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The Transition to a Sustainable Economy

By Julie Gorte, Ph.D. | February 1, 2019

History is stuffed with examples of societies that confronted existential challenges and failed to solve them: Easter Island, the Anasazi in Chaco Canyon, the Norse settlers in Greenland, the Maya in Central America.[1] Today, the challenges are planetary in scale, and failure to solve them could mean that societies across the globe collapse.

We are in the midst of what many experts see as the sixth great extinction. Unlike the first five, this one isn't attributable to external events like a meteor impact or flood volcanism or loss of marine oxygen. This one is on us: It is a consequence of things like greenhouse gas emissions, overuse of fresh water, overexploitation of natural resources, rapidly expanding population and pollution without accountability.

On top of what we're doing to our planet, there are several social forces at work that threaten the foundations of our societies and economy, such as increasing inequality, discrimination and poverty. None of these things is new, of course, but in an increasingly crowded world, all the problems mentioned above interact with and reinforce each other. These are the global challenges we need to solve, and we need a sustainability transformation to enable our economies and societies to continue to work for us — and by us, we mean all of us, not just some of the tribes.

Every company, and every investor, has many impacts on society. Many of them are positive, but many are not. By focusing our efforts on augmenting the positive impact and eliminating or curtailing the negative ones, investors can help to achieve the kind of sustainability

transformation we need to have. The good news is that there's every reason to think that that will be as financially rewarding as investing with only a focus on financial returns.

Climate change

We've known about climate change for at least six decades. But not until the most recent one was it possible to say that most people believe that climate change is happening and that we need to do something about it. Moreover, there is a growing consensus in the investment world that climate change presents a group of risks that will, if unmitigated, have a profound impact on economic performance and financial returns. Forecasts of what those risks could cost range widely, from 2 percent to 20 percent of global GDP by 2100, and up to hundreds of trillions of dollars — and even those forecasts openly acknowledge that they do not, and cannot, include many of the costs that could result from climate change, including increased likelihood of conflict and the creation of tens or hundreds of millions of climate refugees.

> There are two things that we need to do, and investors can have impacts on both.

Avoid the unmanageable: mitigation. If we continue with business as usual, the globe could warm by 5 degrees Celsius by the end of the century. That, unless several miracles occur, is unmanageable by today's standards and includes events and conditions such as many more species facing extinction, falling harvests in developing and developed countries alike, sea level rise threatening many major cities and significant water shortages.

Small changes in temperature have enormous impacts on our livelihoods. Even the difference between 1.5 C and 2 C in future warming can be profound: at 2 C, the duration of heat waves is more than double their duration at 1.5 C; the population facing at least one severe heatwave every five years rises from 14 percent to 37 percent; the frequency of warm extremes more than doubles; and the frequency of extreme rainfall more than doubles. That's what the best predictions say will happen with half a degree; if we continue on our current path, the impacts will be almost unthinkably more profound.

Manage the unavoidable: adaptation. No matter how good a job we do mitigating emissions, we will still need to adapt to a changing climate. Greenhouse gases stay in the atmosphere anywhere from decades to millennia; the carbon dioxide we emit today will still be in our atmosphere a hundred years from now. Adaptation is a vital piece of a sensible sustainability transition, though, because it will help to keep our societies and economies civil and running through the inevitable crises that a warming planet brings.

Resource scarcity

All of the resources we depend on for our lives and livelihoods are essentially finite. Some are more finite than others — water, for example, doesn't come new to us every day like sunshine; mineral resources are not renewable on human timescales. The greater the human population, the more finite even resources we've long thought of as renewable become increasingly finite. We're accustomed to thinking of food and fiber, things that are produced by plants and animals that can be grown, as renewable, but the rate at which we are using these resources is

outstripped by human demands for them as the population expands. We have always been able to use technology to extend our dependence on the endowments of our native planet, sometimes by developing new ways to get at resources that were formerly unobtainable (for instance, deepwater drilling), improving the yields of natural resource crops (for instance, through the Green Revolution, which has improved the yields of the world's major cereal crops by 175 percent since 1961), finding ways to use existing resources more efficiently (such as developing lighting sources that require far less wattage per lumen). There are countless examples of how our technologies have enabled us to stretch natural resource endowments.

But that ability is not limitless. Jeremy Grantham, in 2011, pointed out that human use of natural resources has recently passed a kind of tipping point, and our ability to continue to stretch resources through technology or recycling is dwindling.[2] "The prices of all important commodities except oil declined for 100 years until 2002 by an average of 70 percent. From 2002 until now, this entire decline was erased by a bigger price surge than occurred during World War II," Grantham notes. "From now on, price pressure and shortages of resources will be a permanent feature of our lives." There was a time when the number of fish caught depended on the number of boats that could be put to sea; now the catch is limited by the dwindling number of fish in the sea.

The investment perspective on resource scarcity is conceptually straightforward: We need to price the risks correctly, and we need to look for investment opportunities in companies that provide solutions.

It is essential for a sustainable economy to see natural resources as an asset, and wasteful or harmful use of those resources as risks. For investors, understanding and pricing those risks accurately is essential. There is no clearer example of this than water.

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More than 96 percent of the water on Earth consists of oceans, seas and bays. The water we humans use most — that in freshwater lakes and rivers — makes up 0.0009 percent of all the water on Earth. Groundwater, another important source of the water we use, makes up 1.69 percent of Earth's water, but more than half of that water — 55 percent — is saline, and unusable for drinking and hygiene without desalination. Another 1.74 percent of the water on Earth is frozen, in ice caps, glaciers and permanent snow — but turning all that ice into water would raise sea levels by more than 200 feet. The risks and consequences of overusing our precious water endowment are increasingly evident. For instance, drought in South Africa threatened taps running dry in Cape Town in 2018, and while conservation measures and rainfall alleviated the immediate threat, the city still estimates that "zero day" — when it cannot supply water to residents — could occur in 2019. Still, the drought cut agricultural output in South Africa and threatened the country's economic rebound. California's drought starting in 2011 hurt many parts of the state's economy, from agriculture to electricity production to high-tech data centers, and was estimated to cost the state more than $600 million. In Chile, already home to the world's driest desert, overuse of water in the country's copper and lithium mining industry resulted in a severe shortage, followed by restrictions on water use, which could threaten the mines that are so vital to the country's exports.

In 2015, Bloomberg produced a Water Risk Valuation Tool to help investors understand water risks for mining companies and price those risks realistically, and in 2018, Ceres created a Water Risk Toolkit to help investors understand and price water risks in any sector. It is encouraging to see these developments, but this kind of analysis is needed for all natural

resources, including not just minerals but endowments of resources we often take for granted, like clean air, fertile soil, habitat and even sand. These endowments, which form a vast commons that humans have depended on throughout our history, are being damaged and overexploited, as commons often are, because they are not valued correctly. The sustainability transformation demands that we do that work.

Inequality and Poverty

No matter how good we get at solving environmental problems, it's not enough to create a truly sustainable economy unless we address the social challenges that imperil sustainability. Foremost among those challenges are inequality and poverty.

The McKinsey Global Institute documented in 2016 that prior to the 2008 financial crisis, a tiny minority of households in advanced developed countries (2 percent) were worse off than similar households in previous years. That figure, in the United States and Western Europe, is now around two-thirds of households. As the scope of many enterprises changes from local to global, workers and the middle class are increasingly unlikely to share the wealth that comes from such growth. The share of national income around the world that goes to the richest is rising rapidly, while the share that goes to the bottom 90 percent has stagnated. In 2017, 82 percent of new wealth created on the planet went to the richest 1 percent, and none of it went to the poorest half. The increasing concentration of wealth in a smaller group includes corporations as well as individuals. In 1975, 109 firms represented half of all earnings among publicly traded corporations in the United States; 40 years later, that number was 30.

We are accustomed to the idea that work is a route to a comfortable life, and that the opportunities to find work that supports comfortable lifestyles is available to everyone. But the share of GDP that goes to wages has shrunk dramatically, especially following the 2008 recession. McKinsey Global Institute studied six countries in depth, and noted that the share of GDP that goes to wages shrank, on average, 5 percent between 1970 and 2014, and in the most extreme case (the United Kingdom) 13 percent. That happened despite rising productivity. Where did the money go? Largely into corporate profits, which rose nearly 30 percent over the past three decades. And corporate profits, in turn, are increasingly going to CEOs. In 1978, CEO earnings were around 30 times that of typical workers; now they're more than 300 times higher.

Even the concept of average or ordinary work is changing in ways that many find ominous. Technology has historically meant higher living standards — more jobs, higher wages — for many, if not most, people. But the increasing pace of automation, with machines able to do an ever-increasing range of tasks that people used to do, might put the prospects of rewarding work increasingly beyond the means of not only the poor but of the middle class as well.

Demographics and Equality

Long ago, humans' ability to survive and thrive depended on strength and speed. Today, things are different: Most occupations depend on attributes and skills that are not intrinsically male or female. Yet wealth, income and economic opportunity are still skewed heavily in favor of

men, all over the globe. Women's representation in private employment shrinks more toward the top of the employment hierarchy, and pay gaps exist for women at all levels in nearly every country. Progress toward more equal gender balance on boards has improved, but at a glacial pace, and the percentage of female CEOS among the largest American companies is tiny and, at the moment, declining.

The situation is arguably even worse when we consider racial and ethnic diversity. It can be challenging to measure racial and ethnic diversity globally, as definitions differ country by country. But in the United States, at least, it is dispiriting that only 11 percent of senior managers in S&P 500 companies are from racial or ethnic minorities, and that is only two percentage points higher than it was 15 years earlier. There are also pay gaps for racial and ethnic minorities; the earnings of white men exceed those of black and Hispanic men, and all women. Racial and ethnic minorities in the U.S. make up 38 percent of the population. The U.S. Census bureau predicts that whites will no longer be the majority of the country's population in 2045.

Reducing or eliminating gender gaps would dramatically expand the global economy. Photo: Sean Sheridan for Mercy Corps

We simply cannot afford to waste or undervalue more than half the talent on the planet. Improving women's economic opportunities and participation would be a significant boost to the world's economy. McKinsey reported that the global economy could be between $12 trillion and $28 trillion larger in 2025 if gender gaps were reduced or eliminated.[3] The lower figure represents the potential if all countries matched the performance of the best country in their

respective region in terms of eliminating gender gaps, and the higher figure represents what could happen if all gender gaps were eliminated. That's about the size of the gross domestic product (GDP) of the U.S. and China — the two largest economies — combined.

Research establishes that diversity in corporate decision-making can contribute to corporate financial performance. Diverse groups examine more options, and are less subject to the perils of groupthink, than homogeneous groups, and that kind of decision-making is exactly what boards are supposed to do. Company strategic management, which is a collaboration of boards and senior management, is demonstrably improved by diversity at the board table and the executive suite.

Closing the opportunity and economic gaps for racial minorities and ethnicities is, similarly, an economic priority to enable us to have a civil, sustainable future, particularly in view of the fact that, at least in the United States, they will be the majority of Americans three decades from now. A country in which the majority of the citizens are economically disadvantaged is anything but sustainable, and can often be destabilizing. South Africa's example reminds us of that.

Investors have a financial interest in a seamless transition to a more sustainable economy — and a lot of money at risk if we continue with business as usual. Fortunately, there are many tools investors can use to help achieve that transition. We must use all of them and encourage others to do the same.

Long-term thinking

The megatrends we have discussed — the need for a low-carbon economy and the need to reduce inequality and poverty, will take sustained effort for many years, if not decades. Investors whose long-term time horizon stretches only five years out are likely to miss opportunities and perhaps fall victim to risks that manifest themselves unpredictably, but over much longer time periods.

One of the best examples of using long-term thinking comes from climate change. Investors who still look at climate change as being primarily about regulatory risk might not see any prospects for a major change in national, state or other subnational jurisdictions' imposition of carbon pricing or carbon taxes over the next five years. But no matter what happens to regulation of emissions, companies and investors already face climate risks in the form of physical risk. For instance, in the third quarter, AIG reported a $1.3 billion loss resulting from hurricanes, typhoons and mudslides — all phenomena that are likely to worsen as the planet warms. The year 2018 may see higher climate-related losses for insurance companies than 2017, which set the previous record for natural-disaster payouts. While we cannot now forecast the moment and geography of future weather disasters, we do know that the odds of such disasters are shortening and that some companies and sectors are especially vulnerable. Building such risks into our investment analysis is one example of how long-term thinking can be factored into day-to-day portfolio decisions.[4]

ESG integration

Integrating ESG factors into investment management goes hand-in-hand with longer-term thinking. It also makes the risks of not advancing sustainability, and the opportunities that the sustainability transformation presents, things that can be priced into portfolio construction and measured by returns generated.

For example, we know from decades of academic and financial research that gender equality is associated with companies' ability to outperform financially. Our own gender index, the Pax Ellevate Global Women's Leadership Index, and the Pax Ellevate Global Women's Leadership Fund, which invests in companies that invest in women's leadership, have outperformed [5] their passive benchmark every year since inception, because the factors that make the Index and the Fund different from the benchmark are about gender equality: women on boards, women in senior management, and implementation of gender equality principles. Moreover, the only thing that distinguishes performance of our gender Fund from its underlying index is gender alpha — a score that primarily measures the equality of women in decision-making roles at companies.

Impact investing

One of the most appealing forms of investing for sustainability right now is impact investing: investing in things that directly help to bring about a more sustainable future. Some of what is now called impact investing was once called community investing, a category that included investments in things like affordable housing, infrastructure, food access, education, access to childcare, smart growth and the like. Impact investing includes a wide variety of other sustainability purposes as well: clean energy, access to clean water, financial inclusion, water and sanitation, sustainable agriculture, gender equality, poverty and children's well-being. Some impact investors are specialists, and in 2017 the Global Impact Investing Network[6] reported that two-thirds of the respondents to its annual survey specialized in impact investing; the remaining third were investors who also had other types of investment business. Impact investors are expected not only to invest for sustainable impact but report on those impacts.

The proportion of women leaders among the constituents of our Pax Ellevate Global Women's Leadership Fund, for example, has risen every year, and we believe it helps to move the needle in achieving gender equality in the top echelons of business — which also tends to benefit investors, as well as other women working in those companies. Our Global Environmental Markets Fund invests in companies that provide solutions to sustainability in the form of energy efficiency and renewable energy, water infrastructure and waste management, and sustainable food and agriculture. In 2017, the constituents of that Fund contributed to reduced carbon emissions worth 160 metric tons of carbon dioxide, generated nearly 1,960 megawatt-hours of renewable energy, saved or treated 123 million gallons of water, and recovered or treated 2,180 tons of waste.[7]

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Engagement

It is sometimes tempting, when faced with a world full of unsustainable enterprises, to wish we could abandon all of that and start afresh. But we don't have that option; our journey to a more sustainable economy is likely to be much shorter if we can also convince many of those enterprises whose operations are not sustainable now to make them more compatible with a sustainable economy.

Investors, perhaps foremost among companies' many stakeholders, do have the ability to advise or at least urge corporate management to take steps toward sustainability, not just because sustainability is necessary, but because more sustainable companies tend to perform better for their investors.[8] More and more, investors are using their position as owners to bring ideas for more sustainable management to companies in their portfolios, through individual dialogue or through collective action such as the Carbon Disclosure Project, the UN Principles for Responsible Investment, the Climate Action 100+, the Investor Network on Climate Risk and other investor alliances that aim to advance specific actions contributing to sustainability. While these engagements rarely achieve instant success, they do make headway.

When we first began writing to companies about increasing the diversity of their boards (2007), the percentage of women on the boards of the Fortune 500 was less than 15. Over the past 10 years, the total number of people on boards of the S&P 500 has increased by 13 percent; the proportion of women on those boards has gone up 122 percent. In 2018, 40 percent of new board members in S&P 500 companies were women.[9] At Pax World Funds we have been voting against all-male boards on companies' annual proxies for more than a decade, and every time we do, we write the companies letters telling them why we voted as we did. Two years ago, often persuaded by the investment case for diversity in decision-making bodies, several of the world's largest asset managers also began to vote proxies in ways that encouraged all- or mostly-male boards to diversify.

Over the past decade-plus, investors have also helped to persuade a growing number of companies that climate change is a risk to them and to their investors, and asset managers and owners, through the Carbon Disclosure Project, have sent letters to companies all over the globe asking them to report on their own risk exposure (e.g., greenhouse gas emissions, policies to reduce those emissions, and other forms of risk) and contributions to greenhouse gas mitigation. Now, Carbon Disclosure Project investors have assets under management of more than $100 trillion, and companies in more than 50 countries are increasingly disclosing climate risks and opportunities to investors. Disclosure, of course, is only the first step to solving the problem — but it's a necessary step. As the old saying goes, you can't manage what you don't measure.

We have a simple, stark choice: We can either choose and work toward a more sustainable future, or we can be surprised and often shocked by increasingly severe and frequent disasters that our business-as-usual path leads us to. As investors, we do have power to move the needle on the sustainability challenges we face, and doing so will, we know, give our

descendants the opportunity to live in a world of comity, peace and sufficiency. We would be foolish to ignore that possibility. Let's use our power to bring about a more sustainable economy.

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[1] For deeper readings on these, see Jared Diamond's "Collapse: How Societies Choose to Fail or Succeed," (New York: Penguin Group), 2005; and Jeff Masters' "Ten Civilizations or Nations That Collapsed from Drought," Weather Underground, March 21, 2016
[2] Jeremy Grantham, "Time to Wake Up: Days of Abundant Resources and Falling Prices are Over Forever," GMO Quarterly Letter, April 2011.
[3] McKinsey&Company, "How Advancing Women's Equality Can Add $12 Trillion to Global Growth," Sept. 2015.
[4] For additional information, see Pax World's Task Force on Climate-Related Disclosures 2017 report.
[5] The annualized returns for the Pax Ellevate Global Women's Leadership Fund – Investor class – as of 12/31/2018 were, 1 year: -7.74%, 3 year: 6.88%, 5 year: 5.06%, 10 year: 8.60%. The annualized returns for the Pax Ellevate Global Women's Leadership Fund – Institutional class as of 12/31/2018 were, 1 year: -7.51%, 3 year: 7.15%, 5: year 5.31%, 10 year: 8.86%. The returns for the MSCI World Index as of 12/31/2018 were, 1 year: -8.71%, 3 year: 6.30%, 5 year: 4.56%, 10 year: 9.67%. The returns for the Pax Global Women's Leadership Index as of 12/31/2018 were, 1 year: -6.20% and 3 year: 6.99%.
[6] Global Impact Investing Network, "Annual Impact Investor Survey 2018 .
[7] Impax Asset Management, "Pax Global Environmental Markets Fund," Sept. 2018
[8] For more information on the financial performance of sustainable companies and funds, see https://paxworld.com/category/research/esg/
[9] Spencer Stuart, "2018 Spencer Stuart Board Index: S&P 500 Boards: Trends Over One, Five and 10 Years," 2018.

Risks: Equity investments are subject to market fluctuations, the fund's share price can fall because of weakness in the broad market, a particular industry, or specific holdings. The Fund does not take defensive positions in declining markets. The Fund's performance would likely be adversely affected by a decline in the Index. Investments in emerging markets and non-U.S. securities are generally less liquid and less efficient than investments in developed markets and are subject to additional risks, such as risks of adverse governmental regulation, intervention and political developments. There is no guarantee that the objective will be met and diversification does not eliminate risk.

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The top 10 holdings of the Pax Global Environmental Markets Fund as of 12/31/2018 are as follows: Sealed Air Corp. 3.7%; Danaher Corp. 3.5%; Xylem, Inc. 3.5%; Siemens AG 3.5%; Ecolab, Inc. 3.3%; TE Connectivity, Ltd. 3.2%; Suez 3.2%; East Japan Railway Co. 3.1%; Waste Management, Inc. 3.1%; Linde PLC 3.1%.

The annualized returns for the Pax Ellevate Global Women's Leadership Fund – Investor class as of 12/31/2018 were, 1 year: -7.74%, 3 year: 6.88%, 5 year: 5.06%, 10 year: 8.60%. The annualized returns for the Pax Ellevate Global Women's Leadership Fund – Institutional class as of 12/31/2018 were, 1 year: -7.51%, 3 year: 7.15%, 5: year 5.31%, 10 year: 8.86%. The returns for the MSCI World Index as of 12/31/2018 were, 1 year: -8.71%, 3 year: 6.30%, 5 year: 4.56%, 10 year: 9.67%. The returns for the Pax Global Women's Leadership Index as of 12/31/2018 were, 1 year: -6.20% and 3 year: 6.99%.

Performance data quoted represent past performance, which does not guarantee future results. Investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Current performance may be lower or higher than the performance data quoted. For most recent month-end performance information, visit www.paxworld.wpengine.com. Total annual Pax Ellevate Global Women's Leadership Fund operating expenses, gross of any fee waivers or reimbursements, for Institutional Class and Individual Investor Class shares are 0.55% and 0.80%, respectively, as of 5/1/2018 prospectus.

The top 10 holdings of the Pax Ellevate Global Women's Leadership Fund as of 12/31/2018 are as follows: Microsoft Corp. 4.0%; Canadian Utilities, Ltd., Class A 2.1%; American Water Works Co., Inc. 2.1%; Texas Instruments, Inc. 2.1%; Wolters Kluwer NV 2.0%; Intuit, Inc. 2.0%; Swedbank AB, Class A 2.0%; Estee Lauder Cos. Inc., Class A 1.9%; Cisco Systems, Inc. 1.9%; Johnson & Johnson 1.9%.

The Pax Global Women's Leadership Index is a custom index calculated by MSCI. One cannot invest directly in an index.

†On 6/4/2014, the Pax World Global Women's Equality Fund merged into the Pax Ellevate Global Women's Leadership Fund (the Fund), pursuant to an Agreement and Plan of Reorganization dated March 4, 2014 (the "Reorganization"). Because the Fund had no investment operations prior to the closing of the Reorganization, Pax World Global Women's Equality Fund (the "Predecessor Fund") is treated as the survivor of the Reorganization for accounting and performance reporting purposes. Accordingly, all performance and other information shown for the Fund for periods prior to 6/4/2014 is that of the Predecessor Fund.

*The MSCI World Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed markets. The MSCI World Index consists of the following 23 developed market country indexes: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan,

Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom, and the United States. One cannot invest directly in an index. Returns are shown net which includes dividend reinvestments after deduction of foreign withholding tax.

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