



Risk unwrapped: plastic pollution as a material business risk



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Introduction

In 2014, UNEP published a report explaining why companies with a large plastic footprint are exposed to material business risks.

The report made a series of best practice recommendations for companies to manage and disclose their use of plastic. However, few businesses have put in practice UNEP's recommendations.

This briefing explains that companies – particularly those that are intensive plastic users or producers – are under a legal obligation to manage and disclose material business risks posed by plastic pollution.

We start by explaining the known effects of plastic pollution on wildlife and ecosystems, on human health, and plastic pollution's economic impact. This section is important to understand:

- why legislation regulating plastic production and use is becoming more strict;
- why we are seeing the emergence of disruptive innovative materials that aim to replace traditional plastics;
- why the perception of plastic among the general public is souring; and
- the business implications for intensive plastic users or producers.

We then identify a taxonomy of risk (adapting the taxonomy established by the Bank of England to describe the business risks derived from climate change) to explain how companies may be exposed to transition risks and reputational risks. We also explain how companies in specific economic sectors may be exposed to physical risks and we outline the possibility that companies - and directors of companies – could face liability risks in the future.

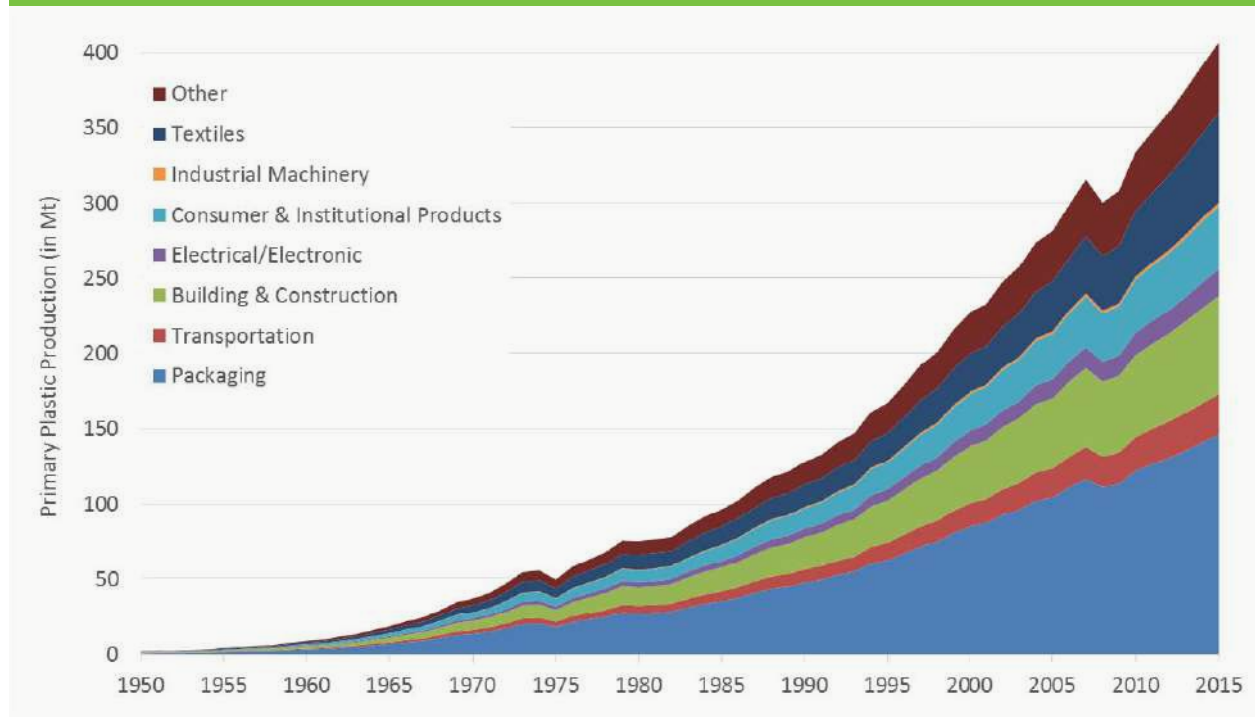
Lastly, we explain the main legal duties directors have in relation to these risks. Although the briefing focuses on directors' duties under UK law, these duties are similarly formulated in most jurisdictions. Generally speaking, the duties comprise a duty to act in the best interest of the company, a duty to act with due care, skill and attention together with various duties of disclosure.



1 Effects of plastic pollution

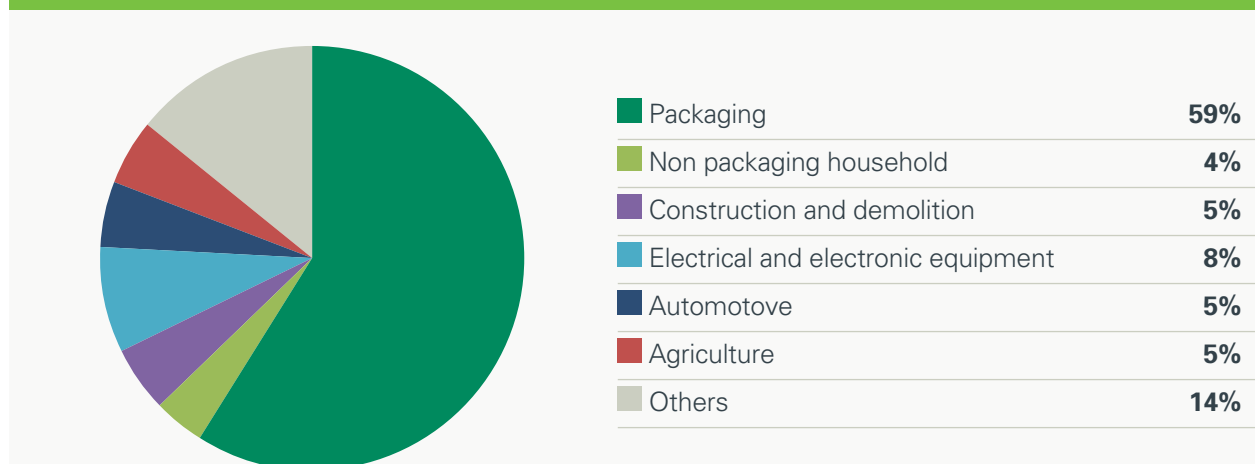
Plastics are an integral part of modern life. Their functionality, paired with their low cost, have caused a twentyfold increase in plastics production since 1964¹, with consumption rising in tandem.

Figure 1. Global primary plastics production (in million metric tons) according to industrial use sector from 1950 to 2015



Source: Geyer R, Jambeck JR, Law KL. Production, use, and fate of all plastics ever made. *Sci Adv.* 2017;3(7):e1700782.

Figure 2. Plastic waste generation in the European Union (EU-28) in 2015, by type



Source: European Commission. Plastic waste generation in the European Union (EU-28) in 2015, by type

"Approximately 50% of plastics are used for single-use disposable applications, such as packaging, agricultural films and disposable consumer items".² In Europe, 59% of plastic waste generation comes from packaging.³

1.1 Plastic as a threat to human health and the marine environment

Not all plastic waste is properly collected and even when it is, it can escape collection and processing systems and pollute marine environments. If present trends continue, the amount of plastic making its way into the oceans is forecast to double between 2010 and 2025, rising from approximately 8 million metric tons in 2010 to 9 million in 2015 to 16 million in 2025.⁴



Table 1. Plastic production and waste globally between 1950 and 2017

Global data on plastic production and waste 1950-2017

Key information of plastic production and waste globally between 1950 and 2017

Total plastic production (in million metric tons)	8300
Plastics that outlived usefulness and became waste (in million metric tons)	6400
Percent of plastics sitting in landfills/natural environment	79
Percent of plastics incinerated	12
Percent of plastics recycled	9

Source: The Atlantic. Key information of plastic production and waste globally between 1950 and 2017.
<https://www-statista-com.gate3.library.lse.ac.uk/statistics/728466/plastic-production-and-waste-worldwide-2017/>



The World Economic Forum included plastic pollution as an area of particular concern in its Global Risks Report 2018, highlighting the “huge volume of plastic waste in the world’s water”, the ubiquity of microplastics, and the possibility that they are finding their way to the human body bringing toxic chemicals with them.⁵

Plastic debris is a threat to marine wildlife, as sea creatures can become entangled in it, or ingest it,⁶ causing damage such as internal abrasion⁷ and clogging of the digestive tract.⁸ Plastic debris more than doubles the opportunities for marine organisms to travel outside their natural range, which leads to invasive species arriving in new ecosystems where they may cause damage.⁹

Furthermore, over time, larger plastic items break down into tiny particles known as microplastics. These are so persistent that they may never be completely eliminated from the environment.¹⁰ Other important sources of microplastics are tyre dust, textile microfibers, and pre-production plastic in the form of small pellets that find their way to the ocean from land-based sources.

Microplastics are vehicles for toxic chemicals: substances already present in the environment attach to their surfaces, while others are substances routinely added to plastic polymers to improve their performance, such as fillers, plasticisers, stabilisers, flame retardants and colourings.¹¹ Many of these additives have harmful effects on wildlife and human health. For example, bisphenol A (BPA) and polybrominated diphenyl ethers (PBDEs), commonly found in plastic waste, are linked to endocrine disruption in both wildlife and humans.¹²

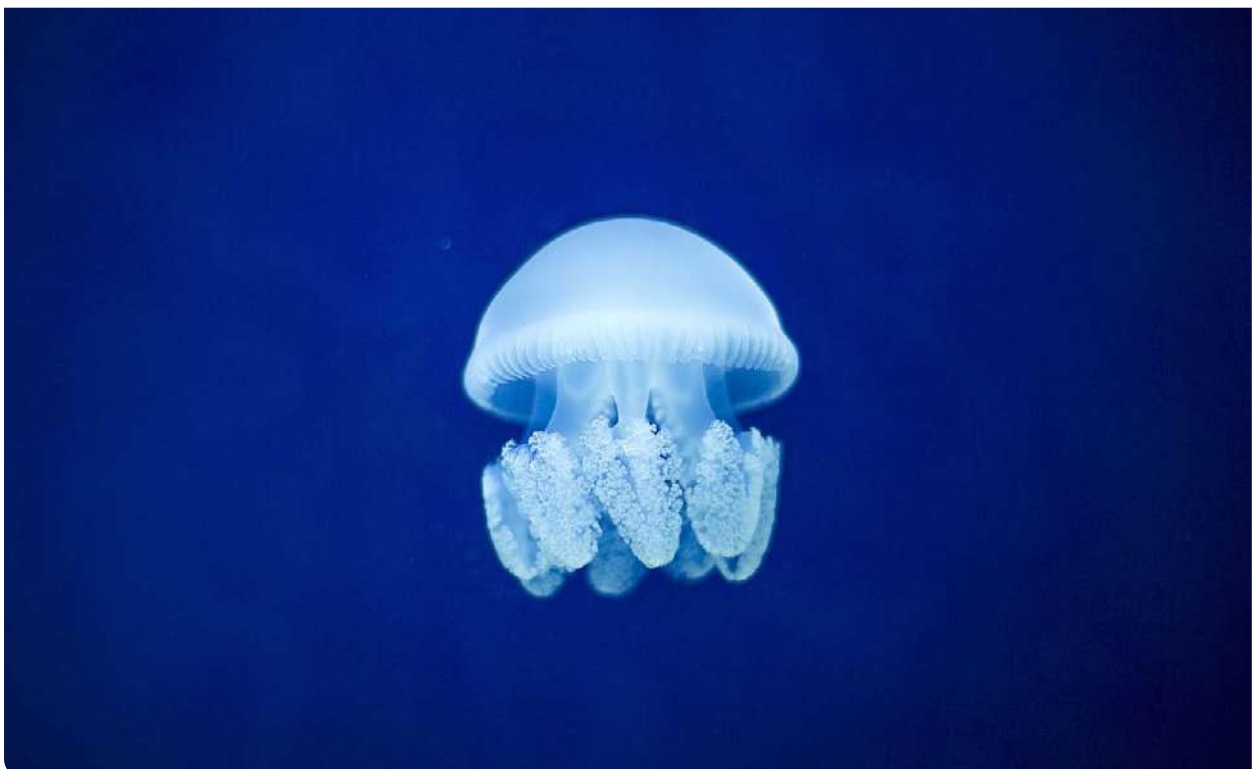
Microplastics are routinely ingested by marine organisms, which reduces their feeding rates and depletes their energy stores, having knock-on effects on their fecundity and growth¹³.

Besides that, when ingested by marine organisms, microplastics are integrated into the food chain¹⁴, where they bioaccumulate¹⁵ into higher concentrations the more they ascend the food chain.

In recent years, researchers have found microplastics in tap water¹⁶, bottled water¹⁷, seafood, table salt¹⁸, and even the air we breathe.¹⁹

The risks that microplastics pose to human health are not completely understood, but the latest scientific research indicates that likely effects may include inflammation of the lungs, reproductive consequences, carcinogenicity and gene mutation.²⁰

Aquatic environments polluted with microplastics facilitate the spread of antibiotic-resistant bacterial genes, which “can have profound consequences for the evolution of aquatic bacteria and poses a neglected hazard for human health”.²¹

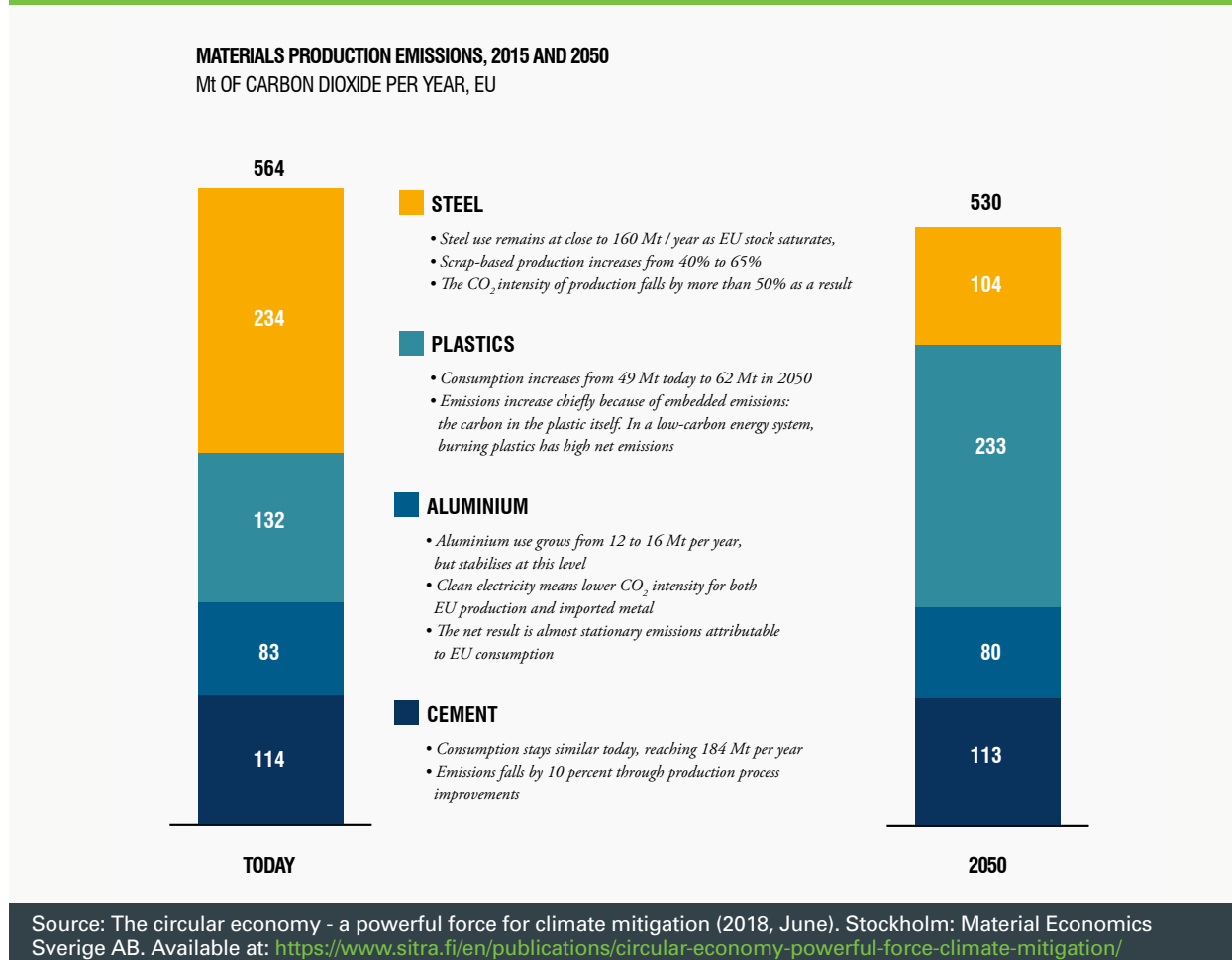


1.2 Plastic as a contributor to climate change

Plastic pollution also has a non-negligible effect on climate change. Plastics are derived from fossil fuels and manufactured through energy-intensive processes, which release greenhouse gases into the environment. On average, each tonne of plastics produced results in 2.5 tonnes of CO₂ emissions from the production process alone.²²

Plastic production currently accounts for between 4% and 8% of global oil consumption. If current trends in production and consumption continue, the plastics sector “will account for 20% of total oil consumption and 15% of the global annual carbon budget by 2050 (this is the budget that must be adhered to in order to achieve the internationally accepted goal to remain below a 2°C increase in global warming)”.²³ Large amounts of carbon emissions will be released in the processes of production, recycling and incineration of the plastic created from this oil extraction.

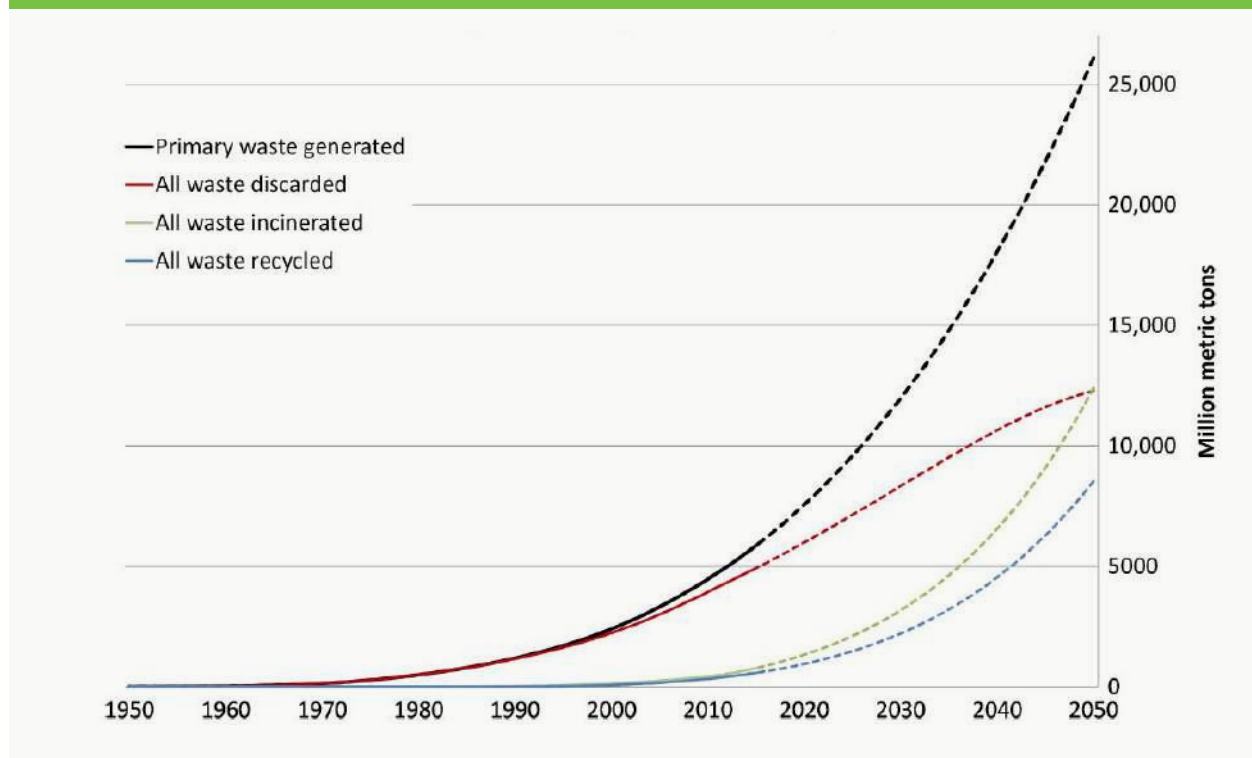
Figure 3. EU current and projected CO₂ emissions from the production of plastics, steel, aluminium and cement.





Plastic recycling also consumes large amounts of energy and when incinerated, the carbon that was stored in the plastic is released as emissions. Dependency on incineration as the waste-management treatment for plastics is rapidly increasing, releasing more and more carbon into the atmosphere. The UK Department for Environment, Food and Rural Affairs (Defra) has found that the maximum potential efficiency of recovery of energy from waste is limited to approximately 33% (without the use of technologies like combined heat and power – CHP), but that to emit less CO₂ than Combined Cycle Gas Turbines (CCGT) generating the same energy would require a conversion efficiency of 83%.²⁴ This comparison shows that, even when energy is recovered in the process, the net effect of incineration of plastic waste is to contribute to climate change.

Figure 4. Cumulative plastic waste generation and disposal (in million metric tons). Solid lines show historical data from 1950 to 2015; dashed lines show projections



Source: Geyer R, Jambeck JR, Law KL. Production, use, and fate of all plastics ever made. *Sci Adv.* 2017;3(7):e1700782

It is also possible that plastic pollution is contributing to climate change by slowing down the sinking rates of phytoplankton faecal matter. This is integral to the “biological pump”, which helps store carbon in the deep layers of the ocean²⁵. Changes in the efficiency of the “biological pump” are believed to account for up to a third of the reduction in atmospheric CO₂ concentrations that occurred during past ice ages.^{26, 27}

Further scientific research may uncover unknown biological effects of plastic pollution.

1.3 The costs to society of plastic pollution

The economic impact of plastic pollution has not been fully measured yet, but we do have evidence regarding some of its effects. We know that plastic pollution has adverse impacts on biodiversity and ecosystem services – such as food provision, air quality, climate regulation and water purification²⁸ – as well as on the health and quality of life of the people exposed to it. Single-use packaging alone “has been estimated to create \$40 billion in externalities (i.e. economic costs which are not borne by those responsible), which likely exceeds the total profits of the packaging industry”.²⁹

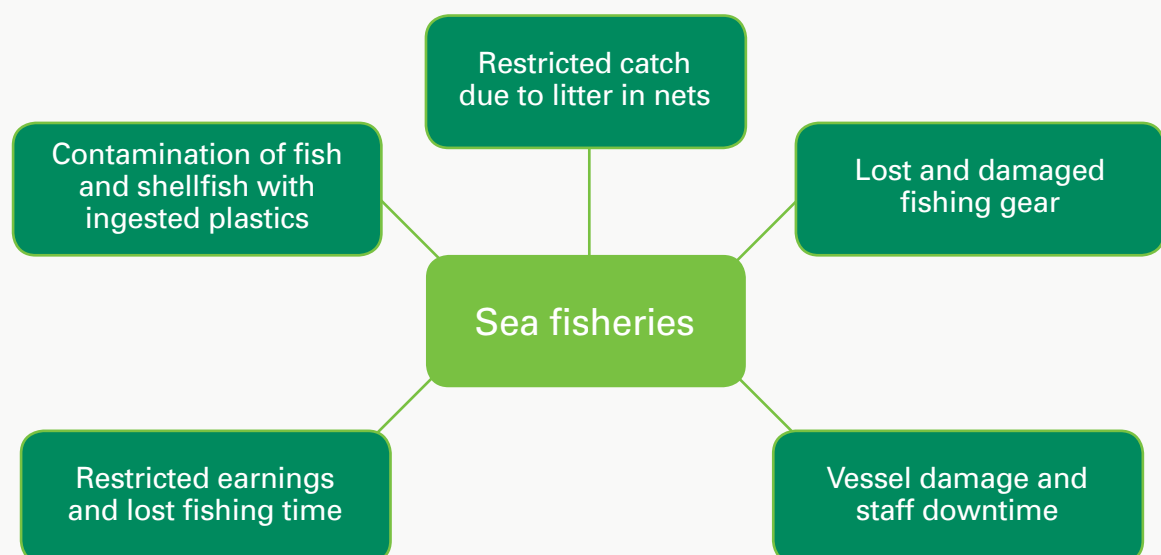
Other, more conspicuous economic effects of plastic pollution include the costs of clean up, and loss of income from tourism.^{30,31} For example, the global opportunity cost of volunteers cleaning up beaches was calculated to be US\$74 billion for 2012.³²

In December 2017, Bali had to declare a “garbage emergency” and temporarily close some of the country’s most popular tourist beaches after 50 tons of rubbish – most of it plastic – had washed up each day for five days.³³

Fisheries face economic impacts from plastic pollution, including damage to vessels and to fishing gear due to marine litter, loss of earnings due to reduced catches caused by ghost fishing (fishing gear abandoned at sea that continues to fish and trap animals),³⁴ contaminated catches, and the time lost by diversions taken to avoid marine litter encounters.³⁵ Additionally, consumer demand for seafood may be discouraged as it becomes public knowledge that it can contain microplastics.³⁶



Figure 5. Potential impacts of marine litter on fisheries³⁷



Source: UK Government Office for Science (2017) Future of the sea: plastic pollution, Available at: <https://www.gov.uk/government/publications/future-of-the-sea-plastic-pollution> (Accessed: 29th May, 2018)



According to McIlgorm et al. (2011), "For the 21 economies of the Asia-Pacific rim we estimate that marine debris-related damage to marine industries costs US\$1.26bn per annum in 2008 terms".³⁸

Scotland estimated, for the cases where there is sufficient data, that the economic impact of marine litter adds up to more than £16 million per annum. This estimate, however, does not include such important impacts as that on tourism or ecosystem services. Scientific literature has found that plastic pollution has had a significant impact for other economic sectors including agriculture, aquaculture, commercial shipping, recreational boating, coastal municipalities, and the emergency rescue services.³⁹

Table 2. Impact of marine litter on maritime sectors in Scotland

Total Economic value	Economic value of Litter	Turnover	Scale	Source
Direct use of the ecosystem				
Consumptive uses				
Fisheries	£10,280,000 p.a.	£443 million (2008)	Scotland	Mout et al 2010; Scottish Sea Fisheries Statistics 2009
Aquaculture	£133,562 p.a.	£367 million (2008)	Scotland	Mout et al 2010
Oil and Gas	No data	£28.6 billion (2008)	UK	Pugh 2008
Agriculture	£841 / croft / pa	£2.28 billion (2008)	Shetland	Mout et al 2010, Scottish Economic Statistics 2008
Recreational angling	No data	£69.67 million (2009)	Scotland	Scottish Government 2009
Non consumptive				
Ports and harbours	£1,385,386 p.a.	£8.1 billion (2008)	UK/Scotland	Mout et al 2010, Ports.org.uk, Pugh (2008)
Marinas	Emerging data	£113 million (2007)	UK	BMF (2007)
Tourism (Scottish total)	No data	£5.8 billion (2008)	Scotland	Deloitte 2008
Marine and coastal wildlife Tourism	No data	£92 million (2010)	Scotland	Scottish Government 2010
Recreational sailing	No data	£101 million (2010)	Scotland	Scottish Enterprise 2010
Local authorities	£3,004,895		Scotland	Hall (2000) & Moat et al (2010)
Renewables	No data	£32 million (2007)	UK	Pugh (2008)
Emergency services	£1,882,540 p.a		UK	Moat et al (2010)
Indirect use				
Volunteering	£112,906		Scotland	Mout et al 2010
Visual amenity	No data			
Ecosystem services	No data			

Source: Scotland.gov.uk. 2014. Marine Litter Issues, Impacts and Actions. [online] Available at: <http://www.scotland.gov.uk/Publications/2012/09/6461/4>

2 Plastic pollution is a material business risk

Scientific literature has been documenting how plastic waste pollutes the oceans since as far back as the 1970s.⁴⁰ Lately, society at large has become more aware of the impact of plastic pollution, and some companies are beginning to address it as a moral imperative; nevertheless, many do not yet realise the implications for their long-term business viability and risk management, over and above reputational concerns.

Nowadays a fundamental change in perspective seems to be underway. In 2014 UNEP published the report *Valuing Plastics: The Business Case for Measuring, Managing and Disclosing Plastic Use in the Consumer Goods Industry*, where it explained the business risks that plastic pollution poses to plastic-intensive companies: “Companies in plastic intensive sectors theoretically have the most value-at-risk, and greatest opportunities ahead of them. Yet all companies are in a position to mitigate risks and seize opportunities in relation to proactive plastic management. Indeed, PDP [UNEP’s Plastic Disclosure Programme] recommends that all organisations measure and manage their ‘plastic footprint’.”⁴¹

Which companies have a high exposure to the risk?

The most pressing and immediate business risks derived from plastic pollution are transition risks from regulatory change, technological disruption and reputational risks.

As will be explained in the following sections, many businesses will be affected by new and rapidly changing laws regulating aspects of plastic production, distribution, use, consumption and disposal. These regulatory changes will reduce the demand and increase the costs of many plastic materials and products, thereby changing the economic case for their use.





Rising awareness from the general public, with subsequent changes in customer demand, which can diminish the market for plastic packaging and products, dampen the interest of investors and devalue brands highly associated with plastic pollution. Therefore, both plastic producers and companies that use big quantities of plastic in their supply chains have a high exposure to the business risks derived from plastic pollution.

However, the companies that produce and use plastic are not the only ones exposed to business risks; the UNEP report reminds us that investors in these companies “are also exposed through the shares they own in these companies as well as the project finance they provide”.⁴²

Types of business risks derived from plastic pollution

Following the taxonomy of financial risks defined by the Bank of England as associated with climate change⁴³, we have identified that the main categories of business risk derived from plastic pollution are transition risks and reputational risks. Some specific businesses are also exposed to physical risks and in the future companies may also be exposed to liability risks.

2.1 Transition risks: risks arising from the transition from a linear economy to a more circular economy, including an increased regulatory burden and disruptive technological change.

Regulatory changes

Currently the price of plastics is artificially low, as the spillover costs of plastic production and use are assumed by society and nature, not by the producers. But growing public awareness of the noxious effects of plastic pollution is pressuring governments not only to take measures to prevent plastic pollution, but also to redistribute the costs of environmental damage to those who cause it, rather than being borne by society as a whole, in line with the “polluter pays” principle. New policies and laws have already started to bring taxes related to plastic pollution, expensive producer responsibility schemes, bans on certain plastic products, polymers and applications, changes in the production methods for certain polymers, new design requirements for products, etc.





“Firms that are hit by new, unanticipated laws are exposed to potentially huge competitive disadvantages”.⁴⁴ Adapting to the new requirements will pose a great challenge and require substantial changes and investments by affected companies with a large plastic footprint.

The level of challenge increases when the regulatory changes happen over a short period. In the case of plastics, regulators are working at an unusually accelerated rate.

The extent and pace of regulatory changes and their impact on business models have not gone unnoticed by the market. The stock of European packaging producer RPC has lost more than one-fifth of its value so far in 2018, attributed by analysts partly to fears over potential regulation against plastic.⁴⁵

As examples, both the EU and the UK are moving quickly to put measures in place to tackle plastic pollution. In January 2018 they issued, respectively, the EU Plastics Strategy and the UK 25-Year Environment Plan.

In 2018 alone, the EU Commission has proposed a plastic tax in its Multiannual Financial Framework for 2021-2027 and proposed a Directive to regulate certain single-use plastic items “most often found on Europe’s beaches and seas”.⁴⁶ The new law proposes a ban on items such as plastic cotton buds, cutlery, plates, straws and drinks stirrers, and introduces extended producer responsibility schemes covering the costs of waste management and clean-up of litter, as well as the costs of awareness-raising measures to prevent and reduce such litter.

The European strategy for plastics in a circular economy,⁴⁷ published in January 2018, also set the goal that all plastics in Europe should be either reusable or recyclable by 2030. It also announced a revision of the essential requirements for placing packaging on the market, and declared that new product requirements will be set under the Ecodesign Directive, which takes account of circular economy aspects. Additionally, it announced regulatory action to restrict the use of oxo-plastics and intentionally added microplastics. The European Parliament and the Council also recently approved the Commission’s proposed reform of the various Waste Directives that sets higher targets for plastics recycling.

ICIS, the world’s largest petrochemical market information provider, forecast the impact of the new European policies regarding plastics thus: “The Commission’s proposals and a rising groundswell of public opinion has prompted other large food and drinks retailers to revise their plastic packaging strategy [...] as recycling awareness – and action – increases, larger percentages of primary plastics demand will be removed from the market”.⁴⁸





When asked about the new measures taken by the EU, John Abbott, downstream director at Shell, said that single-use plastics would “inevitably” be banned and Stephen Zinger, at consultancy Wood Mackenzie, said that single-use plastics could peak as early as the early 2020s.⁴⁹

The UK government, too, held a consultation on using the tax system or other charges to address single-use plastic waste,⁵⁰ and announced two further consultations in 2018: one on deposit-return schemes for drinks bottles and one on banning certain single-use plastic items such as straws, stirrers and plastic-stemmed cotton buds. And in January 2018 a ban on the manufacture of cosmetics and personal care products containing plastic microbeads came into effect in the UK.⁵¹ The new 25-Year Environment Plan also establishes more ambitious recycling targets. The UK Parliament is evaluating the possibility of imposing a levy on disposable cups and lids, referred to colloquially as the “latte levy”.⁵²

Scotland announced that it will implement a deposit-return scheme for bottles and a ban on plastic-stemmed cotton buds.⁵³

Elsewhere in Europe, regulators at national and local level have also taken action. In 2016, France banned non-compostable disposable plastic plates, cutlery and cups.⁵⁴ The Spanish region of Navarra banned the sale of single-use plastic plates, cups and trays not covered by the Packaging and Packaging Waste Directive, and set reuse targets for containers as high as 80% for beer containers and 70% for soft drink containers distributed via hotels, restaurants and catering services.⁵⁵

Brussels warns business over plastic pollution

- “Our aim is to help you adapt and evolve...if you cling to the past I cannot help you, and then you will suffer” **Frans Timmermans, First Vice-President of the European Commission.**
- “Businesses and governments will be rewarded for moving in the right direction...and those that do not will be penalised” **Peter Thomson, United Nations special envoy for the ocean.**
- “There should be no economic opportunity without responsibility” **Karmenu Vella, EU Environment Commissioner.**

Source: ENDS Europe, 17 May 2018, Brussels warns business over marine plastic litter. Available at: <https://www.endseurope.com/article/52729/brussels-warns-business-over-marine-plastic-litter>

Regulatory changes are not only happening in Europe. The city of Vancouver, Canada banned plastic drinking straws, foam cups and foam take-out containers; required businesses to significantly reduce the amount of disposable cups and plastic/paper shopping bags they distribute; prohibited business licence holders from distributing single-use utensils unless requested by the customer; and announced future action to require businesses to collect single-use items for recycling or composting.⁵⁶

The Indian state of Maharashtra, with a population as large as Japan’s, in March 2018 banned with immediate effect the manufacture, use, sale, transport, handling and storage of most single-use plastic items. Those who violate the ban face fines, and if they reoffend, even prison.⁵⁷ In June 2018, India’s Prime Minister, Narendra Modi, pledged that the whole country would ban all single-use plastic items by 2022.⁵⁸

At the beginning of 2018, China implemented stricter regulations regarding the type of waste imports it accepts, including a ban on mixed plastic waste. Even before the ban came into effect, the Chinese government “cancelled the waste import permits of 960 companies in 2017, and shut down another 8,800 firms accused of violating restrictions on imported scrap paper and plastic”.⁵⁹

New regulatory action does not only affect consumption but also other phases of the life cycle, most importantly waste treatment. Significant changes in this area have occurred recently.



In 2017 China imported 56% of the world's plastic waste, mostly from developed countries.⁶⁰ The US was shipping nearly 4,000 cargo containers of recyclables to China per day before the ban was imposed. Reports noted the "mountains" of waste piling up at facilities across the country.⁶¹ By June 2018 China had imposed new tariffs on imports of low- and medium-density polyethylene and polyvinyl chloride (PVC) from the US.⁶²

After China banned the imports of plastic waste, countries like the US and the UK turned to other Southeast Asian nations as a destination for their waste exports. "U.S. exporters shipped 132.8 million pounds of scrap plastic to Thailand in the first four months of 2018, up from 4.6 million pounds shipped during the same period a year earlier".⁶³

However, the increased influx of plastic waste has led Southeast Asian countries to take restrictive measures such as bans on scrap plastic imports.^{64,65} In May 2018, the Bureau of International Recycling, referring to the changing rules for plastic waste imports in Southeast Asian countries, pointed out that "at times with little or no warning, countries were introducing regulations that massively impacted the recycling industry".⁶⁶

In 2015, Deloitte predicted that building the capacity to achieve the 2020 recycling targets enshrined in EU legislation could result in net costs of approximately 1.1 billion per year by 2020.⁶⁷ Taking into account the new and more demanding targets and the Chinese and other countries' ban on the import of plastic waste, building recycling capacity in Europe can predictably be forecast to become at least as expensive as Deloitte projected. In 2018, FEAD – the European association of waste management and environmental services – estimates that up to 10bn worth of investments will be needed to innovate and expand the separate collection, sorting and recycling capacity at EU level.⁶⁸

The issue has never been more pressing. Will governments foot the bill or will they charge it to the producers that manufacture the disposable plastic that piles up as waste?

As was mentioned before, changes in regulation will have a significant impact on the demand for single-use plastics and can also increase its production and distribution costs. Companies will need to adjust their operations to this new model and the timeframes for doing so are shortening as the momentum for achieving a more circular economy builds. Regulators all over the world are working at an accelerated and cumulative pace. These early bans are only the first steps and many more changes are coming. Companies that are intensive users or producers of plastics will be more exposed to the financial risk of not being able to adjust their business to the rapidly changing laws.

Technological disruption

Technological disruption can also create a transition risk to companies that are intensive plastic users or plastic producers.

Consumers are already engaging with the transition to a more circular economy and demanding alternatives to plastic products and packaging. New technologies are emerging and rapid developments in bio-based and biodegradable materials are increasing their costeffectiveness and the chances that they will substitute a significant portion of the traditional plastics market.

On the other hand, technological advances to labelling systems and ‘the internet of things’ will facilitate the implementation of reuse systems. Entrepreneurs in European cities have successfully implemented innovative multi-business deposit-return schemes. In two years, more than 400 restaurants across Switzerland are already using Recircle’s 70,000 reusable meal boxes for take away food. In Germany, reusable coffee cups schemes like the Freiburg cup, or Recup are rapidly growing their network of participating businesses.

Reusable products with innovative design will reduce the demand for disposable and singleuse plastic products, as has been the case of the reusable menstrual cup replacing a significant and growing market share of single-use sanitary pads and tampons, which have a high plastic content. “The global market for menstrual cups was valued at around USD 995 million in 2016 and is expected to reach USD 1.4 billion by 2023, growing at a CAGR of around 4.6% during the forecast period of 2017 to 2023”.⁶⁹





2.2 Reputational risks: the risk of damaging or losing the organisation's reputational capital.

The perception that a firm is a source of plastic pollution exposes it to a reputational risk that may result in loss of value to the corporate brand, loss of interest by investors, and even increase the danger of losing the company's licence to operate.

Market leaders are particularly exposed to this type of risk, as activists may exploit the company's prominent position⁷⁰ to centre public attention on flagship issues, even if the targeted company is not the worst performer compared with others. The risk of being targeted increases with the multiplier effect that campaigns can have through social media.

"Any cell-phone video can go viral, so any individual can spark an instant movement, as United Airlines learned when footage of a passenger being dragged off a flight captured global attention and tanked United's stock to the tune of \$255 million".⁷¹

UNEP flagged this risk in their 2014 report *Valuing Plastics: The Business Case for Measuring, Managing and Disclosing Plastic Use in the Consumer Goods Industry* by highlighting an example of previous, successful Greenpeace campaigns targeting Nestle and HSBC for their respective sourcing of and investment in palm oil with Sinar Mas.⁷²

"For many companies, their value no longer lies in bricks and mortar. It's not the widgets they produce but the ideas they generate, the brand name they build and the customer loyalty they engender that add to their market cap".⁷³ "As much as three-quarters of a company's value is tied to its reputation".⁷⁴

A bad reputation can thus dampen the interest of investors too. This has been understood since the late 1980s by the Coalition for Environmentally Responsible Economies (CERES), founded as a partnership of institutional investors and US environmental organisations after the Exxon Valdez oil spill, with the purpose of counterpoising the power of outside investors against the power of the boardroom.⁷⁵ Following the example set by CERES, other NGOs such as ShareAction and ClientEarth have worked hard to link investors' decisions to firms' environmental and social responsibility performance.

The power of investor activism has already had a huge effect on investments in oil companies. In January 2018 New York City announced a goal to divest its US\$5 billion holdings in fossil fuel companies, out of its total of US\$189 billion invested in pension funds, within five years. City officials claimed it would be "among the most significant divestment efforts in the world to date".⁷⁶

Another risk to reputation is the danger of a firm losing its licence to operate. According to a study by the Centre for Corporate Social Responsibility at the Copenhagen Business School, the risk of losing a licence to operate follows an "iron law of responsibility, which is that in the long run, those who do not use power in a manner which society considers responsible tend to lose it". The study also lists the many examples of the consequences firms have had to face because of mismanaged stakeholder relations.⁷⁷

In a study of managerial perceptions of the business case for corporate social responsibility, these were some of the reasons interviewees gave for conducting business in a socially responsible manner:⁷⁸

- "The way we behave is critically linked to our licence to operate. If we are seen as a responsible company, [...] we will be able to deliver our projects on time and budget because we won't find ourselves opposed by communities and governments".
- "Today the regulatory controls mean that the track record you have with [social and environmental management] is vital for the way you get permits. If you have a good track record, then you get permits to exploit new areas more easily".
- "Certain investors will not invest in a company if it has a certain [unsustainable] product portfolio".



The environmental concerns of consumers can create shifts in the demand for certain products. The effects on the environment and human health of plastic pollution are so patently undesirable that members from all segments of society, including religious leaders, are raising awareness of the problem and looking for possible solutions.

In October 2017, Pope Francis – the leader of the Catholic Church – wrote a letter to the conference Our Ocean, an Ocean for Life, calling for multilateral governance, new models of production and consumption and the recognition of our duty to care for the oceans. His letter stated: “We cannot pretend to ignore the problems of ocean pollution resulting, for example, from plastic and microplastics that enter the food chain and cause grave consequences for the health of marine and human life”.⁷⁹

The government of Indonesia will join forces with the country’s two largest Islamic organisations, Nahdlatul Ulama and Muhammadiyah – which together have more than 100 million followers – to encourage consumers to reduce plastic waste and reuse their plastic bags, using the organisations’ extensive networks across the world’s largest Muslim-majority nation.⁸⁰

Millennial consumers are demanding curbs on plastic and waste.⁸¹ Spencer Dale, BP’s chief economist and former chief economist at the Bank of England said, “rising environmental concern over pollution from plastic could shave 2m b/d [barrels per day] off oil consumption by 2040 by reducing demand for the petrochemicals used to make plastic bags and packaging”.⁸²

2.3 Physical risks: risks arising from the presence of plastic pollution in the environment. These can impact on infrastructure and workforce productivity, disrupt supply chains, and cause resource scarcity.

This type of business risk affects a specific set of industries for which the direct exposure to plastic pollution has an immediate effect. A prime example is the aforementioned impact of plastic marine litter on the fisheries industry, itself an industry with a heavy plastic footprint. The cost of marine litter to EU fisheries is estimated to be 61.7 million yearly, due to reduction in fish catch, damage to vessels, and reduced seafood demand due to concern about fish quality.⁸³

Other industries that are physically impacted by plastic pollution are the tourism industry – particularly in coastal destinations, where marine litter discourages visitor influx – and the bottled water industry, where the product being sold under premises of purity and safety from contamination is itself polluted with microplastics.





2.4 Liability risks: risks arising whenever parties who have suffered loss or damage from plastic pollution seek to recover from others whom they allege to be responsible. Litigation risk may also arise from the physical and transition risks noted above (for example, if shareholders take action for mismanagement of plastic risk or regulators prosecute for failures to comply with new regulation).

The effects of plastic pollution are well documented, and the number of people and companies who suffer damage is on the rise, due in part to the persistence of plastic in the environment; meaning they do not degrade but accumulate in the environment and living organisms over long periods of time.⁸⁴

Liability risks increase with ongoing changes in the broader socio-economic, legal and political settings, as public awareness, political momentum and regulatory changes all affect the potential number of liability claims; the increase the number of duties that could be breached and thus the routes to liability; and the disposition of judges to find new theories and interpretations of the law that allow for fairer outcomes in contentious cases.

In 2017 the Center for International Environmental Law (CIEL) launched a series of publications to explain the links between the fossil fuel industry and plastic pollution. Their report *Plastic Industry Awareness of the Ocean Plastics Problem*⁸⁵ revealed that as long ago as the 1970s, the major chemical and petrochemical companies and industry groups were aware of how disposable plastic caused ocean pollution and of the difficulty of reusing, recycling or even adequately disposing of the plastic waste created by the items they were producing.

The results of asbestos, tobacco and ongoing climate change litigation should alert intensive plastic users or producers to potential future liability risks of what many or some may still consider a risk-free activity. Plastic producers have a duty of care to respect the health of their employees, particularly those with frequent contact with plasticisers and other additives used in plastic production. Many of those additives, like Bisphenol A (BPA), pose a serious and likely irreversible risk to human health, causing adverse effects on the reproductive function, neurodevelopment and metabolism.⁸⁶

A recent study found that employees “manufacturing BPA or making products with BPA had urinary total BPACR [creatinine-adjusted total BPA] concentrations averaging ~70 times higher than US adults”.⁸⁷

The health implications related to the process of the production of plastic exposes producers to employer’s liability, a material business risk.

Pioneer cases

The first lawsuits for plastic pollution have already been filed. In 2017 a group of Chinese environmentalists sued defendants Beijing Xiaodu Information Technology Co. Ltd., Shanghai Lazars Information Technology Co. Ltd., and Beijing Sankuai Technology Co. Ltd., three companies that provide online takeaway food ordering platforms, for failure to enable their customers to opt out of disposable cutlery. The Court held that the evidence presented by the claimants was preliminary proof that there was a significant risk of harming the public interest.⁸⁸

Even if the first cases have limited success, the exposure of companies to liability for the damages caused by plastic pollution will only increase as plastic debris accumulates and public awareness of the effects of plastic pollution rises. With asbestos and later with tobacco, we have seen how products that were thought to be a safe bet for a business to invest in have become huge exposures to liability. Over time, innovative lawsuits changed the way risk was allocated and companies were made responsible for damages they had believed to be outside their scope of responsibility. The sums in question were astronomical.

Even if the lawsuits filed against a company are not successful, these cases can have a huge impact on the company’s reputation. Though still remote risks at present, diligent companies should prevent their exposure to future liability risks related to plastic pollution.



3 Duties derived from plastic pollution as a material business risk

The plastics industry has known of the negative impacts of plastic pollution on the environment since the 1970s.⁸⁹ For decades, good environmental practices have been linked with good quality management⁹⁰ and business success. Social responsibility is a key factor for the “operation, maintenance and long-term survival” of small and medium-sized companies.⁹¹ Since 2014, UNEP explained that having a large plastic footprint exposed companies to business risks and gave concrete recommendations for managing and disclosing those risks.

UNEP recommendations for managing the business risks of plastic pollution

1. Raise awareness at the Board Level.

2. Measure your plastic footprint.

3. Assess the risks and opportunities.

4. Plan and implement a management strategy.

5. Take action.

a. Prepare your business for future regulation. Recognize, commit publicly and push forward the agenda of extended producer responsibility policies and standards. This could help companies to achieve first mover advantage on future bans, taxes and regulations.

b. Design products with the end in mind. Consider the overall environmental and reputational impacts of products and packaging across the lifecycle and minimise the likelihood that materials will be littered or escape into the environment.

c. Evaluate carefully any alternatives such as bio-based plastics or biodegradable additives. Confirm, or disprove, their environmental and social superiority by conducting lifecycle assessments, natural capital valuation and other analyses.

d. Label plastic clearly for tracking, public information and recovery purposes.

e. Participate in community reuse, recovery and recycling programmes.

6. Publicly disclose.

7. Form collaborative partnerships with stakeholders.

In the years since the publication of the UNEP recommendations, the risks faced by intensive plastic users or producers have only become more evident. Directors that are not managing these risks to the business may be in breach of their duties.

3.1 Directors’ duties under UK law

The power to make decisions on behalf of a company is divided between the company’s shareholders and its directors, with the latter entrusted with the responsibility to make most of those decisions and carry out the day-to-day management of the company.

Directors’ duties are now codified under the Companies Act 2006 and include several duties which are relevant to managing the business risks from plastic as set out below.



It should be noted that directors of pension funds, trusts, banks and insurance companies make long-term investments that assume the companies they put their capital in will be viable in a somewhat remote future. This creates a longer exposure period to business risks for these investments. Therefore, the directors of these types of companies have a duty of care to exercise their functions in such a way that limits the exposure of the assets managed by the company to business risks, like those derived from plastic pollution.

3.1.1 Duty to promote the success of the company

A director is expected to act in ways that he considers in good faith to be more likely to promote the success of the company for the benefit of the shareholders as a whole. When exercising this duty, the director is required to have regard to a non-exhaustive list of factors found in section 172(1) of the Companies Act 2006. These factors include the long-term consequences of the director's decisions; the interests of the employees; the relationships with suppliers, customers and others; the impact of the decisions on the community and the environment; the desirability of the company maintaining a reputation for high standards of business conduct; and the need to act fairly between the members of a company.

This duty requires a director to seek to ensure the company is well placed to take advantage of business opportunities and manage risks. It requires a director to consider the likely transition risks from regulatory change, technological disruption and reputational issues identified in this paper, and factor these considerations into decision making so that a company is able to adapt to these emerging transition risks.

Furthermore, research has shown that good environmental performance provides wealth protection or an insurance-like effect on companies. The results are robust after controlling for several moderating effects, including financial and institutional factors.⁹² Therefore, improving the environmental performance of the company can be a direct contribution to a company's success in the long term.

3.1.2 Duty to exercise reasonable care, skill and diligence

Section 174 of the Companies Act 2006 requires directors to exercise "reasonable care, skill and diligence" when performing their functions. Subsection 174 (2) of the Act describes the standard of care expected from directors. The standard is: "the care, skill and diligence that would be exercised by a reasonably diligent person with

- (a) the general knowledge, skill and experience that may reasonably be expected of a person carrying out the functions carried out by the director in relation to the company, and
- (b) the general knowledge, skill and experience that the director has."

From this, we may infer that the standard of care expected from directors is ever evolving and increasing, and that directors need to keep up with the rising awareness amongst their peers of novel business risks.

Thanks to the UNEP report, since 2014, it has been public knowledge that companies that are intensive users of plastic are exposed to material business risks. Ignorance was no excuse then and even less so now that plastic pollution is such a present matter in the public's mind and that regulatory changes and technological innovations receive almost constant press coverage.

In this context, it is likely that directors who fail to consider the transition risks from regulatory change, technological disruption and reputational issues will be viewed as satisfying the standard of care expected.



3.1.3 Duties of disclosure

In order for investors to have an informed view of the health of the business, various information needs to be disclosed about its business model, strategy, principal risks etc.

Section 414A of the Companies Act 2006 establishes the director's duty to publish a strategic report for each financial year of the company. Section 414C(2) establishes that the strategic report must contain a fair review of the company's business, and a description of the principal risks and uncertainties facing the company. Section 414C(7) requires quoted companies to disclose in their strategic report the main trends and factors likely to affect the future development, performance and position of the company's business, and information about environmental matters, including the impact of the company's business on the environment, and information about any policies of the company in relation to those matters and the effectiveness of those policies. If the report does not contain information on environmental matters, it must state which of those kinds of information it does not contain. In addition the UK has also implemented the EU Non-Financial Reporting Directive which imposes further disclosure duties on relevant organisations.

For intensive plastic users or producers, these disclosure requirements are likely to cover issues relating to plastic pollution derived from the company's business, material financial risks related to plastic which the company is exposed to, and the company's policies to manage those risks.

3.1.4 Liability

Breach of the above mentioned directors' duties and duties of disclosure can result in personal liability for directors.

The duty to promote the success of the company and the duty to exercise reasonable care, skill and attention are enforceable through a shareholder derivative action. Where it is established that a company has suffered loss caused by a directors' breach of these duties, shareholders may use the derivative action process to recover losses on behalf of the company.

In respect of the duty of disclosure, Section 414D of the Companies Act 2006 establishes that if a strategic report is approved which does not comply with the requirements of the Act, every director of the company who knew that it did not comply, or was reckless as to whether it complied, and failed to take reasonable steps to secure compliance with the requirements or to prevent the report from being approved, commits an offence and is liable to a fine.

Insurance of CEOs – will their insurance cover fraught decisions related to plastic pollution?

Insurance companies are taking steps to protect themselves from incipient potential liabilities, like climate change. Coverage of the risks for plastic pollution will become increasingly rarer and more costly as the proliferation of pollution exclusions in insurance policies increases.

Source: John G. Nevius; Kathleen F. Donovan; Rachel Seebacher, "Business Decisions and Pollution Exclusions: A Toxic Mix for Corporate Directors and Officers," *Environmental Claims Law Journal* 24, no. 1 (January-March 2012): 3-15

4 Conclusion

Intensive plastic users and producers should be aware of the material business risks derived from plastic pollution, manage those risks in a diligent way, and disclose them, as required by law. Existing corporate governance, risk management and disclosure practices need to be revisited to ensure they accommodate the issues presented in this briefing.

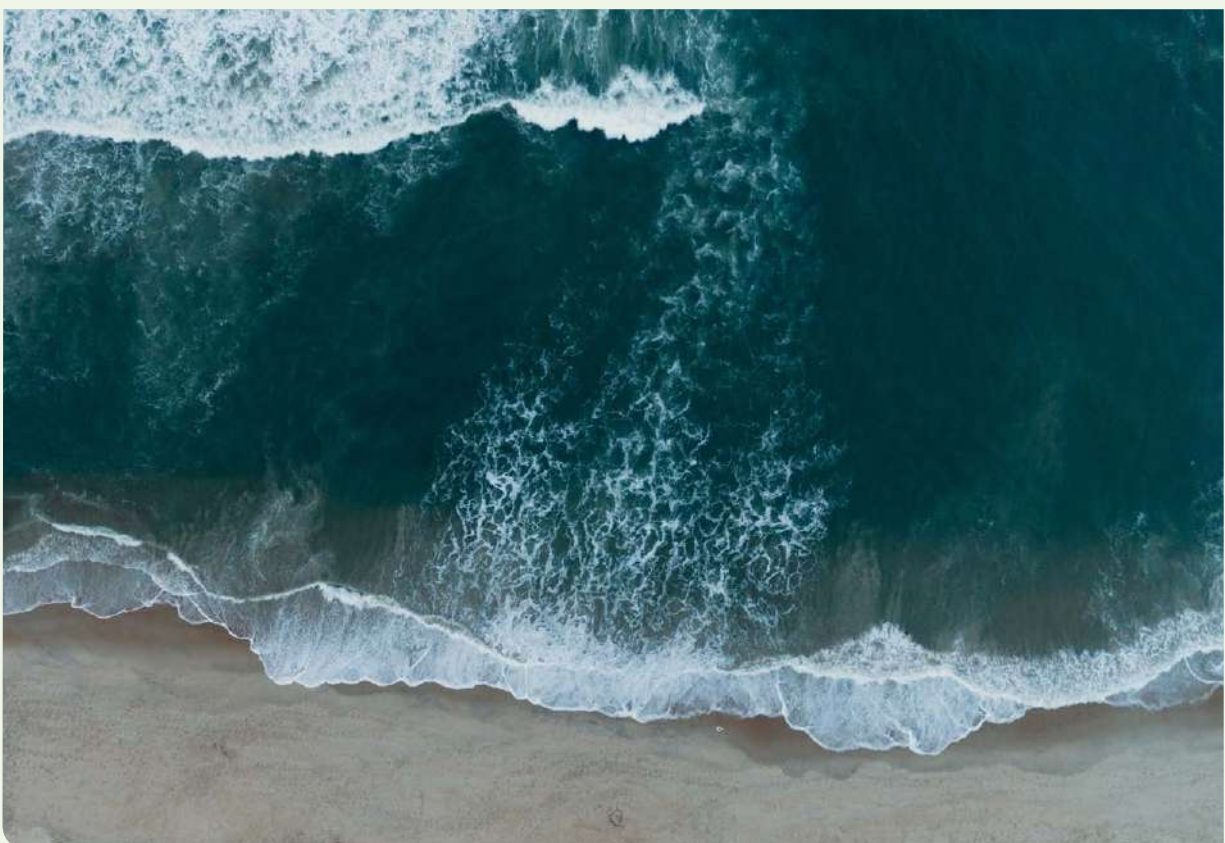
We recommend the following preliminary steps:

Measure plastic footprint using a robust and defensible methodology in order to assess exposure to plastic related business risks as outlined in this briefing.

Ensure disclosure practice adequately reflects the plastic related business risks as outlined in this briefing and the company's response.

Design, implement and disclose appropriate policies to manage the plastic related business risks as outlined in this briefing. In the case of companies with intensive use of disposable plastic, this may require modifications to:

- production methods (for example, by using sturdy and reusable road cloth in agriculture to protect crops from weed suppression and to control moisture and temperature, instead of thin and feeble plastic film); and
- supply chains (for example, by replacing single-use packaging with reusable options, alternative materials or, in many cases, adjusting the distribution systems to remove the need for packaging).





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Brussels

60 Rue du Trône (3rd floor)
Box 111050
Ixelles
Brussels

London

Fieldworks
274 Richmond Road
Martello St Entrance
London E8 3QW

Warsaw

Zurawia 45
(staircase B, 2nd floor)
00-680 Warsaw
Poland

www.clientearth.org

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