The moment you consider polyester just a fabric, it escapes attention as a pollutant. The fact is that polyester is a form of plastic and the second biggest by-product of petrochemicals. Yet only a few countries have regulations to manage the plastic fibre. Time India framed laws to regulate the textile industry and brought it under the extended producer responsibility regime.

ZUMBISH, MINAKSHI SOLANKI and SIDDHARTH GHANSHYAM SINGH report from Panipat and Delhi.
At Panipat, the largest textiles recycling hubs in Asia, units downcycle used clothes to make carpets and other home furnishings.
BElIEVE IT or not, most of our clothes today have plastic in them. From the warm, shiny fleece jackets we wear to brave the winter chill to body-hugging workout clothing to stretchy and comfortable lowers, all the apparel is either completely made out of plastic fibres such as polyester, nylon and acrylic, or from the blending of natural fibres such as cotton and wool with the synthetic material.

About 60 per cent of material made into clothing is plastic, which includes polyester, acrylic and nylon textiles, says the UN Environment Programme (UNEP). The global production of polyester, the most commonly used plastic fibre, has increased by nearly 900 per cent between 1980 and 2014, as per November 2022 report released by US-based non-profit Fibershed. There is a reason the textile industry is so fond of polyester. Despite being tough and durable, it creates new possibilities of fashion. Clothes made out of polyester hold their shape well, are lighter, wrinkle-free and resistant to shrinking and colour fading. But perhaps the most important reason for its popularity is that garments made from synthetic fibres are substantially cheaper than natural fabrics.

Plastic fibres have high carbon footprint as they are mostly derived from fossil fuels. The apparels industry is responsible for 10 per cent of the global carbon dioxide output—more than international flights and shipping combined, says UNEP. At its current pace, the industry’s carbon emissions will increase by over 50 per cent by 2030. It is also responsible for one-fifth of the 300 million tonnes of plastic produced globally each year, as per the World Bank. Today, synthetic fibre accounts for 69 per cent of all fibre production in the world.

They require high amounts of energy to be produced, and, though theoretically recyclable, the used products almost always end up in landfills or get burned for energy. “As an oil-based plastic, polyester does not biodegrade like natural fibres. Rather it stays in landfill for several decades at least—and potentially for hundreds of years,” according to Common Objective, a global network of fashion brands.

Still, governments are actively aiding in the proliferation of synthetic fabrics. India, for example, is banking heavily on polyester to double its textiles export in the next six years, from US $40 billion in 2020-21 to $100 billion, as announced by Piyush Goyal, Union Minister of Textiles, Consumer Affairs, Food & Public Distribution and Commerce & Industry, at an industry event in Delhi on October 27, 2022. So far, the textiles industry in India is mainly driven by natural fibres. They accounted for 70 per cent of the textile exported in April-December 2021. But this story is set to change soon. The country’s reliance on polyester is likely to cause major challenges as it is yet to devise legal frameworks or guidelines to handle the waste.

PROFIT ALL THE WAY

Polyester is not a new fabric. Discovered in the late 1930s, the fabric’s market rapidly expanded in the 1970s in the developed
world (see ‘Plastic in fashion’). Almost half a century later, the polyester problem continues to only worsen. One of the main reasons for this is that the global discussion has majorly focused on textile waste management and not on production. This narrative has put the spotlight on consumers and their consumption pattern, while absolving the real culprits: the petrochemical companies and brand owners.

The International Energy Agency (IEA) estimates that plastics will be the largest driver of demand for oil in the next two decades. Textiles are the second-largest product group made from petrochemical plastics after packaging, making up 15 per cent of all petrochemical products, suggests “The Future of Petrochemicals” report released by IEA in 2018. Experts say that high-end brands, not consumers, are responsible for the “make-take-dispose” business model. “The fast fashion business model, which inherently relies on driving increased consumption of new products, is responsible for creating an intensely competitive, highly extractive, and deeply inequitable system to which the industry has become complicit,” writes Brittany Sierra of Dubai-based non-profit Sustainable Fashion Forum, in a recent article “Should Fast Fashion Brands Be A Part of the Sustainability Conversation?”

The problem does not end here. As consumers become aware of the environmental cost of the textile industry, brand owners greenwash by providing misleading and false information on the environmental footprint of products. In September 2022, the Netherlands Authority for Consumer & Markets directed apparel brands H&M and Decathlon to remove sustainability labels from their products and websites as they were making misleading claims. In its investigation, the Dutch regulator found that H&M was making sustainability claims such as “conscious” and “conscious choice”, without explaining what they meant, or providing a description of the sustainability benefits of the products.

Trunk explains that brands today claim sustainability just because polyester can be recycled. But there is a huge difference between recyclability and what eventually gets recycled. “Most brands claim that their synthetic products are recyclable despite having neither a take-back scheme nor fibre-to-fibre recycling technology in place to guarantee this,” she says.

HIDDEN COST

The textiles industry has always had a high environmental cost. Growing natural fabrics drains a lot of natural resources. As per the UN, cotton farming uses only 3 per cent of the arable land worldwide, but consumes “24 per cent of insecticides and 11 per cent
of pesticides”. The industry also relies heavily on chemicals for dyeing and other processes. The infiltration of polyester has only added to the problem. While synthetic fibres have less impact on water and land than cotton, they emit more greenhouse gases per kg. “Polyester production for textiles released about 706 billion kg of greenhouse gases in 2015, the equivalent of 185 coal-fired power plants’ annual emissions,” as per a 2017 article by non-profit World Resources Institute.

Synthetic textiles also shed tiny pieces of plastic with every wash and wear. These microplastics pollute the oceans, freshwater and land and pose a danger to the animals that consume them, inhibiting their growth and reproduction. Recent research suggests that it can also adversely affect human health, though conclusive links have yet to be established. Albert Koelmans, an environmental scientist at Wageningen University in the Netherlands, in a report released on March 2, 2021, claims that people might be ingesting microplastics around the mass of a credit card every year.

Synthetic textiles account for 12 per cent of the microplastics in the oceans as per “Primary Microplastics in the Oceans” released by the International Union for Conservation of Nature in 2017. “Clothing and textiles (made out of plastic) can break down with use, which may shed microplastics and antimony (a toxic element used in polyester production) in our homes, build up in dust, and may enter our bodies when we breathe, eat, and touch things around us,” says a report by non-profit Defend Our Health. Dharmesh Shah, senior advisor at LIFE, a public interest environmental law group, says companies currently do not disclose the chemicals they use to make polyester or other plastics, but many of the chemicals are bad for human health. “Due to lack of information, polyester should not be mistaken as safe,” he says.

Problems also exist in the way textile waste is handled. An investigation by Greenpeace, UK, has found that garment waste from clothes made for Nike, Ralph Lauren and other brands is burnt in brick kilns in Cambodia. As the majority of these garments are likely to be made from polyester, the burning exposes bonded workers to toxic fumes and microplastic fibres. Similarly, big brands are known to be indulging in dumping, an illegal practice of selling unused clothes in developing countries at a lower-than-original price. This destroys the local market in developing countries.

LOSING ADVANTAGE

Unlike the West, the concept of reusing and recycling textiles is culturally ingrained in India. Most households either repurpose their old clothes or give them away for reuse. There are also communities that take old clothes in lieu of utensils and then sell the clothes in the secondhand market.

The country also has a strong informal sector that collects textiles and other waste after it is dumped by households. This par-
tially explains why the share of textile waste in Indian landfills is substantially lower than the rest of the world. While there is no data, a rough estimate suggests textiles account for 5-6 per cent of the entire waste from cities, says Swati Sambyal, a waste management expert at UN-Habitat. “India’s post-consumer textile waste footprint is relatively low compared to high-consumption economies like the US. However, just like with plastics, we need to evaluate the environmental footprint of clothes and fast fashion from a lifecycle perspective, which includes manufacturing as well,” says Shah.

India’s Reliance Industries is one of the world’s largest producers of virgin polyester, and the country is also a major recycling hub. The major polyester recycling centres exist in Panipat in Haryana, Ludhiana and Samana in Punjab, Ahmedabad, Surat, Rajkot and Gandhinagar in Gujarat.

*Down To Earth* visited the Panipat second-hand market, situated some 90 km from Delhi, to understand how the industry operates. Traders say that over 70 big and small recycling units exist in the industrial cluster, and they receive second-hand clothes primarily from Morocco, Dubai, Canada and the EU. “Except for Surat, where polyester clothes are recycled to make new clothes, all the other hubs in India downcycle to make home furnishing products, particularly carpets,” says Paras Ali, managing director of Global Textile Overseas, a Union Ministry of Textiles-certified recycling unit at Panipat. “Almost 80 per cent of the downcycled products are exported, while the remaining 10 per cent are used to meet domestic demand,” says Ali.

After import, the garments are first sorted, then shredded and pulped to make a range of products from doormats to blankets and bed linen. “The end product is a mix of recycled and virgin polyester. For example, most carpets in Panipat have 60 per cent recycled polyester and 40 per cent virgin polyester can be derived from discarded virgin polyester products and PET bottles. As most garments are made of blended fabric, they are eventually downcycled into home furnishing products. Lack of proper collection mechanism means major portion of polyester waste ends up in landfills or is burnt as fuel.

**PROBLEMATIC FROM START**

Fashion industry relies heavily on fossil fuels for raw materials and is responsible for 10 per cent of the global carbon dioxide emissions—more than what is emitted by international flights and shipping combined.

**Virgin polyester**

- Reliance Industries is the world’s largest producer of virgin polyester, which is more energy intensive than natural fibres

**Recycled Polyester**

- It can be derived from discarded virgin polyester products and PET bottles

**Apparel brands, manufacturers**

- Manufacturers are flooding the market with cheap polyester clothes, and this is pushing consumption at an alarming rate
- People buy 60% more clothes today than what they were buying 15 years ago and wear the clothes for half as long before discarding them

**Recycle, downcycle**

- As most garments are made of blended fabric, they are eventually downcycled into home furnishing products

**Landfill, incineration**

- Lack of proper collection mechanism means major portion of polyester waste ends up in landfills or is burnt as fuel

Source: Compiled by Centre for Science and Environment

Recycling unit owners say that the home furnishings that are produced at Panipat cannot be recycled again, and are sent to landfills or burned at the end of their life.

**TIME TO CHANGE**

Industry experts agree that polyester is here to stay as natural fabrics cannot meet the ever-rising demand for textiles. They, however, warn that the current model is not sustainable. India needs to recognise polyester textile waste as plastic. This is crucial as the country currently has strong legislation to handle plastic waste but nothing on textile waste, which is broadly covered under the Municipal Solid Waste Rules, 2016.

At present, the informal sector operates in two ways: door-to-door collection of municipal solid waste and collection of textile waste from open dumps and landfills or dumpsites “Some discarded textiles are used by the poor people for sanitation purposes. Textile waste from households is also sold to automobile repair shops,” says Shashi Bhushan, secretary, All India Kabadi Mazdoor Mahasangh.

Experts say the first step is to make the fashion industry accountable. “They are not thinking about sustainably designing their products because they are not accountable,” says Shah. As a result, most clothes are made of blended fabric, which makes them extremely difficult to recycle. A 100 per cent polyester shirt can be recycled into a new shirt and this can be done several times before being downcycled. In the case of it being blended, it can only be downcycled into carpets, and this process can be done only once, after which it has to be sent to a landfill, says Ali. There is also little transparency. “We do not know the chemicals they use for the production and dyeing of plastic fibres and there is no tractability about how they source polyester,” Shah says.

One of the ways to address the problem is by introducing extended producers’ responsibility (EPR) for polyester to put the onus on the brand owners responsible to make the sector circular. In India, EPRs exist for plastics, tyre, battery and e-waste sectors, where industry players have specific targets to collect and recycle waste. In European countries, EPRs also include a component of product design, under which manufacturers are encouraged to develop products that are easily recyclable.

Besides cleaner production, it will also improve the collection rate of textile waste before it reaches the landfill.

It will also benefit the informal sector, which is already playing an essential role in collecting, segregating and giving the fabric...
back to the brand/manufacturer through a channel. Textile waste is usually sold in Delhi and neighbouring places at ₹2-3 per kg in comparison to other high value items that are sold at a much higher price, for instance, PET bottles are sold for ₹20 a kg, aluminium foil is sold for ₹20-25 a kg, aluminium containers for about ₹30 a kg, milk pouches for ₹5 a kg.

France introduced EPR for textile and footwear industry in 2008 and the transition has improved the collection rate. Manufacturers in the European country need to register and fund Re_fashion, an organisation set up by the government. The organisation then uses the funds to “manage the waste for articles placed on the market for consumers”. In 2020, the scheme’s 4,096 members paid $36 million as EPR, of which $17 million went to sorting operators, $4 million to community projects and almost $1 million to innovative projects. Of the 517,000 tonnes of products that hit the French market in 2020, some 204,000 tonnes were collected—a collection rate of 39 per cent. This is up from 27 per cent in 2013.

Even the EU, in its Waste Framework Directive, has asked its member-states to set up separate collections for used textiles and garments by January 1, 2025, to ensure the waste can no longer be sent to landfills or incinerated. EPR will most likely be the financial instrument that ensures it happens.

There is another worrying trend emerging in Indian cities, which is moving towards mechanised sorting and treatment of waste through formal industries and, in the process, reducing the role of the informal sector. Researchers from the Delhi-based non-profit Centre for Science and Environment recently visited Indore, the cleanest Indian city as per the Centre’s Swachh Survekshan campaign, and found the city was diverting all of its textile waste to cement kilns. “ Burning waste in cement kilns is like moving the landfill from the ground to the sky,” says Monica Wilson, associate director of international non-profit Global Alliance for Incinerator Alternatives.

Overall, the textile industry needs to transition to a circular economy, suggests the Centre for Science and Environment recent report, “Circular Textile and Apparel in India: Policy Intervention Priorities and Ideas”, released by Delhi-based non-profit Centre for Responsible Business in April 2022. For this, the government must release clear guidelines for production and waste management. The guidelines should also ask manufacturers to include the cost of collection at the end of life in the final price. The government should also make resource audits mandatory for the industry.

Finally, there is a need to work with alternate materials such as hemp and banana fibre that are less water and energy intensive, can be easily recycled, and are more durable. Such alternatives exist in the market, but their uptake is limited as little research and development have been carried out on their feasibility.

**Fuelling war**

Reliance and Hengli, the largest polyester producers, are sourcing cheap Russian fuel during the ongoing war

**AT LEAST 39 global apparel brands, including Nike, Wrangler and Levi’s, are indirectly sourcing oil from Russia via two of the largest polyester manufacturers in the world—India’s Reliance Industry and China’s Hengli Group. Russia has become the largest oil supplier to Reliance Industries and its polyester manufacturing, suggests a report by Netherlands-based non-profit Changing Markets, released on November 4, 2022. The investigative report, “Dressed to Kill: Fashion brands’ hidden links to Russian oil in a time of war”, found that Hengli Group was also purchasing Russian oil to make its polyester-based products.

Polyester yarns and fabrics by both companies are then sold to garment manufacturers around the world, who in turn produce clothes for many of the world’s largest brands. Even though over 25 of the 39 brands (including Adidas and Esprit) have suspended or withdrawn their operations in Russia after its full-scale invasion of Ukraine in February 2022, through their reliance on synthetics they continue to indirectly fund the war, alleges the report.

“During Russia’s full-scale invasion of Ukraine, Reliance has increased the amount of oil it buys from Russia 12-fold: from €67.4 million (US $72 million) per month before the invasion of Ukraine to €829.4 million ($882 million) per month by July 2022, making Russia its biggest oil supplier,” states the report. The investigation goes on to show that the company is taking advantage of discounted prices of Russian oil, undermining efforts by the West to cut funding to Russia’s war on Ukraine. By May 2022, China’s imports of Russian oil had soared by 55 per cent compared with a year earlier, with Hengli purchasing discounted crude oil from the country.