DEBUNKING PLASTIC MYTHS

MYTH #7

PLASTIC WASTE IS NOT AN ISSUE IN TEXTILES

Though largely invisible, plastic waste from textiles has become a significant part of the overall plastic waste problem. We may commonly associate textiles with natural fibres such as cotton, wool, down, and silk, but synthetic and plastic-based materials such as polyester and nylon account for 62 per cent of global fibre production (Textile Exchange, 2019). Most of the vast volume of textiles that are thrown away each year are not recycled, but end up being incinerated or put in open dumps or landfills. Textile recycling is labour intensive and time consuming which makes it unprofitable.

Polyester is highly resistant to environmental conditions, making it ideal for use in outdoor clothing, and blending polyester with cotton or other fabrics results in clothing that wrinkles and fades less, and is more durable and stain-resistant because it absorbs less water. These qualities together deliver lower production costs and affordable prices for consumers (Koszewska, 2018).

Low production costs, however, are often related to low pay rates and poor working conditions (ETC/WMGE, 2019). In recent years, companies have also increasingly cut production costs by deploying fragmented, low-tech production systems and using cheaper, low-quality materials (Remy et al., 2016).

The environmental costs

Globally, the production of textiles more than doubled between 1998 and 2018 – from 48 million tonnes to 107 million tonnes, and is expected to reach 145 million tonnes by 2030 (Textile Exchange, 2019), while annual plastic production is estimated at 348 million tonnes (Geyer, 2020). Fast fashion – inexpensive and trendy derivatives of the latest clothes on the fashion catwalks – is driving demand in wealthy countries, as is a growing middle class in developing countries. This has led to increased consumption accompanied by a decrease in the lifespan of clothes (Remy et al., 2016). In Europe, clothing items across various categories are being

kept by consumers for half as long as they used to be 15 years ago (ETC/WMGE, 2019). Consequently, the environmental costs of the industry are mounting.

The production of polyester requires 70 million barrels of oil per year, and the textile industry – including cotton farming – needs about 93 billion cubic metres of water annually (Girn, Livingstone & Calliafas, 2019). Within the EU, the greenhouse gas emissions from the production and handling of clothing, footwear, and household textiles came to an estimated at 654 kg of CO2 equivalent per person in 2017, making textiles the fifth highest greenhouse gas emitting sector (ibid.). Should the industry continue on its current growth pathway, it could use more than 26 per cent of the global carbon budget associated with limiting global warming to 2°C (Ellen MacArthur Foundation, 2017).

Dyes with considerable colouring capacity are widely employed in the textile industry, where up to 200,000 tonnes of dyes are discharged every year during the dyeing and finishing operations (Ogugbue et al., 2011). Unfortunately, most of these dyes escape conventional wastewater treatment processes and persist in the environment. The wastewater from textile plants is classified as the most polluting of all the industrial sectors, considering the volume generated as well as the effluent composition (ibid). The colour associated with textile dyes not only causes aesthetic damage to the water bodies, but also prevents the penetration of light through water (Hassan & Carr, 2018), and leads to a reduction in the rate of photosynthesis and dissolved oxygen levels affecting the entire aquatic biota (ibid).

The wearing and washing of clothes made with synthetic fibres release into the environment microplastics that make their way even to sparsely populated areas. A recent study found widespread distribution of polyester fibre microplastics in the European and North American Arctic – including the North Pole (Ross et al., 2021). Up to 4,000 microplastic fibres per gram can be released during an average 6 kg, 30–40°C laundry wash of polyester, acrylic, and polyester-cotton items (Napper & Thompson, 2016), while more recent research shows that an equal or higher amount of synthetic fibres can be released just by wearing synthetic clothing (De Falco et al., 2020).

Recycling challenges

Current recycling rates for clothing are low. Most of the vast volume of textiles ends up being incinerated or put in open dumps or landfills. In the US, for example, landfills received 11.3 million tonnes of textiles in 2018 (EPA, 2018).

The estimated amount of material recycled into new clothing is less than 1 per cent of the material used in clothing production, while about 12 per cent is recycled into lower-value applications such as insulation material, wiping cloths, and mattress stuffing (Ellen MacArthur Foundation, 2017).

The labour-intensive and time-consuming textile recycling process is not particularly profitable. Blended fabric, where two or more fabrics are joined in a single garment, makes the process even more difficult as the different fabrics need to be separated either mechanically or chemically. Hazardous chemicals such as additives and dyes that cannot be removed in the mechanical recycling process end up in the recycled output (Duhoux et al., 2021). In addition, information about the chemical content in products tends go no further than the end textile recyclers (ibid). Most clothes are simply not designed to be recycled at this point (; Duhoux et el., 2021).

Polyethylene terephthalate (PET) is one of the most widely available plastics, and is commonly used for plastic bottles and food packaging among other uses. The use of recycled PET (rPET) in clothing reduces the amount of virgin material needed from the oil industry. It has a smaller carbon footprint than new polyester, provides a productive use for all the plastic bottles and fishing nets that might otherwise be polluting beaches and seas. On the other hand, the use of rPET in clothing redirects high quality PET from the food industry where it can potentially remain in a circular recycling loop, while recycling PET into clothes brings the plastic close to the end of its useful life.

What can we do?

Despite the complexity of the issues, possible actions to reduce the environmental impacts of the textile industry – and the associated plastic waste – do exist. The reduction of textile waste is imperative, and both industry and consumers have roles to play. Other recommended actions focus on transforming the industry from a linear, cradle-to-grave approach into a smarter, more circular system.

1. Promote a repair and reuse culture

Many solutions available to us today are not dependent on new technologies. Behavioural change, tax incentives, and changing business models can promote a repair and reuse culture that increases the length of time that clothes are used before being thrown away. Brands can steer their marketing to make higher quality, more durable clothing, designing for longevity. Governments can use tax incentives to make reuse and

repair more attractive and competitive, thus ensuring that less waste – including plastic – is produced.

2. Design for recycling

Currently, the way clothes are made is disconnected from the recycling requirements at the end of clothing life. "Designing for recycling" and "eco-design" encompass a set of principles that optimize the functional needs and recyclability of clothing through such approaches as reducing the complexity of materials used in a garment or considering small design changes to facilitate the removal of tags, labels, logos, buttons, and zippers while maintaining the integrity of the remaining fabric.

3. Value natural materials appropriately

Natural fibres such as wool and cotton should be preserved as natural materials. As polymer fibres are dominant in the fashion industry, natural materials such as wool are becoming less and less popular. In some parts of the world, wool becomes waste because of high processing costs (Rubino el al., 2021). Governments should strictly forbid the incineration and landfilling of wool in favour of prioritizing the valorization of conventionally discarded wool. A study in Sweden reveals that the valorization of waste wool could halve the environmental cost compared to imported wool (Martin & Herlaar, 2021).

4. Implement Extended Producer Responsibility schemes for textiles

The vast majority of textiles are incinerated or discarded with other household waste in landfills and waste dumps. Extended Producer Responsibility (EPR) is a market-based mechanism intended to hold manufacturers responsible for the post-consumer treatment or disposal of their products and could provide for separate collection, recovery, and final disposal of textile waste. France has initiated EPR for textiles at the national level, while the Netherlands, Ireland, and Sweden are investigating these possibilities (Gerbendahl & Johansson, 2021). EPR takes time and resources to put in place, but manufacturer responsibility generates benefits and provides incentives for increased garment to garment recycling (ibid.).

5. Advance recycling technologies for textiles

With plastics accounting for 62 per cent of global fibre production, the recycling of textiles is important in the recycling of plastics. The current low textile recycling rate reflects failures of existing practices along the whole textile value chain. Investments are needed to create and stabilize textile recycling markets along with efforts to develop and scale up textile recycling and sorting technologies.

6. Prevent microfibre releases and use more environmentally friendly alternatives where possible

Understanding of how plastic-based fibres shed microplastics is still developing and needs further research. In the meantime, wastewater treatment plants need innovation and investments to ensure that more microplastic fibres are caught before they enter aquatic environments (Ellen MacArthur Foundation, 2017). Residential filters can also play a role: microplastic filters in home laundries have prevented up to 78 per cent of microplastic shedding into wastewater (Napper et al., 2020).

Ultimately, the easiest solution to preventing plastic pollution is to prevent the use of plastics in the first place. Alternatives that have similar properties to plastic-based fabrics need to be prioritized where possible. In evaluating the alternatives, life cycle assessments can determine the relative environmental costs and benefits of different materials.

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