Wellington Management recognizes that an international transition toward a lower-carbon economy is underway and believes this is important not only for our clients’ investments, but for the sustainability of financial markets, the global economy, and our planet.

At the December 2015 United Nations Climate Change Conference in Paris, all 195 participating countries reached a landmark agreement to reduce greenhouse gas emissions. This accord represents the first truly global agreement to address climate change. The main goal is to prevent the average global temperature from rising more than 2 degrees Celsius (3.6 degrees Fahrenheit) above pre-industrial levels, as most scientists believe that global warming beyond this point would result in the most catastrophic consequences of climate change (Figure 1).
THE PARIS AGREEMENT AND INVESTMENT IMPLICATIONS

Key elements of the Paris agreement include:

- Establishing greenhouse gas (GHG) emission reduction targets for the majority of the world’s countries, which will hopefully limit GHG emissions to a range that will keep the average global temperature from rising more than 2 degrees Celsius (ideally “well below” that), with a goal to “pursue efforts to limit” any temperature rise to just 1.5 degrees Celsius above pre-Industrial Revolution levels
- Setting a target peak for GHG emissions with a target date that is “as soon as possible” and setting a post-2050 target date for carbon neutrality
- Requesting progress reports every five years from participating countries
- Encouraging developed countries to commit US$100 billion in financing each year post 2020 to assist developing countries with their transition to a low-carbon economy

While there is still much to be resolved in terms of implementation of these targets and questions around the monitoring and enforcement of countries’ target emissions reductions, the Paris agreement signaled a clear global desire to move toward renewable energy and energy efficiency. We expect an increase in policies and market environments that favor more carbon-friendly businesses. We anticipate policymakers will produce clearer road maps and emission-trading schemes in the future that we believe will have investment implications for carbon-intensive industries. There will likely be long-term challenges for sectors, such as oil and gas, metals and mining, and carbon-intensive power generation that investors should consider.

Figure 1

The global average temperature is projected to rise by more than 4 degrees Celsius if preventative measures aren’t taken

Average warming projections by 2100

- If countries do not act
- Following current policies
- Based on Paris pledges
- 2°C Celsius scenario
- 1.5°C Celsius scenario

Data as of 8 December 2015 | Source: Climate Action Tracker, data compiled by Climate Analytics, ECOFYS, New Climate Institute, and Potsdam Institute for Climate Impact Research

Tom Levering
Global Industry Analyst, Utilities and Infrastructure

“...we expect an increase in policies and market environments that favor more carbon-friendly businesses.”

Alan Hsu
Portfolio Manager, Global Environmental Opportunities

“...as renewable energy becomes more mainstream, the day is quickly approaching when wind and solar may no longer be thought of as ‘alternative’ energy.”
CLIMATE CHANGE: RISKS AND OPPORTUNITIES

Climate change and related policy movements toward a low-carbon future may present an array of near- and long-term risks and opportunities. While the Paris agreement was a step in the right direction, climate change could still pose significant long-term risks to companies in many industries, especially those exposed to extreme weather, food- and water-supply disruptions, and increased government regulation.

Figure 2 shows that the frequency of extreme weather events and natural catastrophes has been on the rise for decades, a trend our firm expects will continue. At its core, we view climate change as being about greater volatility and less-predictable outcomes.

Figure 2
Weather catastrophes worldwide have been on the rise

As of January 2015  |  Sources: BofA Merrill Lynch based on Münchener Rückversicherungs-Gesellschaft, Geo Risks Research, NatCatSERVICE

Climate change implications are not just long-term considerations. There are also many questions regarding current and near-term effects that need to be addressed, such as:

• Which coastal real estate is exposed to fat-tail climate change risks?
• Is disaster insurance mispriced?
• Which municipal bonds hold climate change-related risks?
• What is the impact of extreme temperatures and weather volatility on various commodities?
Investing in a low-carbon economy: Potential opportunities

The Paris agreement further solidifies the global push toward a low-carbon economy and enhances the attractiveness of sustainable investments such as low-carbon electricity, low-carbon transport, energy efficiency, and water- and resource-management companies. Our portfolio managers and ESG team see a range of potential investment opportunities emerging as efforts to address climate change continue to advance.

Energy storage

The current inability to store electricity causes significant inefficiency on power grids and heating and cooling systems. Large-scale energy storage has the potential to fundamentally alter the energy sector and generate enormous value. Utility-scale batteries could enable wind farms and solar arrays to store electricity when demand and costs are low, and dispatch it when demand and costs rise.

Renewables

Additionally, as renewable energy becomes more mainstream, the day is quickly approaching when wind and solar may no longer be thought of as “alternative” energy. Industry watchers expect more than 50% of incremental electricity capacity to come from renewable sources over the next five years. While this presents potential opportunities for renewable energy providers, it may pose challenges for incumbent power generators.

Infrastructure

Even if the guidelines set out in the Paris agreement are met, the world will still need to make additional investments in infrastructure design for climate change. Companies that design seawalls to withstand rising sea levels, “green” buildings, and other structures that are ecologically sound and sustainable over decades should see demand rise significantly. Sudden natural disasters and long-term climate change-related problems have been expanding and have accelerated demand for these services. This is still a niche with relatively few publicly traded companies, but we believe the problem they are solving will become more acute and widespread. Businesses and municipalities around the world will almost certainly be more thoughtful about seeing infrastructure solutions that can alleviate climate-related challenges and try to protect them from economically crippling disasters.

Water

A warmer planet will likely increase water scarcity concerns in many areas of the world. In our opinion, the management of scarce water will be one of the most pressing issues globally over the next several decades. By 2030, global water demand is set to surpass supply by 40%, yet countries have underinvested in water management for decades. New infrastructure, including new pipelines, plumbing, meters, and sanitation facilities, should become critically important in many areas of the world.

Green bonds

Finally, the rise of green bonds has the potential to serve as an opportunity for investors to finance the transition to a lower-carbon economy. The proceeds from the green bond market, which reached US$70 billion in 2015, are earmarked for environmentally friendly projects, such as renewable energy, climate adaptation infrastructure, and energy efficiency. Experts have estimated that it will take US$93 trillion worth of investments to meet the targets for addressing climate change. Green bonds are one way for private pools of capital to contribute to the financing of this transition. Some of our fixed income portfolios hold green bonds and we believe this is a growing market with potential to serve as a meaningful tool to help reach the goals of the Paris agreement.

---

CLIMATE CHANGE IS EMBEDDED WITHIN OUR ESG INTEGRATION PROCESS

Climate-change considerations are a core part of our environmental, social, and corporate governance (ESG) integration process throughout our clients’ portfolios.

ESG research

Our team provides proprietary ESG ratings on companies, incorporating a range of ESG factors, including climate-change topics such as greenhouse gas emissions reduction targets, renewable energy use, and water scarcity management. Our team also works closely with our industry analysts to analyze sector-specific ESG risks including climate-change implications for more carbon-intensive industries.

Engagement with company managements

Our ESG team and investors engage with hundreds of company management teams on ESG topics each year. We believe that engaging with the companies we invest in plays a critical role in helping to identify, understand, and appropriately consider ESG risks such as climate change. As part of this process, our firm connects with companies in order to gauge their exposure to climate-related events, assess management’s awareness of this topic, evaluate their risk-management approach, and potentially influence their behavior. Sample engagement questions include:

- How does the board evaluate risks associated with climate change?
- Are there individuals at the company who are specifically responsible for issues associated with climate change?
- What is the company doing to mitigate its own greenhouse gas emissions?

Companies are increasingly reporting on direct emissions such as corporate facilities and operations owned by the company, referred to as Scope 1 emissions, and indirect emissions from electricity use, referred to as Scope 2 emissions. However, reporting on Scope 3 emissions — which refers to all indirect emissions within the supply chain and broader product life cycle and distribution activities — is less common. As shareholders, we want to know how climate-change risks could affect our portfolio companies’ long-term business and supply-chain operations; therefore, additional disclosure on Scope 3 is needed.
“In a recent study, companies reported that supply-chain risks as they relate to climate change are the sixth most common ESG question they receive, while the number-one question is usually focused on how they are reducing their energy consumption.”

**Figure 3**

**Survey: What environmental and social issues are companies being asked about?**

Green bars refer to climate-change-related issues. | Source: Ernst & Young Global Limited survey in cooperation with GreenBiz Group. 282 respondents representing 17 sectors and employed by companies with annual revenue greater than US$1 billion. Approximately 85% of respondents were based in the US. | As of 2013

**OUR CORPORATE ENVIRONMENTAL INITIATIVES**

Wellington Management is committed to addressing the environmental impact of our operations and raising awareness of sustainable practices among our employees. We continue to replace aging technology infrastructure with newer, more energy-efficient alternatives. Reducing the carbon footprint of our data centers, using more renewable energy sources, and “greening” our buildings are key components of our corporate environmental initiatives. For more information, please see our Annual Environmental Report.¹

We have no “house view.” While designated teams are accountable for the design and implementation of each of our investment strategies, at a firmwide level the views of our investment professionals can vary, sometimes significantly. We believe this diversity of thought strengthens our investment pro-
cesses by creating a robust “marketplace of ideas.”

Wellington Management Company LLP (WMC) is an independently owned investment adviser registered with the US Securities and Exchange Commission (SEC). WMC is also a commodity trading advisor (CTA) registered with the US Commodity Futures Trading Commission. In certain circumstances, WMC provides commodity trading advice to clients in reliance on exemptions from CTA registration. WMC, along with its affiliates (collectively, Wellington Management), provides investment management and investment advisory services to institutions around the world. Located in Boston, Massachusetts, Wellington Management also has offices in Chicago, Illinois; Radnor, Pennsylvania; San Francisco, California; Beijing; Frankfurt; Hong Kong; London; Luxembourg; Singapore; Sydney; Tokyo; and Zurich. ■ This material is prepared for, and authorized for internal use by, designated institutional and professional investors and their consultants or for such other use as may be authorized by Wellington Management. This material and/or its contents are current at the time of writing and may not be reproduced or distributed in whole or in part, for any purpose, without the express written consent of Wellington Management. This material is not intended to constitute investment advice or an offer to sell, or the solicitation of an offer to purchase shares or other securities. Investors should always obtain and read an up-to-date investment services description or prospectus before deciding whether to appoint an investment manager or to invest in a fund. Any views expressed herein are those of the author(s), are based on available information, and are subject to change without notice. Individual portfolio management teams may hold different views and may make different investment decisions for different clients.

In Canada, this material is provided by Wellington Management Canada LLC, a US SEC-registered investment adviser also registered in the provinces of Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Quebec, and Saskatchewan in the categories of Portfolio Manager and Exempt Market Dealer. ■ In the UK, this material is provided by Wellington Management International Limited (WMIL), a firm authorized and regulated by the Financial Conduct Authority (FCA). This material is directed only at persons (Relevant Persons) who are classified as eligible counterparties or professional clients under the rules of the FCA. This material must not be acted on or relied on by persons who are not Relevant Persons. Any investment or investment service to which this material relates is available only to Relevant Persons and will be engaged in only with Relevant Persons. ■ In Germany, this material is provided by Wellington Management International Limited, Niederlassung Deutschland, the German branch of WMIL, which is authorized and regulated by the FCA and in respect of certain aspects of its activities by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin). This material is directed only at persons (Relevant Persons) who are classified as eligible counterparties or professional clients under the German Securities Trading Act. This material does not constitute investment advice, a solicitation to invest in financial instruments or financial analysis within the meaning of Section 34b of the German Securities Trading Act. It does not meet all legal requirements designed to guarantee the independence of financial analyses and is not subject to any prohibition on dealing ahead of the publication of financial analyses. This material does not constitute a prospectus for the purposes of the German Capital Investment Code, the German Securities Sales Prospectus Act or the German Securities Prospectus Act. ■ In Hong Kong, this material is provided to you by Wellington Management Hong Kong Limited (WM Hong Kong), a corporation licensed by the Securities and Futures Commission to conduct Type 1 (dealing in securities), Type 2 (dealing in futures contracts), Type 4 (advising on securities), and Type 9 (asset management) regulated activities, on the basis that you are a Professional Investor as defined in the Securities and Futures Ordinance. By accepting this material you acknowledge and agree that this material is provided for your use only and that you will not distribute or otherwise make this material available to any person. ■ In Singapore, this material is provided for your use only by Wellington Management Singapore Pte Ltd (WM Singapore) (Registration Number 201415544E). WM Singapore is regulated by the Monetary Authority of Singapore under a Capital Markets Services Licence to conduct fund management activities and is an exempt financial adviser. By accepting this material you represent that you are a non-retail investor and that you will not copy, distribute or otherwise make this material available to any person. ■ In Australia, Wellington Management Australia Pty Ltd (WM Australia) (ABN 19 167 091 090) has authorized the issue of this material for use solely by wholesale clients (as defined in the Corporations Act 2001). By accepting this material, you acknowledge and agree that this material is provided for your use only and that you will not distribute or otherwise make this material available to any person.

Wellington Management Company LLP is exempt from the requirement to hold an Australian financial services licence (AFSL) under the Corporations Act 2001 in respect of financial services, in reliance on class order 03/1100, a copy of which may be obtained at the web site of the Australian Securities and Investments Commission, http://www.asic.gov.au. The class order exempts a registered investment adviser regulated by the SEC, among others, from the need to hold an AFSL for financial services provided to Australian wholesale clients on certain conditions. Financial services provided by Wellington Management Company LLP are regulated by the SEC under the laws and regulatory requirements of the United States, which are different from the laws applying in Australia. ■ In Japan, Wellington Management Japan Pte Ltd (WM Japan) (Registration Number 199504987R) has been registered as a Financial Instruments Firm with registered number: Director General of Kanto Local Finance Bureau (Kin-Sho) Number 428. WM Japan is a member of the Japan Investment Advisers Association (JIAA) and the Investment Trusts Association, Japan (ITA). ■ WMIL, WM Hong Kong, WM Japan, and WM Singapore are also registered as investment advisers with the SEC; however, they will comply with the substantive provisions of the US Investment Advisers Act only with respect to their US clients.

©2016 Wellington Management Company LLP. All rights reserved.