU has also established a number of international agreements and partnerships with countries outside of the EU to address plastic pollution and improve waste management globally. In addition to regulations and economic incentives, the EU has also launched a number of educational and awareness-raising campaigns to encourage citizens to reduce their use of single-use plastics and properly recycle plastic waste. Some examples of these campaigns include:

### **The "Clean Seas" campaign:** <sup>[1] [2] [3] [4] [5]</sup>

launched by the European Commission in 2017, aims to raise awareness about the impact of marine litter, particularly plastic pollution, and to encourage citizens, businesses, and governments to take action to reduce it. The campaign focuses on raising awareness about the problem and promoting sustainable alternatives to single-use plastics.

The "Clean Seas" campaign is part of the EU's wider efforts to combat marine litter, which include regulations and economic incentives aimed at reducing the use of single-use plastics and promoting recycling, as well as research and development to improve our understanding of the problem and to develop new technologies and solutions to combat marine litter.

### **The "Plastics, the Facts" campaign:** <sup>[1] [2] [3] [4] [5]</sup>

Launched by the European Commission in 2018, aims to provide citizens with accurate and reliable information about the environmental impact of plastic products, as well as information about recycling and sustainable alternatives. The campaign's main goal is to provide citizens with the information they need to make informed choices about the plastic products they use and to encourage them to reduce their use of single-use plastics.

The "Plastics, the Facts" campaign is intended to be an important source of information for citizens to learn about the environmental impact of plastic products and to encourage citizens to reduce their use of single-use plastics and recycle plastic waste. By providing accurate and reliable information, the campaign aims to empower citizens to make informed choices about the plastic products they use and to contribute to the EU's efforts to create a circular economy for plastic products.

### **The "Plastics in a Circular Economy" campaign:** <sup>[1] [2] [3] [4] [5]</sup>

Launched by the European Commission in 2019, aims to raise awareness about the importance of a circular economy for plastic products and to encourage the use of more sustainable alternatives. The campaign's main goal is to promote a circular economy for plastic products and to encourage citizens, businesses, and governments to take actions that support it.

The "Plastics in a Circular Economy" campaign is part of the EU's wider efforts to promote a circular economy for plastic products, which include regulations and economic incentives aimed

at reducing the use of single-use plastics and promoting recycling, as well as research and development to improve our understanding of the problem and to develop new technologies and solutions to support a circular economy for plastic products. The campaign aims to raise awareness about the importance of a circular economy for plastic products and to encourage citizens, businesses and governments to take actions that support it.

### The "Say No to Single-Use Plastics" campaign <sup>[1] [2] [3] [4] [5]</sup>:

launched by the European Commission in 2020, focuses on encouraging citizens to reduce their use of single-use plastics and to properly recycle plastic waste. The campaign's main goal is to reduce the amount of single-use plastics in circulation and to promote sustainable alternatives such as ... that can reduce the amount of plastic waste in the environment.

The "Say No to Single-Use Plastics" campaign is part of the EU's wider efforts to reduce the amount of single-use plastics in circulation and to promote sustainable alternatives. The campaign aims to raise awareness about the environmental impact of single-use plastics and to encourage citizens to take actions that can help to reduce the amount of plastic waste in the environment, such as by reducing their use of single-use plastics and properly recycling plastic waste.

These campaigns are designed to raise awareness about the environmental impact of plastic products and encourage citizens to take action to reduce the amount of plastic waste in the environment and to promote a circular economy for plastic products.

### *National Strategy Plans*

In order to achieve the targets set out in the EU Plastics Strategy, EU member states are required to develop and implement their own National Strategy Plans (NSPs). These plans are intended to provide a detailed roadmap for how each member state will meet the EU's recycling and reduction targets and implement the measures outlined in the EU Plastics Strategy.

#### **Some of the key elements that are included in the NSPs are:**

- Setting targets for recycling and reduction of plastic waste.
- Identifying specific actions to be taken to achieve those targets.
- Identifying policies, measures and actions that will be implemented in order to achieve the EU targets.
- Identifying responsibilities and stakeholders that will be involved in the implementation of the plan.
- Identifying monitoring and reporting mechanisms to track progress and evaluate the effectiveness of the plan.

The NSPs have to be approved by the European Commission and will be reviewed regularly to ensure that member states are on track to achieve the EU targets. The NSPs are intended to provide a flexible and adaptable framework that can be updated as needed in response to changing circumstances and new information.

The NSPs play a crucial role in the implementation of the EU Plastics Strategy and are key to achieving the EU's recycling and reduction targets and creating a circular economy for plastic products. The EU commission closely monitors the progress of each member state and will provide support and guidance to help them achieve their targets.

## 1. Case studies & Examples

Since June 2021, all disposable PET bottles produced by Schwarz Produktion for Lidl and Kaufland products in Germany are made of 100% recycled plastic, excluding the cap and label. Schwarz Produktion achieved this step in PET recycling by investing in the recycling loop and developing some of its own solutions.

The topic "plastic waste management strategies in EU" is related to the broader topic of environmental sustainability, as plastic waste has become a significant environmental concern in recent years. The European Union (EU) has implemented various policies and strategies to address this issue and reduce the environmental impact of plastic waste.

The management of plastic waste in the EU is also related to the topics of circular economy, waste management, pollution prevention, and sustainable development. The EU has set ambitious targets for plastic waste reduction, recycling, and recovery, and has implemented a range of measures, including waste prevention, reuse, and recycling initiatives, to achieve these targets. Therefore, it is a relevant and important topic for discussions on environmental sustainability and waste management.