

#WhyESGMatters

IPCC on Climate Science



Together we thrive

The Intergovernmental Panel on Climate Change (IPCC) of the United Nations has recently published a report on the physical science of climate change. Findings include estimates on how much the climate has changed, whether limiting further change is possible, and risks by region.

In this edition of #WhyESGMatters, we discuss the significance behind the IPCC's latest report and why it puts greater urgency in the fight against climate change. As we continue to experience extreme temperatures and precipitation, the report is another wake-up call for world leaders to set more ambitious climate targets and adopt policies for immediate action.

1. The IPCC and key report messages

The IPCC originated in 1988 and was set up by two UN agencies (The World Meteorological Organisation and the UN Environment Programme) to assess the science relating to climate change. It consists of hundreds of scientists from around the world and while they do not conduct any proprietary research, they assess scientific papers on the relevant subject matters. The IPCC publishes Climate Assessment Reports every 6-7 years and is currently in the sixth assessment cycle (AR6) in 2021.

The August report of the AR6 is entitled "The Physical Science Basis" and is a compendium of updated climate science since the AR5 in 2013. Written by 234 authors and totaling 4,000 pages long, it forms as one of the four final reports that the IPCC will release during this cycle¹.

Figure 1: The IPCC's AR6 series of reports



Source: IPCC

This report incorporates observations and advanced modelling to estimate on how much the climate has already changed, provisions of further change and whether any of such can be limited, as well as risks that lie in global regions. One key message is that climate change has been observed in "every region and across the whole climate system", and another capturing global attention with: "it is unequivocal that human influence has warmed the atmosphere, ocean and land"².

¹ <https://www.ipcc.ch/report/ar6/wg1/>

² Ibid

The report outline can be found in the “Summary for Policymakers” (SPM) which contains the following:

Figure 2: Outline of the SPM

1 The Current State of the Climate	<ul style="list-style-type: none"> Comprehensive view of the climate system and its changes Human influence on climate variables, including climate and weather extremes
2 Possible Climate Futures	<ul style="list-style-type: none"> Projections of the changes in climate system in the near-term (2021-2040), mid-term (2041-2060) and long-term (2081-2100) at five emissions scenarios
3 Climate Information for Risk Assessment and Regional Adaption	<ul style="list-style-type: none"> Climate response and possible outcome at global, regional and local scales
4 Limiting Future Climate Change	<ul style="list-style-type: none"> Possible future control to assess the effect of projected climate and air pollution

Source: IPCC, AR6, SPM

2. Summary of report findings

From our perspective, the key findings of “The Physical Science Basis” can be summarised as :

- The **effect of human activities on all parts of the climate system** is, in essence, much clearer now. Human influence is compounding extreme weather and climate events, with observations that these are either happening at the same time, or similar events are happening across different locations.
- Our **atmospheric greenhouse gases (GHGs)**, with the majority components being carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O), also **measure at new highs**. And, while our lands and oceans have absorbed 56% of CO₂ emissions since 1970, cumulative atmospheric emissions have continued to increase over time, resulting in less CO₂ being proportionately absorbed.
- The **earth’s surface is also rising in temperature** by 1.4-1.7x faster than the oceans. Our lands are measuring approximately 1.09°C higher in 2011-20 than in 1850-1900. This is expected to trend upward until mid-century, where even the Paris Agreement goals of limiting temperature rises to 1.5°C and 2°C could be exceeded, unless deep reductions in GHGs take place in the coming decades.
- The rate of **average precipitation is increasing** across most regions, with frequency and intensity rising with temperature. The warmer it gets, the heavier the precipitation and extreme daily precipitation is projected to intensify by about 7% for each 1°C of global warming.

- Global **sea levels have soared** by 20cm since the beginning of the 20th century. Half of this is attributed to thermal expansion: 42% from glacial and ice sheet loss, and 8% from changes in land water storage.
- Although CO₂ can be removed and stored (e.g. in the form of a carbon sink), its effects are mixed. **CO₂ removal would gradually reverse temperature** increases on land, although not all climatic effects would be reversed.
- **Climate change cannot be reversed in short time frames.** For example, the effects on oceans – surface temperatures, acidification, and deoxygenation, sea-level rises and ice sheet melt, as well as permafrost may not reverse for hundreds of years.
- **Highly disruptive events** that have a low likelihood of occurrence, but with catastrophic effects, **cannot be eliminated.** These can include the collapse of ice sheets or abrupt changes to ocean circulation. The aftermath effects would be highly disruptive to weather patterns and the water cycle.
- The **carbon budget** is an estimation of permissible CO₂ emissions while keeping within the limits of temperature increase. Historic CO₂ emissions levels from 1850-2019 already translates to a 1.07°C temperature increase. From 2020, it is estimated that **only 400 gigatonnes of CO₂ can be emitted** before breaching the 1.5°C warming threshold.



4. Implications for investors

The AR6 has incorporated more details on the climate impact on various geographies. This will have implications for economic and business planning, both in the short and long term.

The world's biggest annual summit on climate change (COP26) will be convening in Glasgow, Scotland, in November of this year. It is a significant milestone in achieving the Paris Agreement goals, in part due to countries needing to set out more ambitious climate targets. With attention building up to COP26, climate change will remain high on the agenda for world leaders as the 'make-or-break' discussions occur before the next AR6 reports come in 2022.

As a bottom-up approach, we think investors have now an even stronger case to demand more actions from businesses and governments to implement decarbonisation measures. For companies involved in high-carbon activities, the demand is to rethink business models and strategies, as well as providing more investor transparency by adopting stronger ESG principles. For industries, the demand is to be more innovative in lower carbon solutions. For all segments of the economy, the demand is to prepare for the impact of climate change.

Major economies such as the US, Europe and China that have pledged to accelerate their climate ambitions will look to deploy green solutions in scale, thus creating opportunities for investors. In particular, sectors, including power generation, transport, buildings and industrials, are expected to see an emphasis in radical decarbonisation to reverse atmospheric emissions.



4. Conclusion

The IPCC's latest report is a testament that the science of climate change is clear. It also serves as a stark reminder that the goals set forth in the Paris Agreement could be missed without deep and rapid emissions cuts. As the race to climate neutrality becomes more critical, so will the calls from global citizens and investors for governments and companies to make radical changes and deliver change. Investors should be prepared to ride on the accelerated transition as more decarbonisation pledges take centre stage and more solutions are developed to achieve these targets.

Disclosure appendix

1. This report is dated as at 17 August 2021.
2. All market data included in this report are dated as at close 16 August 2021, unless a different date and/or a specific time of day is indicated in the report.
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