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RESEARCH INSIGHT

FROM MSCI ESG RESEARCH LLC

2019 ESG TRENDS TO WATCH

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EXECUTIVE SUMMARY

Trade wars.[1] Technological disruption.[2] Political dysfunction.[3] Rising volatility[4] and vulnerability.[5] The beginning of 2019 has already been described in a multitude of ways, but the overarching themes coming forth tend to follow a clear narrative: The bull market may be ending, and everyone is bracing for the long haul.[6]

For an ESG investor, the long haul already has started. Underlying many of the 2019 themes are potentially overlooked costs and opportunities, and our 2019 ESG Trends to Watch have one thing in common: Acting today could make the difference tomorrow.

1. THE OTHER TRADE WAR: PLASTIC WASTE

"JUST ONE WORD: PLASTICS" – MR. MCGUIRE, *THE GRADUATE* (1967)

In 2019, companies and investors are forced to contend with the new reality: Waste reduction isn't a marketing priority; it's a business challenge.

2. REGULATING THE BUSINESS OF ESG INVESTING

"WELCOME TO THE PARTY, PAL!" – JOHN MCCLANE, *DIE HARD* (1988)

In 2019, the script flips, and it isn't just companies that are fielding ESG-related disclosure requirements. Investors will see escalating demands as regulators ramp up scrutiny beyond primarily issuers to focus on the business of ESG investing.

3. THE NOT-SO-DISTANT FUTURE FOR CLIMATE RISK

"I WISH IT NEED NOT HAVE HAPPENED IN MY TIME" – FRODO BAGGINS, *THE FELLOWSHIP OF THE RING* (1954)

In 2019, we will see the end of the argument that time is on our side. Nowhere will it be more evident than in private assets like real estate.

4. THE BIG SIGNAL REVOLUTION

"…KNOW WHY YOU OWN IT" – PETER LYNCH, *ONE UP ON WALL STREET* (1989)

In 2019, as we look out onto the next decade for ESG Ratings, having more data will be the easy part. The hard part – and the important part – will be knowing how to identify and apply the most relevant signals and achieve better-differentiated investment objectives.

5. LEADERSHIP IN THE AGE OF TRANSPARENCY

"THE CEO IS THE LINK BETWEEN THE INSIDE THAT IS 'THE ORGANIZATION,' AND THE OUTSIDE OF SOCIETY, ECONOMY, TECHNOLOGY, MARKETS, AND CUSTOMERS." – PETER DRUCKER (2004)

In 2019, investors stop asking after a scandal, "What did the board know, and when did they know it?" and start asking before a scandal hits, "What are my rights?"

With contributions from ***Michael Disabato, Ric Marshall, Gillian Mollod, Gaurav Trivedi***

1 THE OTHER TRADE WAR: PLASTIC WASTE

“JUST ONE WORD: PLASTICS” – MR. MCGUIRE, *THE GRADUATE* (1967)

Filmgoers may have chuckled at Mr. McGuire’s attempt to give advice to a waylaid Benjamin Braddock, but he was right: The plastics industry was rising in material dominance.[7]

Today, plastic is one of the most-produced manmade products in the world.[8] An estimated 8.3 billion metric tons of virgin plastics (synthetic organic polymers) have been produced in the past 70 years,[9] 79 percent of which has accumulated in landfills or the natural environment.[10] Its ubiquity has become so disruptive that the UN Environmental Programme (UNEP) declared that “unless we take action, there will be more plastic [in the ocean] than fish by 2050.”[11]

In fact, in 2019, we anticipate this disruption will change the global regulatory landscape, forcing companies to grapple with waste reduction not as a marketing priority but a significant business challenge.

Why do we think this will happen now? Because China exited the thriving global trade in waste.

Previously, countries that couldn’t repurpose or handle their own garbage exported it to other countries, mostly in Asia. China, for example, together with Hong Kong, was importing an estimated 70 percent of the annual waste produced globally since 1992.[12]

Then China sent a shock wave through the global waste trade by notifying the World Trade Organization (WTO) that it would stop accepting 24 kinds of solid waste beginning Jan. 1, 2018 – including the prevalent forms of plastic waste exported.[13]

In the wake of China’s decision, exporting countries scrambled to find new markets for their waste. Immediately, imports of plastic trash increased by 56 percent in Indonesia, 100 percent in Vietnam and 1,370 percent in Thailand in the first half of 2018. The tsunami of foreign waste triggered waste-import bans in Thailand[14] and Malaysia,[15] with more countries, including Poland and Turkey,[16] considering similar restrictions to stem the flow.

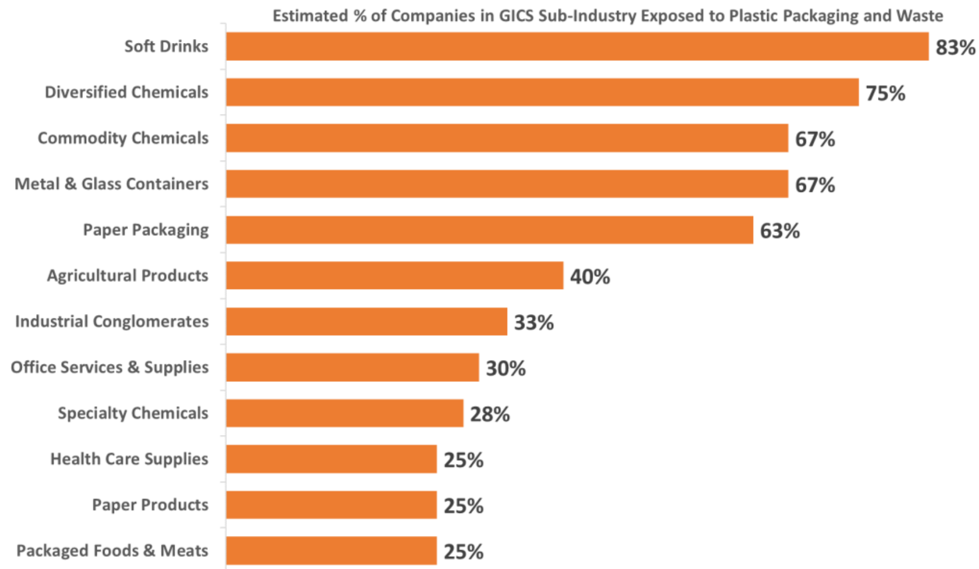
Correspondingly, major trash-exporting countries, including the U.K., Germany and France, moved to curb their waste production, initially focusing on single-use plastics. The European Parliament, for example, voted in late 2018 to ban single-use plastics by 2021, including a requirement to recycle more than 90 percent of beverage bottles by 2025.[17] The U.K. could impose a similar ban as early as 2019.[18]

Companies have taken notice. The number of earnings calls in 2018 that mentioned "plastic waste" increased by 340 percent compared with 2017.[19] Some of the more vulnerable industries, like the restaurant industry (especially fast-food chains) and food and beverage manufacturers (particularly the soft-drink industry), rely extensively on single-use paper cups or plastics. Yet only 30 percent of the industry constituents in the MSCI ACWI Index as of Dec. 31, 2018, had declared a formal commitment toward reducing or phasing out plastic waste. Companies in the packaging sector like Amcor and Sealed Air, with a sizable amount of their revenue coming from plastic materials as of Dec. 31, 2018,[20] declared a formal commitment toward reducing or phasing out plastic waste. These companies, tied to both plastic packaging and to the EU, are likely exposed to any regulatory changes for packaging in Europe.

But it isn't just the obvious sectors that could be affected. When we used a natural-language processing technique to analyze regulatory filings of the 2,450 constituents of the MSCI USA IMI (as of Dec. 12, 2018), we identified as many as 12 relevant industries potentially exposed to malfeasant rubbish, including Agricultural Products and Office Services and Supplies. Such companies include Fresh Del Monte Produce, which uses plastic packaging for both its existing and under-development products, and Ingredion, which relies on plastic users to purchase their value-added materials.[1]

[1] Screening criteria: (a) more than three companies in GICS subindustry and (b) 25 percent or more companies in the GICS subindustry with greater than 0.1 cosine similarity to the plastic-related keywords in company 10-Ks, focusing on the pertinent sections of the reports: Business, Risk Factors, Management's Discussion, Analysis of Financial Condition and Results of Operations. Notably one of the GICS sub-industries didn't meet the minimum companies in industry screening criteria but had high exposure, and Newell Brands and Tupperware Brands had 100 percent of their product lines exposed to these issues.

Exhibit 1: More companies will potentially be exposed to plastic and plastic-related regulation beyond the obvious industries



Based on analyzing the most recently released annual filings as of Dec 12, 2018, of the 2,450 MSCI USA IMI constituents. The assessment identified companies within each sub-industry group that referenced key phrases and terms related to plastic waste and plastic-waste recycling in their disclosures. Source: MSCI ESG Research

Companies in these sectors will likely be looking for solutions, providing an opening for winners to emerge. Packaging innovations, such as biodegradable, fiber-based renewable packaging, or paper, will likely be further developed to meet the demand from at-risk companies. Already, there has been an uptick in revenue for those companies in the Container and Packaging industry of the MSCI ACWI Index with a majority of their revenue made from innovative paper-based packaging solutions. All have seen a steady increase in their quarterly revenue since the first quarter of 2016,[2] while their plastic-packaging peers (those with a majority of their revenue from plastic-based packaging solutions) have seen a corresponding decrease in revenues. It seems a systemic shift has begun.

[2] See Appendix A

While all eyes remain on the trade war between the U.S. and China, another global trade war, in waste, is beginning to unfold. How the world addresses the disruption it creates will have ripple effects across multiple industries and countries, ripping the issue from the pages of glossy sustainability reports and thrusting it into investor presentations and financial filings as a subject of business risks and opportunities. And in 2019, we anticipate seeing a globalized world forced to look locally for solutions on how to deal with waste.

2 REGULATING THE BUSINESS OF ESG INVESTING

"WELCOME TO THE PARTY, PAL!" – JOHN MCCLANE, *DIE HARD* (1988)

In Australia, the Modern Slavery Act – passed in December 2018 – calls for companies to take action on modern-slavery risks in the operations and supply chains.[3] The U.K. instituted disclosure of the gender pay gap; Japan of gender composition, retention and promotion of corporate staff. Even Malaysia and Thailand are in on the action, with updates to corporate governance codes; in Malaysia's case, companies now have to "comply or offer an alternative" rather than "comply or explain." Companies have been the target of regulators for ESG topics since as early as 1838, when the Dutch government mandated that information about the environmental and human-capital risks they faced were to be disclosed in annual reports. In fact, company- or issuer-focused regulations brought by policy makers outnumber investor-focused regulations by almost 2.5 to 1.[21]

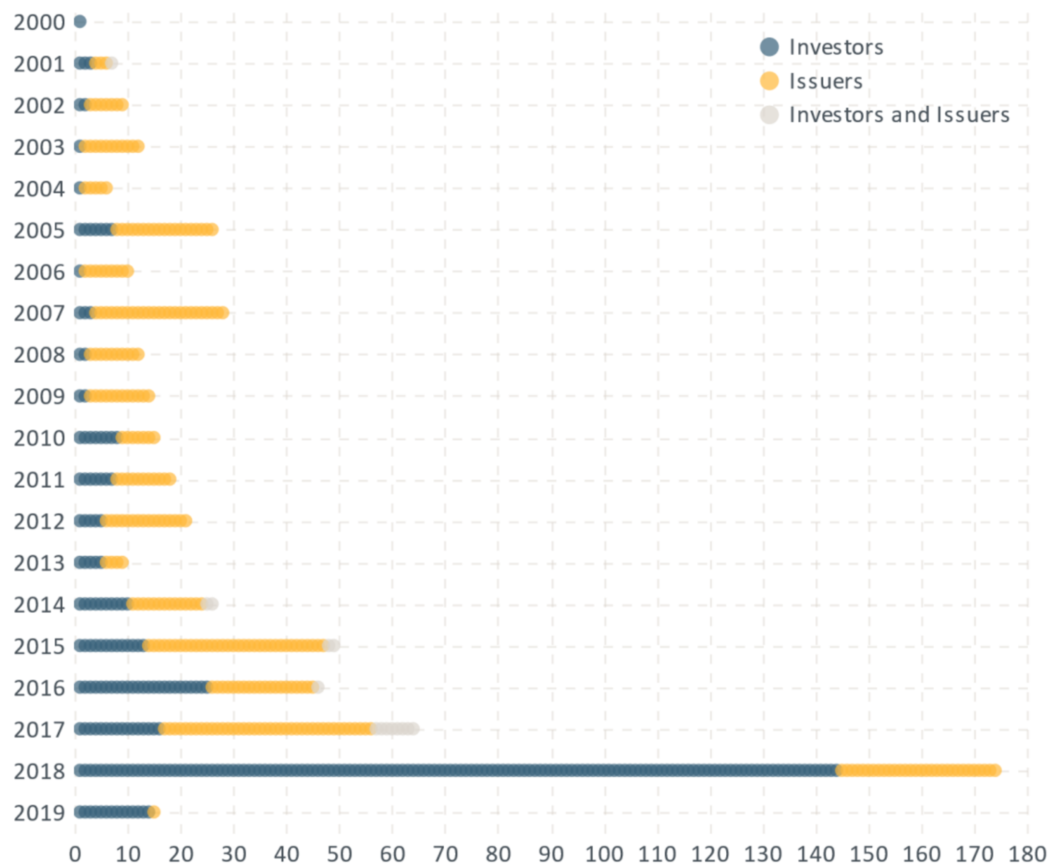
In 2019, the script flips, and it isn't just companies that are fielding ESG-related disclosure requirements. We anticipate that investors, both asset owners and asset managers, will see escalating demands as regulators ramp up scrutiny beyond primarily issuers to focus on the business of ESG investing. Are institutional investors prepared?

Historically, investors generally have welcomed regulatory and quasi-regulatory measures that target issuers, as most of these regulations led to improved data disclosure and transparency on their portfolio companies. In fact, some institutional investors actively seek regulators to weigh in – exemplified by the investor-led efforts in October 2018 to petition the U.S. Securities and Exchange Commission to codify rules on ESG disclosure.[22] And an Ernst & Young survey of 220 global institutional investors found 70 percent wanted regulators to close the gap between what issuers disclose and what investors want in terms of ESG data.[23] Even in relatively opaque markets such as in China, the requirement imposed by the China Securities Regulatory Commission (CSRC) and the Ministry of Ecology for mandatory ESG disclosures by all listed companies and bond issuers has usually met with approval from investors, as they may otherwise lack

[3] This follows the UK Modern Slavery Act adopted in 2015.

confidence in the governance oversight of these issuers.[24] The growth in regulations broadly – illustrated in Exhibit 2 – has been exponential, with as many new regulations and quasi-regulations proposed in 2018 as passed in the prior six years.

Exhibit 2: Number of ESG regulations has increased since 2000



Regulations collected by MSCI and the UN PRI's ESG regulations database; regulations can be either mandatory, voluntary, or explanatory in nature – and are collected globally. Source: MSCI ESG Research, UN PRI, as of Jan. 15, 2019.

The regulations in Exhibit 2 are broken out into investor and issuer targets. What is evident is that ESG-focused regulatory attention is turning increasingly toward investment products and processes used by investors. Of the more than 170 regulatory or quasi-regulatory measures proposed in 2018, 80 percent of them target institutional investors, not issuers. Aggregating country-level assets under management (AUM) data from PwC, Boston Consulting and others indicates that there could have been as much as USD 32.6 trillion in AUM as of 2018, subject to regulations now under discussion for asset managers and asset owners alike.[4]

Whether global investors will support these measures with the same vigor as they did for those imposed on issuers, will likely depend on the regulation – and the investor.

A number of measures seek to clarify the roles and duties of investors – mostly those of large asset owners – and financial institutions that can reduce the amount of second-guessing about ESG's treatment in their investment processes. The most prescriptive of these measures include those of the U.K. Department for Work and Pensions, which announced in September 2018 updated regulations[25] to clarify trustees' duty to consider all material issues "whether those are traditional, such as company performance, interest or exchange rates, or broader such as those resulting from ESG considerations including climate change."[5] In 2019, a similar clarification on considering ESG risks as a part of fiduciary duty will be included in a wide-ranging set of Sustainable Finance Initiative proposals that will be voted on by the European Commission.[6]

In jurisdictions such as Ontario, Canada, the requirement is less prescriptive and more descriptive. There, institutional investors are required only to disclose how they account for ESG factors, if they account for them at all.[26] And then there is

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[4] Data on country-level assets under management from PwC, Boston Consulting, IFIC, the Korea Herald and Nomura Research as of 2017 and 2018. We added estimates of AUM for China, Canada, South Africa, Japan, EU members and South Korea, given pending regulations in each, to estimate a global AUM number. Sources: PwC, Boston Consulting, Investment Funds Institute of Canada, Nomura Research, Korea Herald

[5] In the UK, financial regulators – the Financial Conduct Authority (FCA), the Pensions Regulator (TPR), the Financial Reporting Council (FRC) and the Prudential Regulation Authority (PRA) -- also announced that they will start to report how pension schemes and other companies under their remit are addressing climate risk. The PRA had launched a consultation on a draft supervisory statement that sets out its expectations for firms managing financial risks from climate change. https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/consultation-paper/2018/cp2318.pdf?la=en&hash=8663D2D47A725C395F71FD5688E5667399C48E08

[6] The stated goals of the Sustainable Finance Initiative are: (i) reorienting capital flows towards sustainable investment in order to achieve sustainable and inclusive growth, (ii) assessing and managing relevant financial risks stemming from climate change, resource depletion, environmental degradation and social issues, and (iii) fostering transparency and long-termism in financial economic activity. These proposals will be a major focus of regulatory and investor activity on ESG topics in the EU through 2019. See Appendix B.

the U.S., where ESG considerations can be interpreted to be more restrictive. The Department of Labor (DOL) issued guidance[27] to clarify that funds governed by the Employee Retirement Income Security Act of 1974 (ERISA), such as corporate pension funds, can only consider ESG factors when they are economically relevant.[28]

What about the retail market, where interest in ESG investing also has grown substantially? The European Commission is proposing that investment advisers ask clients directly about their sustainability preferences, "and take them into account when assessing the range of financial instruments and insurance products to be recommended."[29] That should get the conversation started. Given additional consultations from regulatory bodies such as the European Securities and Markets Authority (ESMA),[7] the reach into retail investments could eventually be highly significant.

While these clarifications could be seen positively by some institutional investors as they navigate between what they can do versus what they should do in considering ESG factors across diverse jurisdictions, regulatory efforts aimed at classifying ESG investment products could be more equivocal and contentious, particularly for asset managers.

If done well, efforts such as those being proposed by the European Commission to create a taxonomy for sustainable finance or to institute standards for what can be considered "green" relative to green bonds can also support the development of the market for ESG investments. Setting some minimum standards can create trust by enabling comparison across investment offerings, increasing transparency and limiting potential "greenwashing."

Done poorly, hard lines drawn about what can or cannot be considered ESG, green or sustainable could stifle the diversity of choices available and the innovation happening now in a market that is evolving rapidly to meet the many goals and approaches that investors seek. New business models and technological solutions could emerge tomorrow that could be magnitudes better than what qualifies as green in today's criteria. Conversely, digital privacy or

[7] The European Securities and Markets Authority (ESMA) announced three public consultation on 19 December 2018, two of which seek input into the integration of ESG risks into MiFID II, AIFMD and UCITS directive.
https://www.schjodt.no/en/news/newsletters/integrating-sustainability-into-aifmd-and-the-ucits-directive/

cybersecurity are risks today that many investors incorporate, but would have been difficult to account for as important ESG criteria five or 10 years ago. Further, some investors intentionally seek to create value by holding companies with poor ESG practices and engaging with them intensively to improve their performance.

In practice, it may be difficult to strike a balance between creating a standard to prevent a free-for-all on what counts as sustainable, and reducing the opportunity set for investors seeking a variety of innovative approaches to achieve a more sustainable economy and investments. Drawing on our own experience, when we consulted in 2018 with more than 20 clients representing USD 9.5 trillion-plus in assets on how best to construct a useful ESG rating for funds, we found that one of the top concerns expressed was how to avoid greenwashing[30] and allowing some funds to appear strong on ESG risk management without proper manager diligence or stated intentions. While there was consensus that providing a fund-level signal aids fund selection and flows to ESG investments, even criteria as basic as whether negative screening (removing a company, sometimes for moral reasons) should constitute strong "ESG" engendered much debate. As industry experts are still developing various ESG approaches, it will be important to allow flexibility in designating standards.

In 2019, we anticipate that regulatory developments will escalate around ESG investments, rather than ESG disclosures for issuers. For investment institutions that have treated ESG from a narrow, thematic point of view, applying ad hoc divestments or other theme-style offerings, 2019 may well be a year to play catch-up, as measures governing investors' roles and duties compel the development of investment policies that address ESG more holistically as an investment-relevant risk.

3 THE NOT-SO-DISTANT FUTURE FOR CLIMATE RISK

"I WISH IT NEED NOT HAVE HAPPENED IN MY TIME" – FRODO BAGGINS, *THE FELLOWSHIP OF THE RING* (1954)

In the latest Intergovernmental Panel on Climate Change (IPCC) report on the impacts of global warming, one line among many might give investors pause: "Transition challenges as well as identified trade-offs can be reduced if global emissions peak **before 2030** and marked emissions reductions compared to today are **already achieved by 2030**" (emphasis added).[31] If not, according to the authors, by 2040, the atmosphere's temperature will have risen by 2.7 degrees Fahrenheit (1.5 degrees Celsius), inundating coastlines and intensifying drought, poverty and subsequent migration.

It is a finding that converges the time horizons for science and investment – and puts investors on a timeline in which investment allocations made in 2019 will need to, at times, account for an accelerated carbon transition, or accelerated climate-related impacts, before they finish paying out.

Building a portfolio that incorporates the question of climate – particularly the reality of a 2-degree-constrained world – can reflect diverse intents. Some investors aim to *push* toward a 2-degree world by allocating their capital in ways that can raise the cost of capital for high emitters or that can provide market-signaling to them that change is needed. Others are simply trying to avoid the downside risks of holding assets that lose value in an economy that is less carbon-intensive.

It's the difference between trying to change the future or avoid potential future losses. In either case, the underlying assumption is the same: Some combination of technology and policy forces will limit emissions going forward, such that we can avoid the worst outcomes of climate change. We will eventually adopt a route to long-term prosperity.

Or, for various, myopic reasons, we won't.

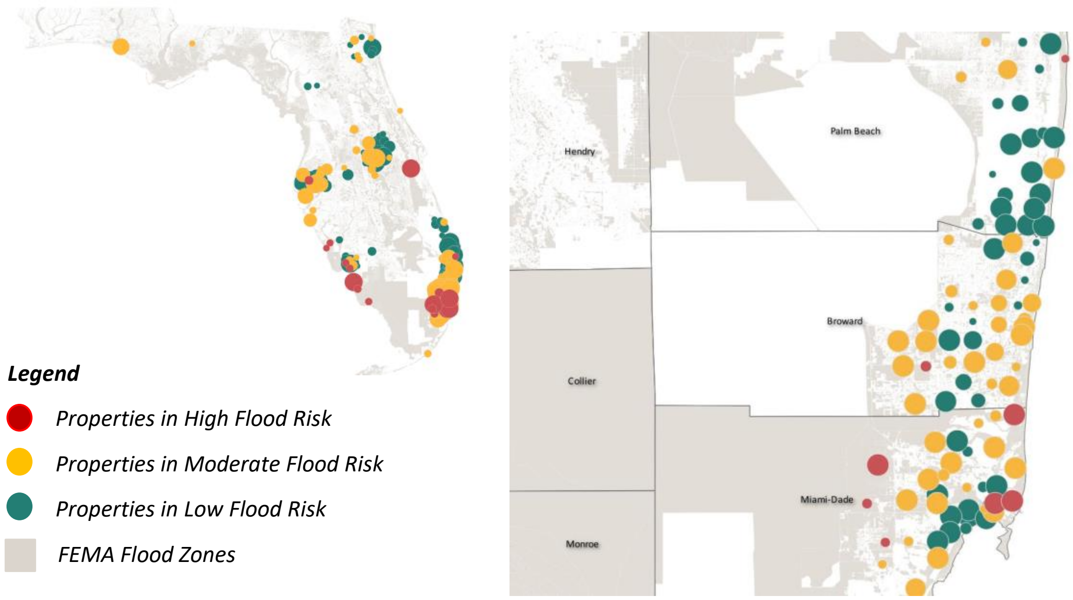
It's a possibility working its way into investor thinking in 2019, especially for those investing in less liquid assets. While public-equity investors may not see the price implications of climate change reflected immediately, valuing a variety of other investments is routinely pegged to longer-term time frames. For example, many companies budget for new projects by using 10-year Treasury bond rates to set their cost-of-capital expectations.[32] According to the Energy Information Administration (EIA), lease operating expenses for drilling often are incurred over a 20-year period, if not longer.[33] Sports-jersey licensing deals often span eight to 10 years, such as Nike's deal extension with the U.S. National Football League (NFL), signed in 2018.[34]

Many investments take shape in a time frame that flirts dangerously with the IPCC's projected time span before emissions need to peak and before an acceleration toward climate calamity. Within the lock-up periods of some types of private investments, many could see their projects implicated in climate-related problems and facing enhanced regulations before their payout. Among these are real estate investments.

We estimate the total size of the professionally managed global real estate investment market to be USD 8.5 trillion, as of the end of 2017.[35] Real estate investors already are exposed to possible losses due to sea-level rise: A study by the University of Colorado Boulder and Pennsylvania State University found properties exposed to sea-level rise selling at a 7-percent discount relative to comparable but less-exposed properties across the U.S.[36] And real estate investors are often buying – or even leasing – assets today with useful lives that extend far into a changed climate world.

We examined the possible effects that the IPPC's new recommended timeline could have on real estate assets, using a small sample of aggregated MSCI Real Estate data that focuses on Florida, where the effects of climate change are expected to be dramatic.[37]

Exhibit 3: Florida will have different risks and opportunities as sea level begins to inundate coastlines over the next decades



High flood-zone pertains to ZIP codes with 66 percent or greater of landmass in a flood zone as defined by FEMA; Moderate flood-zone pertains to ZIP codes with greater or equal to 33 percent and less than 66 percent of landmass in a flood zone as defined by FEMA; low flood-zone pertains to ZIP codes with 33 percent or less of landmass in a flood zone as defined by FEMA. Source: MSCI ESG Research, MSCI Real Estate Database (IPD) for Florida real-estate, as of Dec. 31, 2018

Exhibit 3 highlights the 456 commercial real estate properties in our sample which are located in approximately 200 Florida ZIP codes representing USD 22 billion in capital value. It is separated into "high," "moderate" and "low" flood risk, as defined by the MSCI ESG research team using data from the Federal Emergency Management Agency's (FEMA) National Flood Hazard Layer (NFHL) geospatial database.

Mapping the assets in aggregate already shows the potential scope of the problem – 51 percent of the assets find themselves in the vanguard of rising seas representing approximately USD 10 billion in capital value. But examining the properties by asset construction dates is even more alarming. If "high" to "moderate" flood-risk zones are likely to be inundated by sea-level rise in 2040, we can see that approximately one in five of these mapped commercial assets was constructed in a flood-prone ZIP code after the year 2000, representing USD 4.4 billion in capital value. This means these properties will likely be affected by sea-level rise before the end of their usable life, using the average lifespan of a commercial property estimated at 50 years.

For some investors, though, it may not all be doom and gloom. In 2010, Michael Burry, the former head of Scion Capital made famous by the book *The Big Short*, invested in something curious at the time: agricultural land with water rights.[38] "A bottle of wine takes over 400 bottles of water to produce — the water embedded in food is what I found interesting," said Burry. In 2018, it was reported that Harvard University was accruing vineyards in California – all with water rights.[39] Saudi Arabia is buying agricultural land,[40] and Canadian-farmland investors are finding new sources of revenue as the growing season has been extended by weeks because of rising temperatures.[41]

In accordance with the opportunists, we can use our data from Florida in Exhibit 3 to isolate two factors investors may already be seeking: Land and elevation. Low-rent properties at higher elevations adjacent to flood-prone areas or places affected by sea-level rise could potentially increase in value over its lifespan as buyers, lessors and consumers migrate inland.[42] We estimate that 12 percent of the low-risk properties in the Florida data set, representing USD 3.7 billion in capital value, are less than halfway through their useful life and selling at lower-than-average returns as of Sep. 2018. As the seas rise due to global warming, inland-migration or burdensome flood-related costs (like insurance or cleanup and adaptation costs) could drive up the price for a subset of properties such as these.

There is much more at stake for investors in 2019 than those in the real estate sphere. The U.S. National Climate Assessment report issued in November 2018 directly linked recent extreme weather events to changes in the climate, and projects that the economic impact from climate change could be double the impact of the Great Recession.[43] But the pinch may happen faster in some places than in others, with real estate as a prime example of an asset class that will inevitably be impacted by climate in the next decade. While private assets like real estate may be the tip of the spear, eventually all assets may have to be judged by the same question: Where are the winners and losers in my portfolio?

4 THE BIG SIGNAL REVOLUTION

"…KNOW WHY YOU OWN IT" – PETER LYNCH, *ONE UP ON WALL STREET* (1989)

Thirty years ago, Peter Lynch, then a vaunted Fidelity fund manager, famously said, "know what you own..."[44] in his book *One Up on Wall Street*. Overshadowed is the second half of what he said: "…and why you own it."

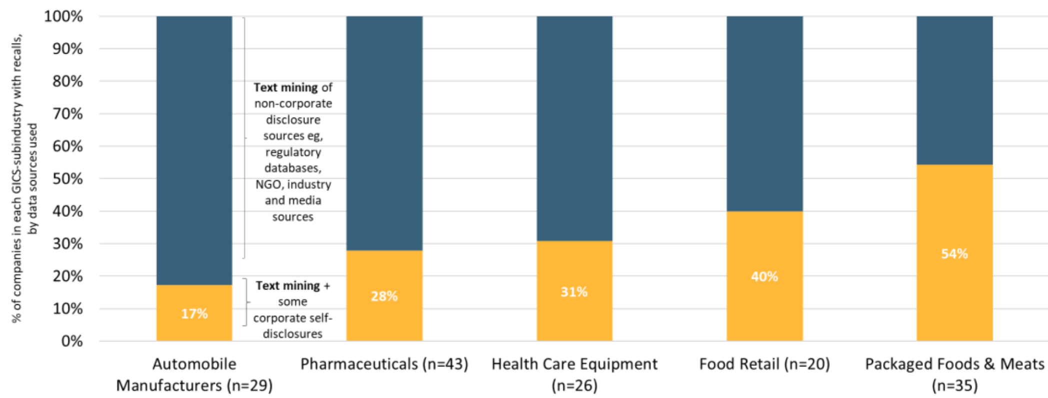
The "big data" revolution already has helped investors answer the first half of Lynch's statement. But in 2019, investors will turn their attention from data proliferation to signal proliferation, recognizing that the value of ESG data as a relevant factor depends as much on knowing why they own something as on knowing what they own.

Deeper understanding of investor portfolios and the drivers behind their performance has been greatly facilitated by the increased availability of disparate new data sources, from satellite imagery of parking-lot activity to job-posting and land-use data.[45] And there will be even more: IBM has estimated that 90 percent of data in use today was created in just the last two years.[46]

ESG investing has been a major beneficiary of this explosion of new data sources. Looking back at the past decade since Innovest launched its updated "IVA Ratings" model in 2008 (predecessor to the MSCI ESG Ratings), contextual, alternative data has always been used alongside voluntary corporate-disclosure data to assess companies' exposure to ESG risks. The use of alternative data was necessary because disclosure alone was so sparse and could tell investors relatively little about companies' latent and emerging ESG risks.

Consider the example of companies' product safety performance. Fewer than 1 percent of companies in the Autos, Pharmaceutical and Food industries disclose comprehensive information on product safety recalls, with between 17 percent to 54 percent providing only some comments on a few, select incidents. Hence, as Exhibit 4 shows, the vast majority of product safety lapses are identified through text-mining of sources such as local regulatory databases, nongovernmental organizations (NGO), industry and media.[8]

Exhibit 4: Identifying companies with product recalls requires many more data sources beyond company disclosure



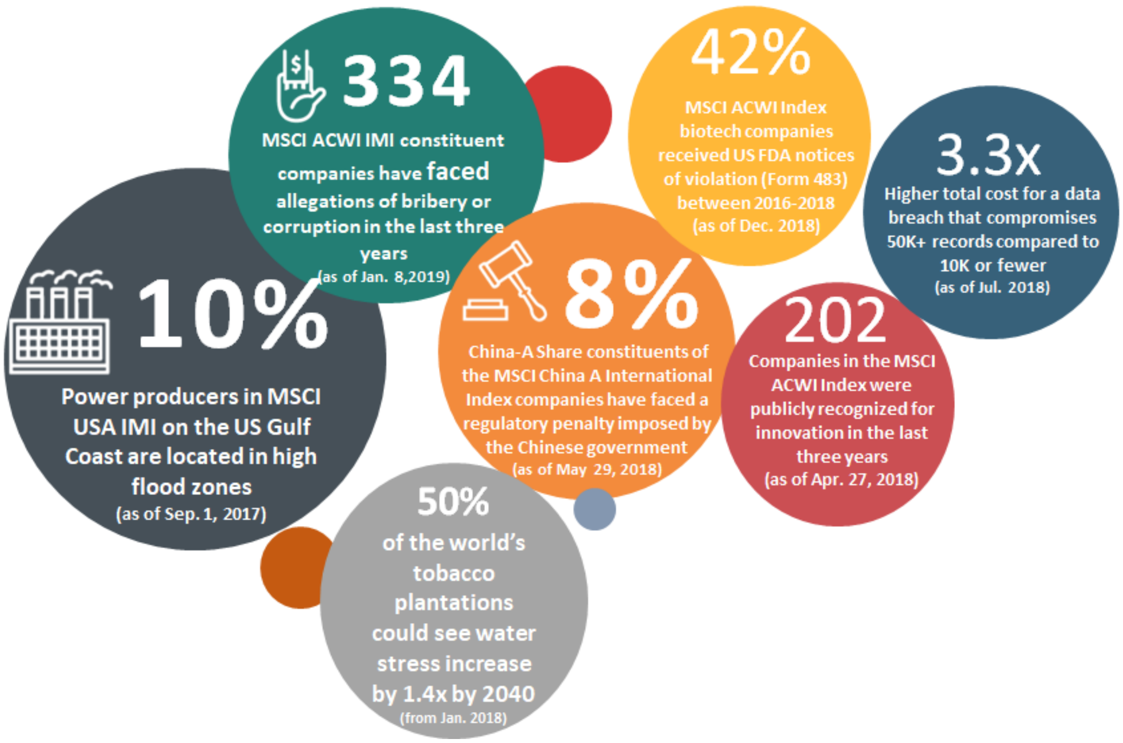
"n" references the companies flagged for product recalls. Source: MSCI ESG Research, MSCI ACWI as of 20 Dec 2018

The "big data" revolution has allowed investors to become less reliant on voluntary corporate disclosure, as the universe of ESG information from alternative sources continues to expand at a pace that far exceeds improvements in voluntary disclosure (see examples in Exhibit 5).

But data alone – structured or unstructured, alternative or company-disclosed – does not address the second half of Mr. Lynch's maxim: "*…know why you own it.*" And it is the "why" question that can best help investors make sense of all this data and extract the most relevant signals.

[8] Examples of sources for information on pharmaceutical recalls: US: Food and Drug Administration (FDA); Canada: Health Canada; China: China Food and Drug Administration (CFDA); United Kingdom: Medicines and Healthcare Products Regulatory Agency (MHRA); Australia: Therapeutic Goods Administration (TGA); and Japan: Pharmaceuticals and Medical Devices Agency (PMDA)

Exhibit 5: Examples of what investors can know about companies' ESG risks and opportunities without voluntary disclosure



Source: MSCI ESG Research

In 2008, Nate Silver used what he called a "big soup of polling"[47] to create his startlingly accurate ratings of that year's elections. His was a discrete goal: to predict the outcome of highly unpredictable elections at scale. Yet even after his forecasts in 2008 were validated by election results, skeptics derided Silver's process as "merely political punditry dressed up as sophisticated mathematical thinking."[48] We see a similar chorus of "caveat emptor" today when it comes to ESG ratings. Skeptics downplay emerging research supporting[49] the financial relevance of ESG ratings, such as evidence that high ESG-rated companies tended to show higher profitability, higher dividend yield and lower idiosyncratic tail risks (from January 2007 to May 2017).[50] They continue to demand bigger and better data, and promote the idea that better data would lead to one single true "unified" ESG signal. But the data alone, no matter how big, cannot tell investors how to apply them if they lack an investment thesis. In 2019, as investors become more familiar with the ESG data landscape, the most successful will be those who recognize that they have an advantage only if they have a clear view and construct a signal to match.

Unlike Nate Silver and his election predictions, the signals extracted from the "big soup" of ESG data serve not one goal, but rather a panoply. For some investors, the core objective is to identify emerging risks and opportunities and maximize long-term investment returns. For others, it is to identify positive social or environmental impacts, or to match investments with moral values. Not all "ESG ratings" or other rankings labeled as "ESG" aim to achieve the same goal, nor are they equally effective in achieving their particular goal. Different methodologies lead to uncorrelated signals.

ESG ratings today serve as a reference for a growing number of investors – a common language for measuring the long-term resilience of companies and their ability to manage emerging ESG risks and opportunities. For many investors, it also provides a foundation on which to add value, building on the ratings signal to better realize their unique form of differentiation. More and more investors are marrying disparate metrics, like factors and ESG,[51] in ways that reflect competitive differentiation and diverse investment beliefs.

In that sense, the rise of ESG has coincided with a rise in other, new investment metrics. Factors and "smart beta" concepts give the markets attributes that investors can pick and choose to assert their own worldview. Increasingly, technological solutions that deploy artificial intelligence are making it easier to find ever more patterns in big data that can be used alongside existing investment signals.[52]

The mainstreaming of ESG is just an indicator of this larger change – a move to understand how best to extract signals from a proliferation of ever-bigger data, signals that can best answer the "why" for a given investor. In 2019, as we look out onto the next decade for ESG Ratings, having more data will be the easy part. The hard part – and the important part – will be knowing how to identify and apply the most relevant signal and achieve better-differentiated investment objectives.

5 LEADERSHIP IN THE AGE OF TRANSPARENCY

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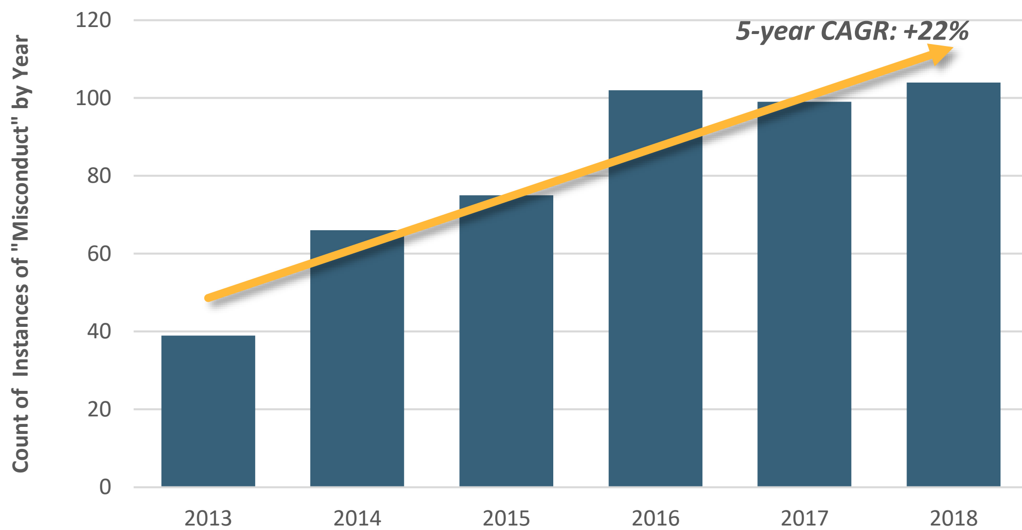
It might have been hard for Peter Drucker to imagine the world as it is today, with no internal memos; now, virtually everything is external. It is no secret that corporate leadership is under increased scrutiny, and that every gaffe can end up as part of a news cycle or viral tweet. The disintegration of walls between the executive suite and markets, governments and even employees has not just exposed corporate leadership to potential reputational damage. It also has opened investors to new vulnerabilities, as company after company has been shaken by revelations of questionable conduct at best, or illegal activities at worst.

But in 2019, we anticipate investors will stop asking *after* a scandal, "What did the board know, and when did they know it?" and start asking *before* a scandal hits, "What are my rights as shareholders?"

If ever there was a wake-up call it was the case of Liu Qiangdong, founder of China's largest online retailer, JD.com.[53] As Mr. Liu sat in jail on allegations of rape on Sept. 2, 2018,[54] investors could choose either to ride the sharp drop in stock price[55] or divest. Their minimal rights as shareholders precluded any resolute action.[56] And the situation was made worse as the company had not held a shareholder meeting since listing on the NASDAQ in 2014,[57] nor was it required to do so, according to its bylaws.[58] When prosecutors ultimately chose to drop charges almost four months later, it hammered home the fact that shareholders had little recourse but to follow the company's headlines, along with the rest of the world.

Mr. Liu's case is just one example of many executive scandals at this point: Les Moonves of CBS, Steve Wynn of Wynn Resorts and Carlos Ghosn of Renault and Nissan; the list grows steadily. Our own data on companies implicated in ESG-related controversies[9] shows a steady rise in controversies involving conduct issues with corporate leadership in the last five years for companies that are constituents of the MSCI ACWI Index (Exhibit 5).

Exhibit 6: Instances of company controversies has increased



Cases involving "CEO" and "misconduct" in the MSCI ESG Controversies database between 2010 and 2018. Source: MSCI ESG Research, MSCI ACWI Index Constituents, as of Dec. 31, 2018

The direct implications are obvious – headline risk, customer backlash, share-price pressure and even regulatory scrutiny. But there can be longer-lasting effects that are less obvious, particularly with a company's employees and future recruitment prospects. Revelations that Google had paid huge sums in severance to senior managers accused of sexual misconduct prompted 20,000 employees to walk out in public protest.[59] Employee morale at Facebook, as measured by internal surveys, reportedly has declined due to exposés detailing how senior leaders have handled problems with online misinformation and data privacy.[60] To put in perspective how long a company's employee problem can last after a scandal, surveys of bank and Wall Street employees nearly a decade after the financial crisis were still rife with negative perceptions[61] of the industry or their companies as a result of those companies' behaviors years earlier.[62] The result

[9] We used a natural-language search through our MSCI ESG Controversies database between 2010 and 2018 for word combinations like "CEO" and "misconduct," among others. For a full description of the methodology.

for banks: Deloitte found in 2014 that banks had been supplanted by technology companies as the premier talent recruiter.[63]

When a scandal will hit, and how it will affect a given company is largely unpredictable. But for investors, the ability to do something about it may not be.

Outside of the decision to invest or divest, investors tend to control two key elements of a company: the proxy vote and, by extension, the board. Investors know when the companies in which they hold stakes have controlling shareholders that limit their rights. Less obvious may be the limits imposed on their ability to influence companies with widely dispersed shareholders, where the ability to influence change through proxy votes may be nearly impossible for any individual shareholder.

Based on our assessments of ownership structure and board effectiveness,[10] 21 percent of MSCI ACWI Index constituents as of Dec. 31, 2018, rank in the bottom third for both, a combination that greatly limits investor influence. What happens when a leadership scandal or crisis erupts at these companies?

Largely what you might expect – the companies with weak boards and limited shareholder rights, which limit "investor influence,"[11] tend to either react and change more slowly or protect their own interests over shareholders'.

Examining data from 2015 for companies in the MSCI ACWI Index that were implicated in controversy involving its leadership, we found that over the following three years, on average, companies in the lower third of "investor influence" refreshed their boards and CEOs far less often than did more easily influenced companies. In the less easily influenced companies, 49 percent of the directors at these companies in aggregate were replaced, and 14 percent of CEOs replaced; compared to 58 percent of directors and 44 percent of CEOs replaced at the more easily influenced companies.[12] This supports the notion

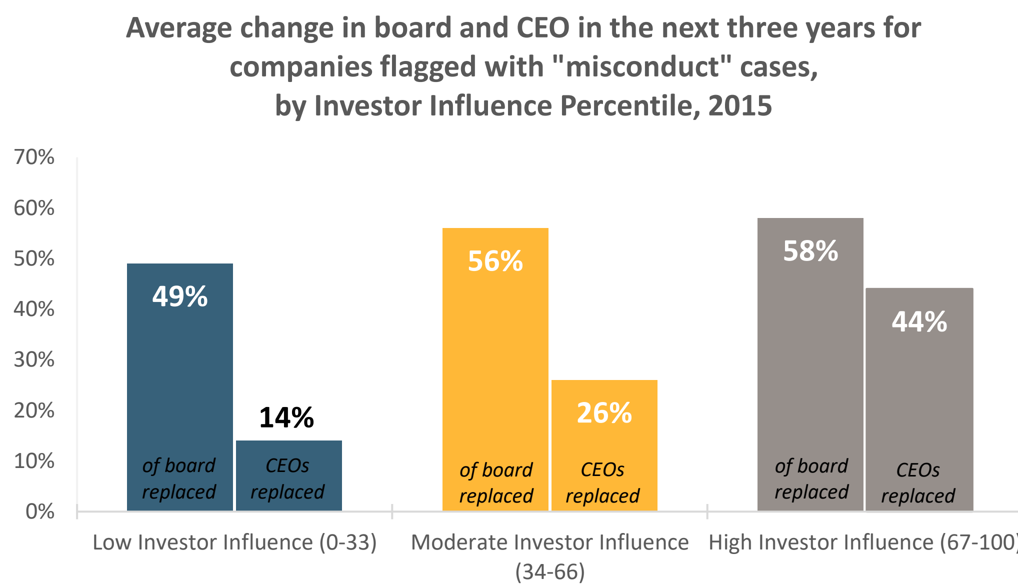
[10] These assessments were based on each company's scores in the Ownership and Control and Board sections of our overall Corporate Governance scores, as of Dec. 31, 2018, ranked by thirds.

[11] Based on board structure, ownership structure and assessment of shareholder rights

[12] We divided all the companies rated by MSCI ESG Research into three groups, based on their Board and Ownership and Control scores, as determined by the MSCI Governance pillar scoring model. Companies in the lowest-scoring third were identified as being the most difficult to influence by shareholders, and the highest third identified as being the easiest to influence; the middle third were identified as being of average difficulty to influence. We then identified those companies in each group that had experienced one or more leadership-misconduct controversies in 2015, by applying permutations of relevant search terms (e.g., "director," "president" and "CEO" with "testify" and "arrest") to MSCI's ESG Controversies database. We calculated the average percentage of board and CEO turnover for each of the three groups over the next three years, from 2015 to 2018.

that unless shareholders have recourse, companies are less likely to react to a controversy (Exhibit 7).

Exhibit 7: Company responsiveness to controversies varies by level of investor influence



Source: MSCI ESG Research, MSCI ACWI Index constituents, as of Dec. 31, 2015

Nowhere was this more evident than at Volkswagen. Predicting the automaker's emissions scandal[64] may have been impossible for an investor; even regulators were largely fooled. But even after the fact, investors looking for change have been forced to mostly wait, as just 20 percent of the Volkswagen board was refreshed over the last year, three members of the founding family continue to serve and influence board decisions, and the supervisory board still lacks an independent majority, according to our research. Even the CEO and management changes took nearly three years to manifest, all while investors were left to wait and see or divest from the company altogether.[65]

In 2019, that's likely to change. Pension funds such as CalPERS and Norges Bank Investment Management already have put their portfolio companies on notice. To accelerate board refreshment, CalPERS has announced that, in 2019, it will be voting against all directors who exceed 12 years in tenure.[66] CalPERS also will vote against boards that lack at least one diverse candidate,[67] and the global movement to increase board diversity is being coupled with a demand to remove entrenched or ineffective board members.

The age of transparency means there are fewer and fewer places for questionable corporate practices and even personal conduct to hide. What happens in the executive suite – or in internal chatrooms or remote factories – is unlikely to stay there. But the age of transparency also can turn into an age of vigilance. Investors are starting to insist that, while the parade of CEOs behaving badly may be difficult to predict and avoid, replacing them and cleaning house in the wake of a scandal should not be. As a result, 2019 may mark a turning point for investors tired of paying the cost for companies slow to adapt when the internal becomes external and the whole world can judge misconduct for itself.

APPENDICES

APPENDIX A |

QUARTER-ON-QUARTER REVENUE GROWTH OF COMPANIES WITH A MAJORITY OF THEIR REVENUES FROM PAPER VERSUS PLASTIC PACKAGING, Q1 2016 – Q3 2018

Growth in Rev (Q/Q)	1Q 2016	2Q 2016	3Q 2016	4Q 2016	1Q 2017	2Q 2017	3Q 2017	4Q 2017	1Q 2018	2Q 2018	3Q 2018	AVERAGE
>50% from Paper Packaging												
International Paper Company	--	4%	3%	5%	8%	13%	16%	11%	10%	14%	15%	10%
Klabin	--	28%	46%	46%	42%	45%	70%	68%	60%	41%	70%	52%
Packaging Coporation of America	--	1%	6%	5%	10%	13%	17%	20%	21%	26%	29%	15%
Sonoco Products Company	--	-2%	-1%	-7%	-4%	1%	8%	6%	6%	11%	11%	3%
>50% from Plastics Packaging												
Sealed Air Corporation	--	9%	8%	10%	-35%	-33%	-29%	-23%	-29%	-27%	-25%	-17%
Aptargroup	--	6%	1%	-7%	3%	6%	7%	7%	21%	22%	14%	8%
Berry Global Group	--	2%	0%	-7%	12%	18%	17%	10%	22%	28%	27%	13%
Amcor*	--	0%		-8%		-5%		-8%		-1%		-4%
Bemis Company	--	6%	6%	2%	3%	5%	7%	4%	6%	7%	6%	5%

APPENDIX B | EUROPEAN COMMISSION PROPOSALS ON SUSTAINABLE FINANCE

1. Green taxonomy: Proposal for a regulation on the establishment of a framework to facilitate sustainable investment

2. Fiduciary Duty:
   a. Proposal for a regulation on disclosures relating to sustainable investments and sustainability risks and amending Directive (EU) 2016/2341
   b. Commission draft delegated regulation amending Regulation (EU) 2017/565 supplementing Directive 2014/65/EU as regards organizational requirements and operating conditions for investment firms and defined terms for the purposes of that directive
   c. Commission draft delegated regulation amending Delegated Regulation (EU) 2017/2359 with regard to environmental, social and governance preferences in the distribution of insurance-based investment products

3. Low-Carbon benchmarks: Proposal for a regulation amending Regulation (EU) 2016/1011 on low-carbon benchmarks and positive carbon-impact benchmarks

4. Source: European Commission: https://ec.europa.eu/info/publications/180524-proposal-sustainable-finance_en

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