

Q3 2021 SIXTH IPCC ASSESSMENT

CLIMATE SCIENCE “CODE RED”

In our last Research Spotlight, we discussed an emerging international convergence of important climate regulation trends, which will have significant implications for investors going forwards. A global regulatory consensus to tackle climate change will mean both investment risks and opportunities; “E leadership” is likely to be a source of competitive advantage globally, rather than a moral “nice to have”. We expect the strengthening of international environmental regulatory trends to have a long term transformative effect on company behaviour, market pricing, and investment decision making in the months and years ahead.

In this section, we examine the new landmark Intergovernmental Panel on Climate Change (IPCC) report released in August 2021, and how the IPCC conclusions provide strong scientific and political support to drive the regulatory convergence and evolution needed to combat the serious implications of climate change. The long-awaited report is the sixth assessment of its kind since the panel was formed in 1988, and is considered to be the “11th hour report” – the last report that has a chance of affecting change before it is too late.¹ In this latest report, scientists unanimously and unequivocally confirm human-caused climate change, and that human activities have affected all the major climate system components, not just the atmosphere. Changes to the ocean, including warming, more frequent marine heatwaves, ocean acidification, and reduced oxygen levels have been clearly linked to human influence. These changes affect both ocean ecosystems and the people that rely on them, and they will continue throughout at least the rest of this century.

In the report, the IPCC considered five possible futures. Under the most optimistic scenario, carbon emissions will fall to zero during the next few decades, and new technologies will be invented to suck tens of billions of tons of CO₂ from the air. Even in this case, average global temperatures are expected to increase by 1.6°C by 2040. Under a more likely scenario, the world will warm by 2.0°C by 2040, and by almost 3.0°C by the end of the century, and in a plausible scenario temperatures will rise by 3.6°C by around 2090. The last time global surface temperature was sustained at or above 2.5°C higher than 1850 – 1900 levels was over 3 million years ago.²

Essentially, a 1.5°C increase in global temperatures is expected by 2040 at the latest in all emissions

reduction scenarios. To put this into perspective, when we talk about 1.5°C of warming, we are talking about the increase in the global average temperature. This means that some areas, such as the poles, are warming much faster than others, and spikes and heat waves will go much, much higher than just 1.5°C. Temperature increases above 1.5°C means that heat extremes will reach critical tolerance thresholds for agriculture and health. We have already seen the devastating effects of heatwaves in Greece, Turkey, and Canada this year.^{3,4} Rising temperatures are also already affecting rainfall patterns, and are projected to further intensify the global water cycle, including its variability, global monsoon precipitation, and the severity of wet and dry events. In high latitudes precipitation is likely to increase, while it is projected to decrease over large parts of the subtropics. We have already observed extreme flooding events this year in New York, Germany, Belgium and China⁵, and the projections in this report suggest such events will become even more likely.

THE SIXTH ASSESSMENT E N U M E R B H N I E E

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INTERGOVERNMENTAL PANEL ON climate change



Other expected effects of a 1.5°C increase in global temperatures include:

- 1.7bn more people will experience severe heat waves at least once every five years
- Sea rise of 10cm, contributing to more frequent and severe coastal flooding
- Up to several hundred million more people will become exposed to climate-related risks and poverty
- The coral reefs that support marine environments around the world could decline as much as 99%
- Global fishery catches could decline by another 1.5m tons. Fisheries and aquaculture are important to global food security but are already facing increasing risks from ocean warming and acidification
- Water scarcity and precipitation deficits in some regions, while more intense rainfall and flooding in other regions
- Reductions in projected food availability (reductions in yields of maize, rice, wheat, and potentially other cereal crops).⁶

According to the IPCC, to have a 50/50 chance of halting warming at around 1.5°C, the finite amount of CO₂ we can emit is about 500bn tons. At current levels of carbon-dioxide emissions this “carbon budget” will be completely used up within 12 years.⁷

For decades, about half of the CO₂ that human activities have emitted into the atmosphere has been taken up by natural carbon sinks in vegetation, soils and oceans. However, the proportion of CO₂ emissions taken up by land and ocean gets smaller in scenarios with higher cumulative CO₂ emissions, meaning nature’s capacity to absorb our emissions is also declining.⁸ Many changes due to past and future greenhouse gas emissions will be irreversible for centuries, if not thousands of years, especially changes in the ocean, ice sheets and global sea level. All hope is not lost, however.

For the very low GHG emissions scenario, it is more likely than not that global surface temperature would temporarily overshoot 1.5°C by no more than 0.1°C before declining back to below 1.5°C toward the end of the 21st century. This would require scenario one, which involves carbon emissions falling to zero in the next few decades combined with CO₂ removal.⁹ While asset management alone cannot “solve” the GHG crisis, the critical role for investors cannot be denied, and the compelling impetus for “E” focused investing will only grow. We believe the asset management community needs to recognize the “Code Red for Humanity”, and adapt investment processes accordingly.

METHANE -- A DEVELOPING GHG CONCERN One greenhouse gas that has gained more attention recently is methane. Natural gas is often referred to as a “transition” fuel, as natural gas emits less carbon dioxide than coal and provides a similar function for energy generation. However, we believe it is mistaken to call natural gas “clean”.¹⁰ Methane comprises about 95% of natural gas, and, after CO₂, is the second most significant greenhouse gas. Methane is 80x as effective at trapping heat than CO₂ in a 20-year period, as such it is a much more powerful heat trapper than CO₂.¹¹ However, it only lasts in the atmosphere for about a decade. By contrast, CO₂ lingers for hundreds, or even thousands, of years.¹² About a quarter of man-made global warming is estimated to be caused by methane, largely through leaks in coal, oil and gas production, as well as from agricultural processes.¹³ Recent technological development means new satellites, infrared cameras, and 3-dimensional portraits can now pick up on methane emissions leaks, which were previously invisible.^{14 15} At the moment, more than 300m tons of methane are emitted every year as a consequence of human activity, and the rate is growing. The International Energy Agency (IEA) estimates that each year the world’s coal mines release roughly 40m tonnes of methane that was once trapped in the coal being extracted.¹⁶ Additionally, between a fifth and a third of all methane emissions is contributed by leaks in the oil and gas industry.¹⁷ As a result, methane concentrations are now more than 2.5x what they were before the Industrial Revolution, and are rising faster than allowed for in all but the most pessimistic climate projections.¹⁸

Methane leaks are a much bigger contributor of methane emissions than originally thought. A study published in Science in 2018 measured leaks from a third of America’s natural-gas supply chain and oil-production sites. Extrapolating from this sample, the team estimated that some 13m tonnes of methane escaped from these facilities each year, approximately 60% more than the EPA’s official figures.¹⁹ The Environmental Defense Fund, which has commissioned flights to monitor methane over Texas oil and gas fields, confirmed this finding.²⁰ Earlier this year, 120 cases of methane leakage and venting from oil and gas infrastructure were found in seven European countries.²¹ In August 2021 methane plumes were found in the Midwest of the U.S., leaking from the natural gas pipeline infrastructure of Energy Transfer LP (n.b., a position in our short book).²² A representative for the company said that they did not have information on how much methane was released in the leak. Similarly, representatives from TC Energy Corp and Gazprom have declined to disclose any information about their own methane leaks when asked.^{23 24}

The Climate and Clean Air Coalition estimates that halving anthropogenic methane emissions over the next 30 years could shave 0.18°C off the average global temperature in 2050.²⁵ If this is the “decisive decade” to take action, then a methane strategy has to be at the centre of any policy for tackling global warming. Experts say the fossil fuel industry has the biggest potential to cut methane emissions this decade by mending leaky pipelines or gas storage facilities. Specific mitigation approaches, such as EPA recommended practices for clearing gas out of pipe segments, can curb emissions by up to 90%, according to a 2016 report from consultancy M.J. Bradley & Associates.^{26 27}

It is likely that the IPCC report will help reduce political barriers to more decisive action for regulators. Acknowledging the impact of climate change provides politicians the rationale needed for taking urgent action.

China appears to accept the conclusions of the IPCC report, which has significant implications for investors, as policy and regulation will more likely be in alignment with the need to dramatically reduce emissions in order to mitigate the most serious consequences of climate change. A new report by the China Meteorological Administration, released days before the IPCC report, has found that China has been ‘significantly affected’ by climate change, and seen an ‘obviously higher’ warming rate than the global average and increasing extreme weather.²⁸ The paper came after more than 300 people died in Henan province in severe flooding triggered by rainstorms described as “once in a thousand years”.²⁹ Following the IPCC report, China’s Ministry of Foreign Affairs has said that the global community should have

“full confidence” in the nation’s climate actions.³⁰ In September 2021 President Xi Jinping announced that China will cease funding coal projects abroad and will “step up support for other developing countries in developing green and low-carbon energy”.³¹ This is a monumental announcement as China has been funding coal projects in countries like Indonesia and Vietnam under a massive infrastructure project known as the Belt and Road initiative since 2013.

While covering the IPCC report, a state-run Chinese newspaper said that China and the U.S. are “the world’s two largest CO2 emitters”, adding that the two countries “should join hands in limiting warming and tackling [the] challenge together”.³² This further confirms China’s commitment to working with the U.S. to reduce emissions, which was discussed in our last Research Spotlight.

Until recently, methane policy in the **U.S.** has been unclear. Currently, companies can legally release methane into the atmosphere for maintenance,

shutdown, start-ups and for emergencies, said Sharon Wilson, senior field advocate for the nonprofit Earthworks.³³ In 2020 President Trump repealed regulations on monitoring and plugging methane leaks introduced by President Obama. On the campaign trail, President Biden promised to undo this reversal, but faced heavy pressure from environmental lobby groups to go further by setting a target of reducing emissions by as much as 65% by 2025.³⁴ In September 2021 the U.S. and **EU** made a joint pledge to reduce human-caused methane emissions by at least 30 percent by 2030. They are also calling on more than two dozen countries to join the pledge. These include big methane emitters like China, Russia, India, Brazil and Saudi Arabia, as well as others including Norway, Qatar, Britain, New Zealand and South Africa.^{35 36} The trend is clear: methane is about to become a more material ESG risk for companies that are not effectively managing their methane emissions.

In the **UK**, the IPCC report is likely to accelerate plans in the UK for investment in renewables infrastructure, reinforced by the UK’s chairmanship of COP 26 in November. The UK Climate Change Committee has already advised the Government that their commitments will need to be stepped up in order to reduce the UK’s inevitable contribution to climate change. Infrastructure will play a key role in this transformation. UK cabinet minister and president-designate of the COP 26 conference Alok Sharma has stated that “rich countries” must end coal use by 2030. The meeting must be the one to “consign coal power to history, with countries committing to end the use of coal power at home and to stop financing coal abroad,” he added.³⁷ Despite the increase in demand and higher coal prices in 2021, from a scientific, political and regulatory standpoint, we believe stranded asset risk is continuing to increase. Similarly in the EU, the European Parliament and member states are negotiating a raft of European Commission proposals to align climate policies with a goal of cutting emissions by 55% on 1990 levels this decade.³⁸

In 2017, research conducted by the Sustainability Accounting Standards Board found that climate change “is likely to have material financial impacts on companies in 72 out of 79 industries, representing 93 percent of the U.S. equity market, or \$27.5 trillion.”³⁹ Going forward not only do we expect investors to take regulatory risks around carbon emissions more seriously, but also methane emissions and leaks and potential regulatory response as a material risk issue -- certainly for companies in the oil and gas industry. More details on upcoming climate regulations in China, the EU, the UK, and the U.S. are available in our last quarterly Research Spotlight.

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