October 9, 2024

Dear Sustainable Equity Strategy Clients and Friends:

Unless you witnessed the intense midtown congestion caused by shuttling 76 heads of state around Manhattan in a single week, it would have been easy to miss the recent UN General Assembly. The international commitments adopted at such conclaves are often derided as ineffectual. But the inherently global nature of climate change has given those who want to solve it little choice but to work through the imperfect UN. Indeed the 2015 Paris Agreement created a crucial framework through which nations disclose, compare and add up their nationally determined commitments (NDCs) to see if we're on track to avoid dangerous climate change. And…we're not (at least not yet).

While global energy-related greenhouse gas emissions growth did slow in 2023 to 1.1%, this was nowhere near the 7-8% annual decline we've needed to achieve through this decade to halve emissions by 2030 (and thereby meet a Paris-aligned trajectory). Advanced economies managed to reduce their emissions 4.5% in 2023 despite 1.7% GDP growth, by rapidly deploying solar, EVs, heat pumps, and other technologies (a mild winter and industrial slump also helped).[1] But emissions in emerging economies more than made up for this.[2] And the first once-every-five-year UN "global stocktake" that concluded last year projected that even with the U.S. Inflation Reduction Act's climate provisions, the EU Green Deal and China's staggering rate of renewables deployment, we remain on track for dangerous climate change.[3] The recent UN General Assembly, to its credit, recognized this shortfall and adopted an elaborate 42-page *Pact for the Future* to reinvigorate action on climate and other global objectives.[4] The *Pact*'s closing section, entitled *Declaration on Future Generations,* adopts principles of intergenerational rights and equity that are now also embedded in various forms in a surprising 41% (81 of 196) of national constitutions.[5]

Intergenerational Insights and Wealth

As we reflected on the intergenerational obligations confronting global decision-makers, we found it mirrored topics we increasingly hear from clients as they bring their children into wealth management and inheritance discussions. Younger generations are often especially attuned to the imperative for climate action, and express concerns about whether the world will be stable enough for them and their own offspring to thrive.[6] Many favor portfolios that exclude fossil fuel companies, including students advocating that their college endowments take this step. Other young investors and inheritors focus less on exclusions and more on owning stakes in companies offering solutions to mitigate climate change, water stress, agricultural degradation, deforestation and biodiversity loss. Others watching the recent succession of droughts, wildfires and hurricanes express interest in companies that are helping the world adapt to the climate change that is already here and baked into the near future.

Many such "next gen" investors we've spoken with believe that owning companies that meet the above criteria will enhance financial performance, rather than sacrifice it. We agree, and this conviction drives our day-to-day work to protect and grow client capital. For example, our Strategy's exclusion of companies that own fossil fuel reserves is aligned with the ethical exclusion some of them seek. But it's also rooted in our dispassionate assessment of the investment merits: why invest in cyclical and secularly declining commodities subject to manipulation by a petrostate cartel, and facing "stranded asset" write-down risk, when there are so many attractive compounders demonstrating pricing power and benefitting from powerful long-term secular drivers including electrification, digitalization, infrastructure renovation, decarbonization and resource efficiency?

While no investment portfolio can be insulated from a systemic issue like climate change, we believe it is possible to make a portfolio comparatively resilient to it. We strive to do this by investing in companies that are capturing

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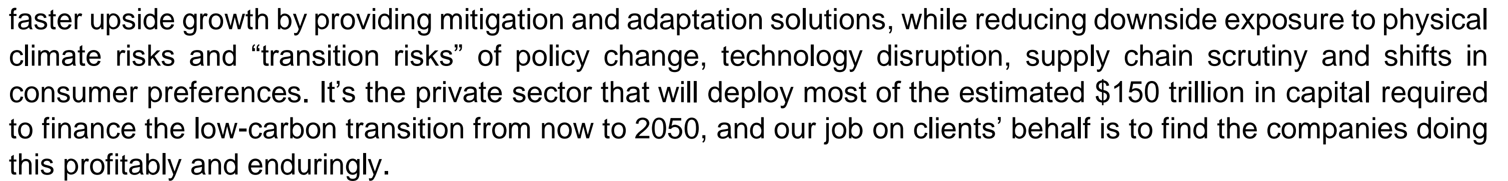


faster upside growth by providing mitigation and adaptation solutions, while reducing downside exposure to physical climate risks and “transition risks” of policy change, technology disruption, supply chain scrutiny and shifts in consumer preferences. It’s the private sector that will deploy most of the estimated $150 trillion in capital required to finance the low-carbon transition from now to 2050, and our job on clients’ behalf is to find the companies doing this profitably and enduringly.

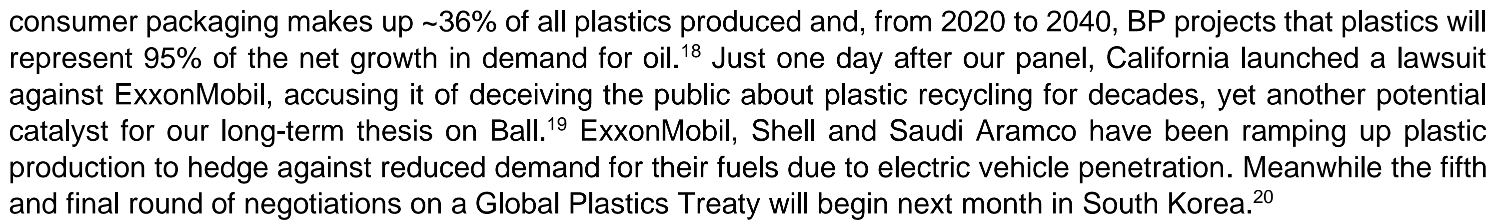
Alongside each year’s UN General Assembly, there is something of a citywide festival of business and civil society where climate action is formulated, known as *Climate Week*.[7] This year’s edition saw a record-breaking 600+ events across New York, including two panels that the Douglass Winthrop Sustainable Equity Strategy co-organized with Deloitte, featuring executives from our portfolio companies. In this letter, we will discuss how our panel themes bear on our investment theses. But first we report that the Sustainable Equity Strategy returned 19.03% gross / 18.32% net of fees through the 3rd quarter of 2024. More relevantly, given our long-term horizon, our annualized return over the 7.75 years since inception is 17.11% gross / 16.06% net, which is ahead of our reference indexes. Please see page 5 for a full performance table (Past performance is no guarantee of future results).

The Substrate Shift from Plastic & Glass to Aluminum

Our first Climate Week panel explored the accelerating “substrate shift” from plastic and glass to environmentally friendly aluminum in beverage containers, a secular trend that we believe will continue boosting the value of our holding in the world’s largest aluminum can manufacturer **Ball Corp**. About half of consumers rank "infinitely recyclable” as extremely important when purchasing products. Aluminum meets this standard with ~75% of aluminum ever produced still in use today.[8]

Beverage can shipments grew last quarter at a faster rate than the market consensus expected, and Ball revised upward its long-term guidance for EPS growth from >10% to 13-15% through 2030.[9] The YTD performance of its stock has significantly exceeded the “materials” sector average and broadly matched the surging, tech-led S&P 500 index despite having no discernible AI angle. We anticipate steady enlargement of the addressable market for beverage cans as manufacturers deliver not just soda and beer, but new product launches and even water in this highly recycled substrate. Coca Cola has begun selling Dasani water in cans, and the 500+ billion plastic water bottles produced industry-wide each year suggest a long runway ahead for aluminum as the shift intensifies.[10] From 2017 -2022, cans gained 6-7 points of share to ~66% in alcoholic beverages and 54% in non-alcoholic beverages (excluding canned water).[11] Cans are chosen not just because of sustainability, but because of their superior design and merchandising flexibility and their lower all-in cost once end-of-life disposal is priced in through regulations like Extended Producer Responsibility (EPR) laws. We also see jurisdictions like national parks beginning to prohibit sale of PET bottles as part of their single-use plastic bans.[12]

Choosing aluminum allays public concerns about the eight million tons of plastic being dumped into oceans every year, contributing to the Great Pacific Garbage Patch that now covers an unnerving 620,000 square miles between California and Hawaii.[13] Consumers are typically unhappy to learn that 90% of seabirds have plastic in their stomachs, and that microplastics are showing up in human lungs, brains and placentas.[14] Each of us reportedly ingests about five grams of microplastics each week, equivalent to a credit card.[15] Our panel included Pierre Labat of Novelis, a company that recycles aluminum on four continents, including more than 82 billion beverage cans annually; April Hembree Crow, a former sustainability executive at Coca Cola and now an investor in circular economy solutions; and Dylan Tanner of InfluenceMap.[16] Tanner discussed the PR blitz oil and gas companies have launched touting plastic recycling despite its inferiority to aluminum.[17] The economic stakes are high:



consumer packaging makes up ~36% of all plastics produced and, from 2020 to 2040, BP projects that plastics will represent 95% of the net growth in demand for oil.[18] Just one day after our panel, California launched a lawsuit against ExxonMobil, accusing it of deceiving the public about plastic recycling for decades, yet another potential catalyst for our long-term thesis on Ball.[19] ExxonMobil, Shell and Saudi Aramco have been ramping up plastic production to hedge against reduced demand for their fuels due to electric vehicle penetration. Meanwhile the fifth and final round of negotiations on a Global Plastics Treaty will begin next month in South Korea.[20]

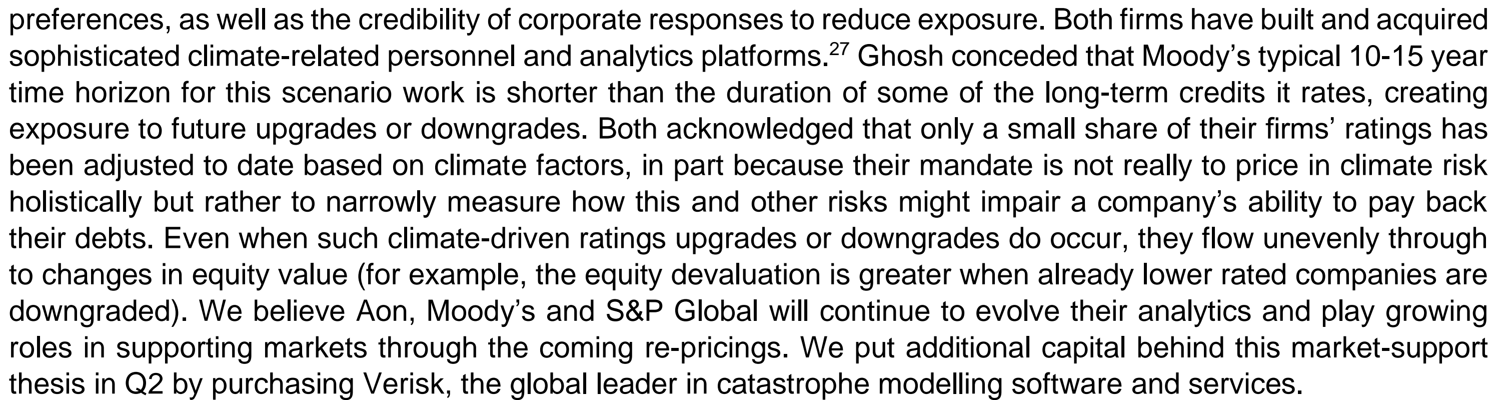
The Coming Asset Repricing Due to Climate Change

Our second Climate Week panel, moderated by DWA Portfolio Manager Dan Abbasi, featured executives from our holdings **S&P Global**, **Moody's** and **Aon**, and a top academic from Wharton, all of whom are leaders in quantifying and pricing climate risk in an effort to facilitate an orderly rather than chaotic repricing ahead. The market will ultimately decide when it impounds the value destruction from intensifying climate change into asset prices in each sector and geography, but we believe it will be well before the full physical impacts arrive. The market is a future discounting machine that pulls material risks (and opportunities) forward to present values once it has conviction they will transpire. Pinpointing the moments of major value dislocation in advance is not possible, but recognizing that climate change threatens this eventuality, and preparing one's portfolio, seems prudent. Mark Carney, former Bank of England chair and now chair of our holding **Brookfield Asset Management** termed the risk of an abrupt collapse in asset values a "climate Minsky Moment" in 2018.[21] Members of the U.S. Fed began warning of systemic market risks from intensifying climate change in 2021.[22] Wharton Vice Dean Witold Henisz on our panel cited economic projections of a global GDP reduction ranging from 7 - 29% through 2050 due to climate change (based on only a portion of impacts). If accurate, this would translate to substantial impairments of corporate equity values.[23]

We began this panel with a survey of the audience, which demonstrated that almost none of the attendees believe that climate risk is already priced into their home's value, their investment portfolios or, for those employed by a publicly listed corporation, into their company's stock price. Realtor.com estimates that 45% of U.S. homes (worth $22 trillion) face at least one climate peril and has launched a tool enabling homeowners to check their own home's vulnerability.[24] When asked if the coming asset repricing would be orderly or chaotic, nearly everyone in the audience conceded that they expect it to be chaotic.

As our panel began, Helene was making landfall and beginning its devastating march through six states, killing at least 230 people and causing an estimated $35 billion in wind and flood damages (or up to $160 billion once business interruption, lost output and other economic impacts are included).[25] As Bridget Gainer of Aon pointed out on our panel, only a fraction of those damages will have been covered by insurance, reflecting a stark "protection gap" — one resulting both from perverse incentives to underinsure in expectation of government disaster relief and from permissive overbuilding in exposed areas. Flood damage is excluded from coverage in typical homeowners' policies and the backstop has been the National Flood Insurance Program. However, only 1% of destroyed Asheville, NC homes damaged by Helene were covered by this subsidized program. Notably, Asheville is 550 miles inland from the Gulf and 2100 feet above sea level – reminding Americans that there are no true safe havens from climate change.[26] Our thesis for investing in Aon, the only insurance broker with its own long-established climate model, is that insurance industry demand for Aon's robust suite of advisory services is going to grow as it strives to meet growing demand for disaster insurance and other innovations for risk management.

Moody's Rahul Ghosh and S&P Global's Michael Ferguson explained on our panel how their ratings determinations assess the resilience of a company to future emissions scenarios and changing policy, technology and consumer



preferences, as well as the credibility of corporate responses to reduce exposure. Both firms have built and acquired sophisticated climate-related personnel and analytics platforms.[27] Ghosh conceded that Moody's typical 10-15 year time horizon for this scenario work is shorter than the duration of some of the long-term credits it rates, creating exposure to future upgrades or downgrades. Both acknowledged that only a small share of their firms' ratings has been adjusted to date based on climate factors, in part because their mandate is not really to price in climate risk holistically but rather to narrowly measure how this and other risks might impair a company's ability to pay back their debts. Even when such climate-driven ratings upgrades or downgrades do occur, they flow unevenly through to changes in equity value (for example, the equity devaluation is greater when already lower rated companies are downgraded). We believe Aon, Moody's and S&P Global will continue to evolve their analytics and play growing roles in supporting markets through the coming re-pricings. We put additional capital behind this market-support thesis in Q2 by purchasing Verisk, the global leader in catastrophe modelling software and services.

Verisk: Cat Bonds Anyone?

Hurricane Helene is the third hurricane to hit the Big Bend region of Florida in just 13 months, after Hurricane Idalia in August 2023 and Debby in August 2024. Well before this, Florida's private insurers had been in turmoil, tightening underwriting standards, re-pricing premiums within regulatory limits, liquidating in bankruptcy or exiting the State altogether. Citizens Insurance, a state-run, non-profit insurer of last resort set up in 2002, has grown rapidly to fill the breach. But Citizens is not a panacea: some of its policyholders have been shocked to realize that the fine print gives it the right to make up any underwriting losses by imposing extra assessments on its customers, or even on all insureds across the state. All insurers strive to limit their losses by buying reinsurance from big reinsurance companies like SwissRe, or they issue "cat bonds" (catastrophe bonds) to distribute the risk to the capital markets.

Citizens is this year issuing a potentially record-breaking cat bond of $850 million.[28] So what is a cat bond? It's a bond that pays a comparatively high interest rate until a specified catastrophe threshold (e.g., hurricane reaching certain wind speeds) is triggered, at which point the investor loses most or all of their principal and stops receiving interest payments. The cat bond index was up 20% in 2023, a record for the asset class, because last year was a quiet hurricane season that followed several active ones. Yields as of mid-2025 were in the mid-teens, which was attractive to institutional buyers seeking uncorrelated returns.[29] The cat bond market as of May 2024 was $45 billion across 286 securities, and this year issuance has been running well ahead of 2023.[30]

Through its subsidiary AIR, Verisk's 100+ PhDs develop probabilistic models covering natural perils in over 110 countries worldwide.[31] Verisk modeled risk for the first publicly issued catastrophe bond in 1996 and has supported more than 80% of issuances since 2011. We expect Verisk's extreme event solutions to grow revenue at a 9.3% CAGR over the next two years, ahead of Verisk's group revenue CAGR of 7%. The climate prognosis unfortunately supports our thesis: attribution scientists assessed Hurricane Helene as having been 2.5x more likely due to human-caused climate change, and the high Gulf of Mexico water temperatures that fueled it 200-500x more likely. Meanwhile, Hurricane Milton is approaching landfall as we put this letter to bed.[32] Our Verisk thesis is, as with all our holdings, grounded not just in our E-thesis but in fundamental economic attributes:

- **Market dominance in its primary segments:** In 2023, Verisk's clients included all of the top 100 property and casualty insurance providers in the U.S.[33]
- **Consistent and recurring revenue:** Over the past 17 years, Verisk has compounded organic revenue growth at 7% and has never fallen below 5% in a given year. 80% of Verisk's revenue is recurring, and features 95+% client retention.[34]

- **Wide competitive moat**: Verisk's moat is grounded in network effects, as each client underwriter recognizes that its ability to project future losses will be more reliable if it uses Verisk's collected industry-wide data rather than its own data exclusively. Verisk's integration into client workflows across the full lifecycle creates high switching costs.[35] Its moat is continuously refreshed as it updates its industry-standard policy language to suit changing legal and regulatory requirements by assessing 2,000 regulatory filings yearly.
- **Ample reinvestment opportunities:** Verisk is investing in AI and other growth vectors. It is using AI to analyze decades of radar data and to update its model for severe convective storms in 2022. Growth vectors include international expansion and adjacencies such as life insurance and annuities.
- **Business in transition / underappreciated value:** Verisk divested its cyclical energy, financial services and healthcare segments over the past five years, while acquiring 13 businesses -- making it a robust insurance "pure play". Its ROIC re-rated from a 7-year average of 13% to 23% in 2023, and our forecast is for this to continue upward to 30+%, its level in the early 2000s.[36]

Performance

All 11 sectors of the S&P 500 are up on a YTD basis, led by Utilities, Communications, Financials and Industrials. Within Utilities, **NextEra**'s 42% total return is well above the 30.5% sector return. All of our Financials were broadly in line with the sector's +22% total return, with Moody's at the top. Within Industrials, our largest sector weighting, our biggest YTD performers have been **Trane, United Rentals, Carrier,** and **Schneider Electric**.

	DWA Sustainable Equity (gross)	DWA Sustainable Equity (net)	Reference Indexes: MSCI SRI TR Index	Reference Indexes: S&P 500 Total Return Index	Reference Indexes: MSCI World TR USD Index
Annualized Returns					
1Yr	36.19%	35.12%	29.43%	36.35%	32.43%
3Yr	6.03%	5.15%	8.45%	11.91%	9.08%
5Yr	15.86%	14.87%	13.53%	15.98%	13.04%
Inception	17.11%	16.06%	13.08%	14.97%	12.12%
Cumulative Returns					
1Yr	36.19%	35.12%	29.43%	36.35%	32.43%
3Yr	19.21%	16.26%	27.54%	40.17%	29.79%
5Yr	108.77%	100.02%	88.61%	109.83%	84.60%
Inception	240.10%	217.24%	159.29%	194.67%	142.58%

Inception date: January 1, 2017

Past performance is no guarantee of future results.

Thank you, as always, for entrusting us with your capital. If you'd like to set up a call, please be in touch with either Dan Abbasi at dan@douglasswinthrop.com or Bowdy Train at bowdy@douglasswinthrop.com.

Sincere regards,
The Douglass Winthrop Team

Please see endnotes below and important disclosures at the end of this document.

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[1] Global and advanced economy emissions and GDP figures are here: https://www.iea.org/reports/co2-emissions-in-2023/executive-summary. The estimate that we need a global 7% decline in annual emissions to 2030 to meet a 1.5C target is here: https://www.bcg.com/press/8november2023-cut-emissions-maintain-global-warming-limit and a U.S. specific target of nearly 7% reduction to meet its national commitment to reduce emissions by 50-52% relative to a 2005 baseline by 2030 is here: https://rhg.com/research/us-greenhouse-gas-emissions-2023/. Finally, the Say on Climate shareholder engagement initiative, with which the DWA Sustainable Equity Strategy is aligned, calls for companies to have a credible plan for 7-8% annual emissions reductions per annum to 2030 – see: https://www.sayonclimate.org/guide-for-asset-managers/

[2] https://www.energyconnects.com/opinion/features/2024/march/explained-how-energy-related-emissions-in-advanced-economies-fell-to-a-50-year-low-in-2023/ and https://iea.blob.core.windows.net/assets/33e2badc-b839-4c18-84ce-f6387b3c008f/CO2Emissionsin2023.pdf

[3] See more on the global stocktake here: https://unfccc.int/topics/global-stocktake and the synthesis report of the UN technical dialogue supporting the stocktake here: https://unfccc.int/documents/631600 Per the Rhodium We are on track for 2.7C global average temperature increase above pre-industrial levels, a seemingly modest amount but this global average disguises much larger increases at the poles, where we keep the ice, and in continental interiors, where we tend to grow our food grains; each tenth of a degree is enormously consequential for impacts. See Rhodium outlook here, issued one year after the stocktake and supporting an average projection of 2.7C temperature increase: https://rhg.com/research/rhodium-climate-outlook-2024/ On China's solar boom, see: https://heatmap.news/economy/chinas-solar-boom-is-big-fast-and-unstable

[4] https://www.un.org/pga/wp-content/uploads/sites/109/2024/09/The-Pact-for-the-Future-final.pdf

[5] See pages 39-42 of: https://www.un.org/pga/wp-content/uploads/sites/109/2024/09/The-Pact-for-the-Future-final.pdf On inclusion of the rights of future generations in national constitutions, see: "The Rise of the Constitutional Protection of Future Generations" by Philipp Thaler and Markus Rutsche, published on August 12, 2022. See: https://verfassungsblog.de/the-rise-of-the-constitutional-protection-of-future-generations/

[6] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8499628/ and

[7] https://www.theclimategroup.org/ClimateWeekNYC2024

[8] https://www.aluminum.org/Recycling

[9] https://www.wsj.com/business/aluminum-cans-froth-up-in-shift-for-beverage-industry-5159d4ef and for Ball's upward guidance revision, see August 1, 2024 Q2 Earnings Call, wherein CEO Dan Fisher says: "And so, if we go back to our Investor Day, and I probably didn't do a great job of pointing this out, but what we laid out, and we have a high degree of confidence in it, is probably somewhere in closer to the 13% to 15% range, as opposed to the 10%-plus".

[10] See page 51: https://bpb-us-e2.wpmucdn.com/sites.middlebury.edu/dist/7/7205/files/2019/06/Citi-GPS-Rethinking-Single-use-Plastics.pdf. Also: https://www.woodmac.com/news/feature/aluminium-vs-plastic-who-will-win-the-water-bottle-war/

[11] See Page 38 in 2022 Ball Investor Day presentation available here: https://investors.ball.com/news-events/presentations

[12] In June 2022, the Biden administration announced a plan to phase out single-use plastics in national parks and other public lands by 2024. This order reversed the Trump administration's 2017 policy that had lifted restrictions on plastic water bottle sales in national parks. See: https://www.doi.gov/reducing-single-use-plastic-pollution

[13] https://theoceancleanup.com/great-pacific-garbage-patch

[14] https://www.nbcnews.com/science/science-news/microplastics-human-body-know-dont-know-rcna23331

[15] https://www.newcastle.edu.au/newsroom/featured/plastic-ingestion-by-people-could-be-equating-to-a-credit-card-a-week

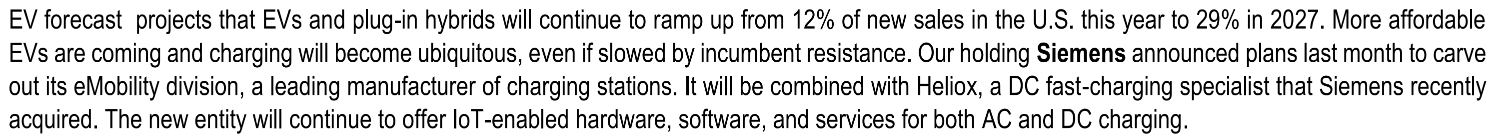
[16] https://filecache.investorroom.com/mr5ir_novelisnew/382/Novelis_Corporate_Factsheet.pdf

[17] https://www.youtube.com/watch?v=rewRKYlRew4

[18] https://carbontracker.org/reports/the-futures-not-in-plastics/

[19] Can sheet volumes inflected up in 2017 after years of stagnation and we continue to track this as part of our investment thesis. But separate from sustainability considerations, the core value prop is strong: beverage manufacturers favor cans for new products because it affords them greater ability to stand out with creative color, design and format flexibility. Plenty of runway remains for beer to shift from glass to cans in Europe, and for canned water to catch up worldwide. While virgin aluminum is energy intensive to produce, most beverage cans contain an average of 65-70% recycled aluminum. Beverages sold in aluminum cans made up ~21% of the market at the end of Q2, up from 17% in 2019, while plastic's market share slipped. https://www.nbcnews.com/science/environment/california-sues-exxonmobil-plastic-recycling-deception-rcna172267 and https://oag.ca.gov/news/press-releases/attorney-general-bonta-sues-exxonmobil-deceiving-public-recyclability-plastic

[20] https://e360.yale.edu/features/the-plastics-pipeline-a-surge-of-new-production-is-on-the-way and on the Global Plastics Treaty, see: https://www.unep.org/news-and-stories/press-release/pivotal-fourth-session-negotiations-global-plastics-treaty-opens. Note also that The oil and gas industry has not only lobbied to slow down the substrate shift away from plastics, but also to delay the fuels shift away from gasoline toward electricity, through state-by-state lobbying against EV charging stations and efficiency rules that favor EVs.[20] Yet Bloomberg New Energy Finance's recent



EV forecast projects that EVs and plug-in hybrids will continue to ramp up from 12% of new sales in the U.S. this year to 29% in 2027. More affordable EVs are coming and charging will become ubiquitous, even if slowed by incumbent resistance. Our holding **Siemens** announced plans last month to carve out its eMobility division, a leading manufacturer of charging stations. It will be combined with Heliox, a DC fast-charging specialist that Siemens recently acquired. The new entity will continue to offer IoT-enabled hardware, software, and services for both AC and DC charging.

[21] Last week Carney also warned of costly transition risks facing properties that have missed regulatory deadlines to upgrade their energy efficiency in the more prescriptive UK market. Carney warned that commercial buildings in the UK face a tough series of deadlines to upgrade their energy efficiency ratings by 2030 per the latest regulations. About 12% of commercial properties missed an energy rating deadline last year. Carney warned investors: "There will be people . . . who think that these timelines are going to shift, or that somehow or another it is not going to become a binding constraint. But that is a big risk to take." See: https://www.ft.com/content/d0925242-858c-4a97-a98b-db846a470d27 In the SES, we exclude the Energy sector from our Sustainable Equity Portfolio, but are also have no pure-play real estate exposure in the portfolio (Brookfield Asset Management has a significant real estate business as part of its diversified mix). If you consider physical climate risks as seriously as we do, it is very hard to invest in publicly traded real estate companies given their typically high exposure to coastal or near-coastal property situated marginally above sea level.

[22] https://www.theguardian.com/business/2018/apr/06/mark-carney-warns-climate-change-threat-financial-system and https://www.frbsf.org/research-and-insights/publications/economic-letter/2021/02/climate-change-is-source-of-financial-risk/ and https://www.federalreserve.gov/newsevents/speech/brainard20211007a.htm

[23] https://www.nature.com/articles/s41586-024-07219-0 and https://www.dw.com/en/climate-change-to-wreck-global-income-by-2050-study-shows/a-68852314 This first study, published in Nature, focused on impacts to which we are already believed to be committed by historical emissions and continuing social inertia, and based only on temperature and precipitation effects, not health impacts, sea-level rise or the crossing of potential tipping points.

[24] https://www.housingwire.com/articles/realtor-com-reveals-new-tools-to-evaluate-climate-risk-exposure/

[25] https://www.axios.com/2024/10/01/hurricane-helene-damages-35-billion and https://www.investors.com/news/hurricane-helene-34-billion-price-tag-stock-market-impact/ and https://www.reinsurancene.ws/a-huge-8-4bn-of-catastrophe-bond-issuance-in-q2-takes-market-to-record-size-report/

[26] Aon Edge has brokered flood insurance through Lloyd's of London. FEMA reports that 99% of U.S. counties have experienced a flood since 1996, yet only 4% of homeowners carry flood insurance. Despite this low uptake, payouts from the National Flood Insurance Program increased more than 660% between 2000 and 2020, rising from $9.4 billion to $62.2 billion, which FEMA attributed to climate change and rising sea levels.

[27] Moody's has expanded its capabilities in assessing climate-related risks and is incorporating them into its credit rating and risk assessment processes. In 2019, Moody's acquired a majority stake in Four Twenty Seven, a research firm that assesses the physical risks of climate change and prices climate-change risk. In 2021, Moody's acquired Risk Management Solutions (RMS), a leading global provider of climate and natural disaster risk modeling and analytics, for $2 billion. S&P Global acquired The Climate Service in January 2022, and RobecoSAM's ESG Ratings Business and its climate and ESG coverage of nearly 7,000 companies. In December 2022, S&P Global acquired the Shades of Green business from CICERO (Center for International Climate Research).

[28] https://www.artemis.bm/news/florida-citizens-targets-850m-cat-bond-issuance-potential-to-become-biggest-ever/

[29] The years 2017-2022 were a difficult period for the cat bond asset class, esp. 2020, which was a record year for named storms. This led to a supply/demand imbalance by the end of 2022 and big returns for those who waded in and benefitted from a light hurricane season in 2023. Citation for the 20% return: https://www.artemis.bm/news/swiss-re-cat-bond-index-hits-record-19-69-total-return-for-2023/

[30] Cat bonds segmented by peril: U.S. wind $395m, U.S. earthquakes $650m, multiperil $1.35bn, international $647m, cyber $340m = total $3.73bn as of December 2023. Source: Elementum, an insurance-linked securities manager cited on CNBC. Only 40% of natural catastrophe losses were covered by insurance in 2023. This percentage has steadily risen from 30% in 2008 and 20% in 2000.

[31] AIR founded the catastrophe modelling industry in 1987 by providing dynamic catastrophe projections. AIR gained attention for producing more accurate projections of the losses from Hurricane Andrew in 1992 than those rendered by insurers' other projections.

[32] See: https://www.theguardian.com/environment/2024/oct/08/hurricane-helene-milton-global-heating-study and https://www.npr.org/2024/10/09/nx-s1-5144216/climate-change-hurricane-helene and https://www.worldweatherattribution.org/climate-change-key-driver-of-catastrophic-impacts-of-hurricane-helene-that-devastated-both-coastal-and-inland-communities/

[33] Verisk operates the largest database (ClaimSearch) for P&C claims with 90% share, models risk through AIR for >70% of global catastrophe bond issuances, provides Xactware software for >75% of the property estimating industry for repairs, and Intherthinx's FraudGUARD provides mortgage fraud software with >70% share.

[34] Its underwriting solutions amount to 71% of revenue and has 99% client retention. Claim solutions = 29% of revenue and boasts 90+% client retention.

[35] Verisk serves the full lifecycle: product development, marketing, new and renewal underwriting, risk selection and segmentation, pricing, and straight through to policy binding and issuance.

[36]Douglass Winthrop internal calculations based on Verisk financial disclosures

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