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- *Corporate Sustainability,*
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To the Point! is a fee-based educational resource for corporate executives and managers distributed each month with periodic brief updates for critical items.

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Tune In To This Important Report: The Fourth Official "Climate Science Special Report" Issued by the U.S. Government's "Global Change Research Program" – Projecting the Critical Impacts of Climate Change on American Society in the 21st Century

Now available for you: the fourth climate change assessment by key U.S. government agencies; this is the "Climate Science Special Report" prepared by the U.S. Global Change Research Program of the Federal government.

The contents of this official U.S. government assessment of climate science are of significance if you are an investor, a company executive or board member, an issue advocate, officer holder or civic leader, or other stakeholder.

Volumes of data and fulsome descriptions are here, for a range of "high probability" climate change outcomes in this 21st Century.

The foundation of the report: The input of hundreds of studies conducted by scientists and researchers around the world that well document increases in temperatures at Earth's surface as well as in the atmosphere and oceans — and projections of what all of that means to the U.S., the planet and (we) its occupants going forward.

What is made clear: Human activities are the primary driver of climate changes observed in the industrial era (i.e., GHG emissions, deforestation, population, land-use changes, poor stewardship of our planet). And human activities are urgently needed to address these challenges before we suffer dire consequences of inaction.

Think about the possible impacts of these events and developments on your business and personal life: *we will see many more superstorms; more drought in more areas of the U.S., especially in the great American breadbasket*

regions; greatly increased risk of forest fires; more floods; steadily rising sea levels; the news of still more melting glaciers; ocean acidification; increasing atmospheric water vapor (thus, more powerful rainstorms / cloudbursts)…and more.

And — what about a potential drop of 10% in the U.S.A. Gross Domestic Product by end of this century? What impact will that have on you?

The impacts of climate change will be felt in human health, agriculture and food security, water supply, transportation, energy, and ecosystems…climate change becoming increasingly disruptive in coming years.

These are some of the subjects explored in depth in the "Climate Science Special Report" released the day after Thanksgiving by the U.S. Global Change Research Program. This is the congressionally-mandated assessment by U.S. government agencies, to be done at least every four years.

Authors: The Global Change Program

The program is a mandated collaborative effort of more than a dozen Federal departments — such as **NOAA, NASA, US EPA, and executive branch cabinet offices of Commerce, Agriculture, Energy, State, Transportation**, and **Defense**; plus the **Office of Management and Budget** – the **OMB** (part of the Office of the President of the United States).

The many experts gathered from these departments and agencies of the U.S. government, plus a universe of university-based experts, reported last week (in more than 1600 pages of related content) on the "state of science relating to climate change and its physical impacts."

The CSSR ("Climate Science Special Report") serves as a foundation for setting policies and then public sector efforts to assess climate-related risks and inform decision-makers…it does not include specific policy recommendations.

The results are not encouraging – at least not in November 2018 as we look out to the rest of the 21st Century, given the pace of actions taken to date to address climate change.

Highlights of The Report

NOAA — The National Oceanic and Atmospheric Administration — is the lead agency working with NASA and other Federal governmental bodies to develop the report.

The collaborative effort analyzes a wide body of scientific research and observations of current trends in climate change — and projects a number of major trends out to the end of this 21st Century. The focus of the work is on impacts to *human welfare, societal, economic, and environmental elements of climate change.*

Each of the 15 chapters of the report focuses on key findings; authors have assigned a "confidence statement" for scientific uncertainties. (There are numerous statements of "Confidence Levels" and "Likelihoods" for various trends and events.)

There are 10 regional analyses of climate change (such as for the Northeast, and Southern Great Plains). The report was 18 months in preparation and the final report is the sixth draft developed over that time.

Chapters include such themes as: *Physical Drivers of Change; Climate Models, Scenarios and Projections; Droughts, Floods and Wildfires; Extreme Storms; Changes in Land Cover; Sea Level Rise*.

Some takeaways to consider:

1. This period is now the warmest in the history of modern civilization. Since the publication of the last Assessment (2014) we experienced the warmest year on record globally; 2015 was even warmer and 2016 surpassed that; 16 of the warmest years on record occurred during the last 17 years.
2. Thousands of scientific and technical studies have documented changes in surface, atmospheric and oceanic temps;
3. Land and sea ice glaciers are continuing to melt; there is acceleration in ice sheet loss with up to 8.5 feet of global sea rise possible by 2100;
4. Ice melts and then Sea levels continues to rise; global average sea level has risen 7-to-8 inches since 1900, with half of that just since 1993;
5. Related: the incidence of daily tidal flooding is accelerating in more than 25 Atlantic and Gulf coast cities;
6. Heat waves are more frequent and cold waves are less frequent;
7. Forest fires have steadily increased since the early 1980s (look at the disaster in California in recent weeks);
8. Carbon dioxide (CO2) concentration has passed 400 PPM — a level that last existed some 3 million years ago, when both global average temperatures and sea level were higher than today;
9. Since 1980, extreme weather events for the U.S. has exceeded costs of $1.1 trillion.

There are hundreds of references to scientific studies throughout the report.

The various findings, the authors point out, are based on a large body of scientific, peer-reviewed research, evaluated observations and modeling data sets. In this report, we should note, experts and not politicians and speak to us in clear terms we can all understand.

Important Key Findings

Global climate is projected to change over this century (and beyond) – the report is complete with "likelihoods") and with major effort, temps could be limited to 3.6°F / 2°C or less – or else.

Without action, average global temperatures could reach to 9°F / 5°C relative to pre-industrial times – spelling *d-i-s-a-s-t-e-r* by the end of this 21st Century.

Human activity continues to significantly affect the Earth's climate and is the dominant cause of climate warming. Aerosols are a key activity with profound and complex roles.

There are 12 Reporting Findings with important results here.

Regarding the TCFD Scenario Testing Recommendations

After the 2008 financial crisis, **The Financial Stability Board** was organized by the central banks and treasury ministries of the G20 nations; the board appointed a 32-member **Task Force on Climate-related Financial Risk Disclosure** (the **TCFD**), headed by **Michael Bloomberg.**

The Task Force in 2017 strongly recommended that the financial sector companies and (initial) four industrial/business sectors begin to test scenarios against (to begin with) 2-degrees Centigrade (3.5°F) temperature rise and increase testing from that level.

This official Assessment (the 2018 report we are describing here) should be a valuable resource reference for the TCFD-identified components of the **Financial Sector** — asset owners, asset managers, bankers, insurance carriers and companies — that the TCFD urged to begin scenario testing of their investments.

And of value to companies in the four industrial sectors for their scenario planning (data and other information for alternative scenarios are in the Assessment). The four industrial sector are: **Agriculture & Food; Transport; Buildings and Building Materials; Oil & Gas**.

Public companies in the above industries are being urged by investors and stakeholders to begin scenario testing and disclosure of results. We're seeing that "urging" in the 2018 proxy season and corporate engagements — and will see more such activity by activist investors in the 2019 proxy season. There are various scenarios in the Assessment that can be referenced by companies in their own scenario testing.

And companies that lead in corporate sustainability are responding by performing scenario testing and reporting on the results.

Board members and C-suite execs in the corporate sector should digest the Federal government's latest Assessment for the potential impact on their companies.

Report Authors

A wide range of experts helped to prepare the report; these included: **U.S. Army Corps of Engineers**; national laboratories; scientists at such universities as **Illinois-Urbana-Champaign; Maryland; Texas Tech; Pennsylvania State; North Carolina State; Iowa State; Rutgers; California-Davis; Alaska.** More than 300 experts contributed to the report.

- View full report here.
- View Exec Summary here.

Important Background

The U.S. Global Change Research Program, based in Washington, D.C., a Federal program mandated by the **U.S. Congress** to coordinate Federal research and investments in understanding the forces shaping the global environment – both human and natural – and their impacts on society.

The USGCRP was established in 1989 and mandated by Congress in 1990…*to understand, assess, predict, and respond to human-induced and natural processes of global change.*

There are 13 Federal agencies involved that conduct or use research on global change. Among these there are Interagency Working Groups to implement and coordinate research activities (within and across the agencies).

The guidance: *Thirteen Agencies, One Vision: Empower the Nation with Global Change Science.*

Executive Cabinet offices involved: **U.S. Departments of State; Health and Human Services; Defense; Commerce; Agriculture; Energy; Transportation; Interior.** And, **White House Office of Science and Technology** and **Office of Management and Budget (OMB).**

Federal Agencies: **NASA; US EPA; National Science Foundation; Smithsonian Institution; U.S. Agency for International Development** (U**SAID**).

Positioning statement (on the web site): *Earth's climate is now changing faster than at any point in the history of modern civilization, primarily as a result of human activities. Global climate change has already resulted in a wide range of impacts across every region of the country and many sectors of the economy that are expected to grow in the coming decades.*

To keep in mind: This fourth assessment ("**NCA4**") developed by USGCP is a best effort in state-of-the-science synthesis of climate knowledge, impacts and trends across U.S. regions to inform decision-making and resilience-building.

It is the most comprehensive and authoritative assessment to date on the state of knowledge of current and future impacts of climate change on society in the U.S.

Reporting requirements for the Assessment comply with Section 106 of the ***U.S. Global Change Research Act of 1990*** and other federal requirements.

Click here for regional information from Global Change.

The current report takes into consideration the findings of the **Intergovernmental Panel on Climate Change** (**IPCC**) – of which the United States is a participating country.

IPCC issued its Fifth Assessment Report ("AR5") in 2014 and issued a Special Report ("SR15") – Special Report on Global Warming of 1.5-degrees C – in October 2018.

The latest IPCC report and related information is available here.