RepRisk

RepRisk Special Report

Plastics

November 2019

About RepRisk

Founded in 1998 and headquartered in Switzerland, RepRisk is a pioneer in ESG data science that leverages AI technology and human intelligence to systematically analyze public information and identify material ESG risks. RepRisk's flagship product, the RepRisk ESG Risk Platform, is the world's largest and most comprehensive due diligence database on ESG and business conduct risks, with expertise in 20 languages and coverage of 130,000+ public and private companies and 30,000+ infrastructure projects. For more than a decade, the world's leading financial institutions and corporations have trusted RepRisk for due diligence and risk management across their operations, business relationships, and investments.

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Introduction

Plastics are present in almost all areas of our everyday lives and play an important role in the construction, electrical and electronics, transport, clothing, as well as the food and beverage industries. After World War II, the desire for consumer products fueled the US industry, and since 1950, the annual production of plastic has increased nearly 200-fold. By 2015, around 7.8 billion metric tons of plastic had been produced globally, more than one metric ton of plastic for each inhabitant of the planet.[1]

Synthetic plastics are mainly derived from fossil fuels such as natural gas, coal, and crude oil. In March 2019, the world's largest crude oil producer, Saudi Aramco, agreed to buy a USD 69 billion stake in a Saudi Arabian chemical manufacturer.[2] Five months later, the company pledged USD 15 billion in investments in one of the world's largest polypropylene businesses in India. The move is apparently part of an industry-wide trend by oil companies to ramp up investments in petrochemicals such as plastic, amid a slow-down in demands for gasoline, due to a global shift toward electric and fuel-efficient vehicles.[3]

However, experts have warned that plastic could become a stranded asset, as restrictions on single-use plastics are being implemented around the world in response to a growing outcry over plastics pollution.[4] In March 2019, the EU agreed to ban single-use plastic products such as cutlery and toiletries by 2021.[5] The consultancy company Accenture estimates that these trends, coupled with an increasing demand for recycled materials, could slash the demand growth for virgin petrochemicals by one-third of its historic pace, a significant material risk for the oil industry.[6]

It is the environmental and human health concerns about plastics, however, that is causing alarm, and companies that produce single-use plastic products are beginning to face reputational risk. Although public outcry has focused on plastic waste in the ocean, there are also environmental problems regarding fossil fuel extraction and plastic production processes, consumption, and end-of-life treatment. The UNPRI has suggested a 'circular economy' approach, allowing plastic waste to be re-used and recycled, as a solution to the problems posed by plastic pollution. Such an approach would open up new business and investment opportunities across the plastic value chain.[7]

Some companies are starting to address the problem. Global players including Coca-Cola, Costa Coffee, McDonalds, Nestlé, and PepsiCo have announced plans to introduce reusable, recyclable, or biodegradable packaging. Some supermarket chains and electronics manufacturer Samsung are looking to limit plastic packaging.

1 https://ourworldindata.org/plastic-pollution
2 https://www.bloomberg.com/news/articles/2019-03-27/saudi-aramco-is-said-to-near-deal-for-70-billion-stake-in-sabic
3 https://www.plasticsnews.com/news/saudi-aramco-make-big-investment-reliance-petrochemicals
4 https://www.bloomberg.com/news/articles/2019-06-05/plastic-trash-crackdown-threatens-oil-giants-chemical-lifeline
5 http://www.europarl.europa.eu/news/en/press-room/20190321IPR32111/parliament-seals-ban-on-throwaway-plastics-by-2021
6 https://www.latimes.com/business/la-fi-oil-plastic-petroleum-environment-20190606-story.html
7 https://www.unpri.org/pri/pri-blog/solving-the-plastics-problem-shifting-to-a-circular-economy

The RepRisk lens

RepRisk takes a risk lens to its monitoring of ESG issues and incidents, providing our clients with insights into how companies are actually behaving, rather than just what they say they are doing. This “reality check” can be an effective tool for due diligence and portfolio monitoring of ESG risks.

With the frequency of plastic-related ESG incidents accelerating, investment management firms, institutional investors, banks, and insurance companies are all paying close attention to how much exposure they have to plastics in their portfolios. Investors in plastic companies and projects are now becoming concerned about the long-term viability of their plastic-oriented investments.

The pressure to reduce plastic use is coming from two sides. On one side, governments and non-governmental organizations are pressuring companies to reduce the reliance on plastics in their supply chains through efforts like banning certain single-use plastics. On the other side, businesses are adapting to consumer and market demand by actively developing and launching alternatives to plastic. The combination of these two concurrent trends signals that the plastics market is due for a systematic transformation that will affect companies in a range of ways. The companies that take proactive steps to ween themsleves off plastics may be best-positioned to succeed in the future.

The report is compiled using information from the RepRisk ESG Risk Platform, the world's largest due diligence database on ESG and business conduct risks, and looks at all stages in the life of plastic, highlighting the environmental issues that need to be addressed. The aim of the report is to help financial and corporate professionals better understand the extent of Plastics-related risks in their investments, operations, and business decisions, as well as showcasing areas that offer investment opportunities to enable innovative and impactful solutions.

Company and infrastructure project rankings

The below unrelated tables display the companies and infrastructure projects in developed and emerging markets, as well as the countries and sectors that are most associated with Plastics, one of the 58 ESG Topic Tags covered by RepRisk. RepRisk defines a Plastics-related risk incident as follows: improper disposal of plastic waste (landfill issues, export of plastic waste to developing countries), the production of plastics that contain harmful chemicals (e.g. BPA, Parabens, PVCs), the manufacture and sale of non-recyclable plastics, the overuse of plastic packaging material – including single-use plastics such as straws, lids, cups, and plastic bags – as well as micro-plastic contamination, and the threat to marine life caused by plastic debris in the ocean. The data in these tables was extracted from the RepRisk ESG Risk Platform, based on weighted news counts in the last two years (September 2017 – September 2019).

For more information on RepRisk's research approach, please see page 18.

Ranking	Companies: Developed markets	Sector	Number of Plastics-related risk incidents
#1	Nestlé (Nestlé Group)	Food and Beverage	28
#2	Coca-Cola Co.	Food and Beverage	21
#3	Unilever Group (Unilever)	Food and Beverage, Personal and Household Goods	19
#4	Procter & Gamble (P&G)	Personal and Household Goods	18
#5	PepsiCo Inc	Food and Beverage	17
#6	Colgate-Palmolive Co	Personal and Household Goods	14
#7	McDonald's Corp	Travel and Leisure	10
#7	Starbucks Corp (Starbucks)	Retail, Travel and Leisure	10
#9	Mondelez International Inc	Food and Beverage	9

Company and infrastructure project rankings

Ranking	Companies: Emerging markets	Sector	Number of Plastics-related risk incidents
#1	Formosa Plastics Corp (Formosa Plastics Group)	Chemicals	16
#2	Liwayway Marketing Corp	Food and Beverage	5
#2	Universal Robina Corp (URC)	Food and Beverage	5
#2	Nutri-Asia Inc (NutriAsia)	Food and Beverage	5
#2	Monde Nissin Corp	Food and Beverage	5
#2	Zesto Corp (Zest-O Corp)	Food and Beverage	5
#7	Meituan Dianping	Software and Computer Services	3
#7	Chronic Plastics Inc	Support Services (Industrial Goods and Services)	3
#7	Shanghai Rajax Information Technology Co Ltd (Ele.me)	Food and Beverage, Software and Computer Services	3
#7	Mayora Indah; Tbk PT	Food and Beverage	3
#7	Torabika Eka Semesta; PT	Food and Beverage	3

Company and infrastructure project rankings

Ranking	Infrastructure Projects: Developed markets	Project type	Number of Plastics-related risk incidents
#1	Formosa Point Comfort Plant	Chemical Manufacturing and Refineries	12
#2	Cinquemetri Canal	Ports, Harbors and Canals	4
#3	Petroineos Grangemouth Refinery (Ineos)	Chemical Manufactuting and Refineries	2
#3	Pennsylvania Shell Ethylene Cracker Plant (Shell Ethane Cracker Plant)	Chemical Manufacturing and Refineries	2
#3	Schleswig Sewage Treatment Plant	Sewage Treatment Facilities	2
#3	Capaccio-Paestum Sewage Treatment Plant (Depuratore Capaccio)	Waste Management Facilities	2
#3	Caribbean Princess	Ships	2

Ranking	Infrastructure Projects: Emerging markets	Project type	Number of Plastics-related risk incidents
#1	MSC Zoe	Ships	4
#2	MV Ivy	Ships	2
#2	Bogor Plastic Processing Facility (Multi Guna Plastik)	Chemical	2

Extraction of fossil fuels and production of plastics

The production of plastic is environmentally and socially controversial. Fracking, a process used to extract shale gas, as well as cracking, a later step used to transform ethane into plastic, are reportedly causing widespread pollution and contributing to climate change. According to the "Plastikatlas 2019" report by the Henrich Boell Foundation and other NGOs, the fluid used in the fracking process contains more than 170 toxic chemicals that could cause cancers and harm the immune system.

Ineos, the largest plastic producer in Europe, was criticized in the Plastikatlas report for fueling the fracking industry in the US, where a study published by the journal Science Advances found that expectant mothers living near fracking sites were exposed to a higher risk of complications during pregnancy and premature births. The company's 75 chemical production facilities across 22 countries have been linked to air pollution, chemical leaks, fires, and explosions. The Plastikatlas report also criticizes Chevron, Dow Chemical, ExxonMobil, Formosa Plastics, Suez, Unilever, and other multinational corporations that control the production, distribution, and disposal of plastics for exacerbating waste, environmental, and health problems in Asia. Similar concerns have been raised over Shell's Pennsylvania Petrochemicals Complex. The cracker plant reportedly has an annual emission allowance of 2.2 million tons of carbon dioxide, equivalent to the emissions of around 480,000 cars.

The Formosa Plastic Group, a major plastic producer, has likewise faced ongoing opposition to its No 6 Naphtha Cracking Project in Taiwan. Throughout its 20-year lifespan the plant has been linked to toxic pollutants, worsening air quality, and increasing cancer rates in nearby townships. Local residents have filed a lawsuit demanding compensation for 29 cancer cases blamed on pollutants emitted by the plant. A scientific study published in November 2018 reported that between 2013 and 2014, at least 100 elementary school students living within a 10-kilometer radius of the No 6 Naphtha facility had developed abnormal liver function and even mild liver fibrosis due to exposure to the carcinogen vinyl chloride monomer (VCM) released from the plant.

In March 2019, the US Department of Environmental Protection in New Jersey announced a crackdown on ongoing contamination by poly- and perfluoroalkyl substances (PFAS) in the state, and ordered Chemours, DowDuPont, Solvay, and 3M to pay USD millions to clean up the pollution. Solvay was ordered to pay USD 3.1 million to New Jersey for investigative

Extraction of fossil fuels and production of plastics

and clean-up work after PFAS were identified around the company's West Deptford Plant. Between 1990 and 2012, the plant reportedly contaminated air and water by dumping substantial amounts of perfluorononanoic acid during its plastic manufacturing processes.

A more noteworthy case is perhaps that of CFC-11, a banned substance whose sudden and mysterious presence in the atmosphere since 2012 had baffled scientists and prompted an investigation into its origin. CFC-11, according to the UK Environmental Investigation Agency (EIA), is a potent ozone depleting gas that has a global warming potential 4,750 times that of carbon dioxide. Initial investigations found that the emissions came from East Asia and in July 2018, the EIA concluded that the polyurethane (PU) foam sector in China was to blame. Testimonies from 18 companies, including Dacheng Aoyang Chemical Co., Dacheng Desheng Chemical Co, Dacheng Shengshi Tianchuang Chemical Co., and Dacheng Wan Fu Chemical Co., have revealed that although CFC-11 has been banned, they have continued to use it in their manufacturing processes.

Consumption of plastics

Increasing concerns regarding the use of plastics have not only challenged retailers, food and beverage companies, and operators of restaurants and coffee shops, but also legislators and environmental watchdogs. A key task is the introduction of global standards to curb the use of single-use plastics, sachets, plastic bags, and plastic straws.

A 2018 UN Environment report on the "Legal Limits on Single-Use Plastics and Microplastics," states that bans on plastic bags in most countries do not cover the lifecycle of the bags, even though they are the world's number one consumer item. Apparently, very few countries tax the manufacture or production of plastic, or offer incentives to encourage the use of renewable materials in the production of plastic bags. While bans on single-use plastics have increased since 2012, most regulators rely on charging consumers for plastic bags and strict recycling rules to diminish the demand for plastic and manage its disposal.

A November 2018 survey by Greenpeace of the UK's ten leading supermarkets, including Aldi, Co-op, Morrisons, Sainsbury's, Tesco, and Waitrose, found that the companies continue to offer single-use plastic bags to their clients, despite the introduction in October 2015 of an EU-wide law, requiring large businesses and supermarkets to charge approximately EUR 5 cents for these kinds of bags. According to the report, each year, the supermarkets put around 810,000 tons of single-use plastic packaging on to the market, and additionally offer 1.1 billion single-use plastic bags, 1.2 billion plastic fruit and vegetable bags, and 958 million reusable "bags for life."

Supermarkets in the UK have been criticized for contributing to the proliferation of plastic by selling plastic-packaged fruit and vegetables at cheaper prices than the same unpackaged product. For example, at Asda, Gala apples wrapped in single-use plastic reportedly cost 54 percent less than loose Gala apples. At Lidl, packed oranges are said to cost 37 percent less than loose ones. The Consumer Advice Center Hamburg has also criticized German retailers such as Penny, Aldi, and Netto-Marken-Discount for selling high quantities of plastic-wrapped vegetables and fruits. Loose fruit and vegetables were also found to cost more than wrapped products.

Similarly, in Australia, Coles Group Limited has been criticized for bucking the global trend to curb the use of plastics by dropping a planned ban and re-introducing single-use plastic bags following customer complaints.

Consumption of plastics

In August 2019, Coca-Cola was criticized for introducing pocket-sized bottles in Nepal as part of a marketing campaign dubbed “jigri,” meaning best friend. The campaign has been criticized by environmentally conscious consumers for promoting wasteful packaging in a country already struggling with a waste management crisis. Protesters claim that consumers would most likely not bother to properly recycle the small plastic bottles and point out that there is only one registered company in Nepal that can recycle the material.

In 2019, Coca-Cola and 31 other corporations published their data on plastics for the first time. According to this disclosure, Coca-Cola produces 88 billion plastic bottles per year, equal to 167,000 plastic bottles per minute. Coca-Cola, Danone, Nestlé, and Unilever also disclosed their annual plastic production as 3 million tons, 1.7 million tons, 750,000 tons, and 610,000 tons respectively.

Nestlé, Procter & Gamble, and Unilever are allegedly among the top-ten companies associated with plastic pollution in the Philippines. Sachet packaging allows low-income communities in developing countries to access affordable quantities of products such as toiletries and detergents. However, plastic sachets have also been found to be the source of “staggering” amounts of plastic waste. The environmental group, Global Alliance for Incinerator Alternatives, claims that 163 million sachets are used every day in the Philippines alone.

Ecologists have also questioned Starbucks’ announced plans to substitute plastic straws with recyclable lids. Apparently, the new lids contain more plastic than the straws, and shift the responsibility on to consumers to recycle them accordingly. There are fears, therefore, that the polypropylene lids will end up in landfills.

Harmful chemicals in plastics

In the US, the Environmental Protection Agency has warned that only about one percent of the more than 40,000 chemicals used in medical equipment, personal household goods, and consumer goods, has been tested for human safety. Experts have issued warnings about five groups of synthetic chemicals, including phthalates, bisphenol A (BPA), and per- and polyfluoroalkyl substances (PFAS) that are used in the manufacture of plastic. Phthalates are mostly used to make plastic more flexible and durable, while Bisphenol A is used in plastic manufacturing, and PFAS can be found in plastics, non-stick cookware, stain and water repellents, furniture, waterproof clothes, food packaging material, textiles, and rubbers.

In November 2018, Dollorama recalled a toy furniture set as the levels of phthalates in the product exceeded the allowable limit in Canada. According to Health Canada, the prolonged chewing of certain phthalates can cause reproductive and developmental abnormalities in young children.

Food companies such as Del Monte and General Mills allegedly continue to use BPA in their cans and food packaging, despite studies that have warned of health consequences linked to minute traces of the compound. According to a study by the Centers for Disease Control and Prevention, approximately 93 percent of US residents have BPA in their bodies, potentially impacting their endocrine system and fertility. There are also fears that BPA can cause early puberty in girls and genital deformation in boys.

Disposal of plastic waste

A 2018 study by the journal Science Advances estimated that over the past 60 years 8.6 billion metric tons of plastics had been produced across the world, and that 6.3 billion metric tons of this volume had become plastic waste. The report claimed that only nine percent of this amount has been recycled, and that the rest had ended up on the land and beaches, or in rivers, and the ocean. The plastic waste ends up in the air, soil, and drinking water, allowing chemicals used in plastic production and microplastics to enter the food chain and, ultimately, the human body. This allegedly exposes people to cancer risks, kidney problems, and other health issues.

Wealthy nations have been exporting some of their plastic waste to poorer countries. Until recently, much of it was sent to Southeast Asia. However, India's ban on the importation of plastic waste in 2016, and China's subsequent ban at the beginning of 2018, has forced companies to look for new destinations. In the first six months of 2018, US exports of plastic waste to Thailand reportedly rose by 2,000 percent. In November 2018, Greenpeace Malaysia warned that Malaysia had become a trash bin for plastic recycling from more than 19 countries including Australia, the countries of the UK, and the US. The Korea Customs Service also reported that exports of plastic waste to the Philippines had increased almost three-fold following China's ban. However, Southeast Asian countries have now begun to limit the imports of plastic waste, and Thailand and Malaysia have announced permanent bans on such imports by 2021.

In July 2019, Cambodia's Ministry of Environment and the country's Customs Department fined Chungyuen Plastic Manufacture USD 250,000 for illegally importing 1,592 tons of plastic waste and ordered the company to return it to the US and Canada by the end of August 2019.

In China, online take away food outlets such as Meituan Dianping Dianping and Ele.me, owned by Alibaba, have also been criticized for causing a massive spike in packaging waste such as containers, chopsticks, plastic bags, and plastic spoons.

In January 2019, a group of more than 30 companies, including Chevron, Dow Chemical, a unit of Dow Dupont, Formosa Plastics, LyondellBasell Industries, Mitsubishi Chemical, Procter & Gamble, Shell, and Sumitomo Chemical pledged a total of USD 1 billion to create the Alliance to End Plastic Waste (AEPW) project, which aims to end plastic pollution. However, environmentalists, including Greenpeace Malaysia and the EcoWaste Coalition of the

Disposal of plastic waste

Philippines, have described the project as “greenwashing,” pointing out that these companies are manufacturers of plastic and that some are investing in new plastic manufacturing plants.

Greenpeace and other organizations have coordinated 239 brand audits under the “Break Free from Plastic” banner in 42 countries to identify the main contributors to plastic waste, and have included Coca-Cola, Danone, Mondelez International, Nestlé, and PepsiCo in their list of the top-ten plastic polluters of 2018. Break Free from Plastic member organizations have denounced the companies for “trashing” the planet at an alarming rate through their continued use of unrecyclable plastic packaging.

In September 2017, audits carried out by Greenpeace in the Philippines found that Nestlé, Unilever, and PT Torabika Mayora, the Indonesian manufacturer of Kopiko coffee candy, were the top three contributors to plastic waste found in the audit area. The audit also identified Colgate-Palmolive, Liwayway Marketing, Monde Nissin, Nutri-Asia, Procter & Gamble, Universal Robina, and Zesto as significant plastic polluters in the country.

In India, the Global Alliance for Incinerator Alternative analyzed a total of 72,721 pieces of branded plastic waste taken from 250 sites across the country and concluded that PepsiCo was the worst polluter, followed by Perfetti van Melle, and Unilever. The audit also claimed that the multinationals Coca-Cola, Ferrero, McDonald’s, Mondelez, Nestlé, and Procter & Gamble were significant contributors to India’s plastic waste problem, and also blamed the local companies Amul, Britannia, ITC, Parle Products, and Haldiram.

Conversion into fuel

Waste plastics can be converted into fuel, but such processing plants have also faced opposition. In October 2018, Energy Roots Limited was given planning permission in the UK to build a plastics recovery facility near Rushden, Northamptonshire, despite concerns from residents that it would release toxic chemicals and pose a risk to public health. The plant will reprocess the waste into diesel, gasoline, and liquid petroleum gas.

In Spain, ecologists in Asturias criticized Hunosa del Norte for burning plastic residue at its La Pereda Power Plant. The regional government confirmed that it had allowed an experiment to burn plastic residue as an alternative fuel, a practice that was severely criticized by ecologists, who claimed that the emissions were dangerous for the health of local residents and environments.

Ocean waste

Most plastic waste ends up in the ocean. The Pew Charitable Trust estimates that 13 million metric tons of plastic waste enters the ocean every year. This waste has an enormous impact on marine life as fish, birds, and marine mammals can suffocate or starve after becoming entangled in the debris. They also allegedly ingest small particles of plastic, allowing it to enter the food chain.

In 2017, South Africa and Mozambique raised concerns when two 40-foot containers containing plastic pellets fell from a cargo vessel belonging to the Mediterranean Shipping Company off the coast of KwaZulu-Natal. The South African Association for Marine Biological Research warned that the pellets could attract toxins after contact with water and might affect the sea creatures that consumed them. There were also fears that the tourism industry and the livelihoods of 12,000 fishermen could be threatened.

The Mediterranean Shipping Company faced problems again in January 2019 when 291 containers fell from the company's cargo vessel MSC Zoe. Greenpeace suspected that some of the containers were loaded with raw plastic materials and claimed it had found large amounts of micro plastic particles on nearby beaches in Germany and The Netherlands.

In Germany, the Schleswig Sewage Treatment Plant was blamed for polluting about 25 kilometers of Schlei, an inlet of the Baltic Sea, with plastic particles in March 2018. The plastic apparently originated from food packaging that had been processed together with expired food from ReFood. There were fears that tourism along the Schlei inlet would be affected and that fish could ingest plastic particles, allowing pollutants to enter the food chain.

In Italy, Greenpeace reported in July 2018 that 80 percent of plastic bottles, containers, and single-use sachets collected from the beaches near Bari, Trieste, Palermo, and the San Rossore Regional Park, had been produced by Coca-Cola, Ferrero, Haribo, Nestlé, San Benedetto, and Unilever.

In the US, Carnival and its Princess Cruise Lines agreed to pay a USD 20 million settlement in June 2019, for allegedly breaching the probation terms of a 2016 waste dumping deal by releasing plastic waste into Bahamian waters. The companies were further accused of forging records and sending in special clean-up teams before inspections to avoid a fine.

Methodology

RepRisk Special Reports are compiled using information from the RepRisk ESG Risk Platform, the world's largest due diligence database on environmental, social, and governance (ESG) and business conduct risks, which is used to conduct in-depth risk research on public and private companies as well as projects of all sizes, from all sectors and countries, including emerging and frontier markets.

RepRisk believes it is important to look at performance, not just policies. Therefore, we take an outside-in approach to assessing a company or project: Our research captures and analyzes information from media, stakeholders, and other public sources external to a company. This perspective helps assess whether a company's policies and processes are translating into actual performance on the ground. RepRisk combines artificial intelligence with human analysis in 20 languages to translate big data into curated and actionable research and metrics, using a proprietary, rules-based methodology.

On a daily basis, RepRisk screens over 90,000 media, stakeholder, and third-party sources including print and online media, NGOs, government bodies, regulators, think tanks, newsletters, social media, and other online sources at the international, national and local level. RepRisk's methodology is issues-driven, rather than company-driven – i.e. RepRisk's daily screening is driven by RepRisk's research scope. The scope is comprised of 28 ESG Issues, which were selected and defined in accordance with the key international standards and of 58 Topic Tags, ESG "hot topics" that are specific and thematic.

For more information on our research approach and the ESG Risk Platform, please visit our website or email us at contact@reprisk.com.

The RepRisk Index (RRI)

The RRI is a proprietary risk metric developed by RepRisk that dynamically captures and quantifies a company's or project's reputational risk exposure related to ESG issues. The RRI is not a measure of reputation, but is rather an indicator of ESG-related reputational risk of a company. It facilitates an initial assessment of the ESG and reputational risks associated with financing, investing, or conducting business with a particular company. The RRI ranges from zero (lowest) to 100 (highest). The higher the value, the higher the risk exposure. A value between 75 and 100 denotes extremely high risk exposure. The Peak RRI equals to the highest level of the RRI over the last two years – a proxy for overall ESG-related reputational risk exposure.

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