SPECIAL EDITION

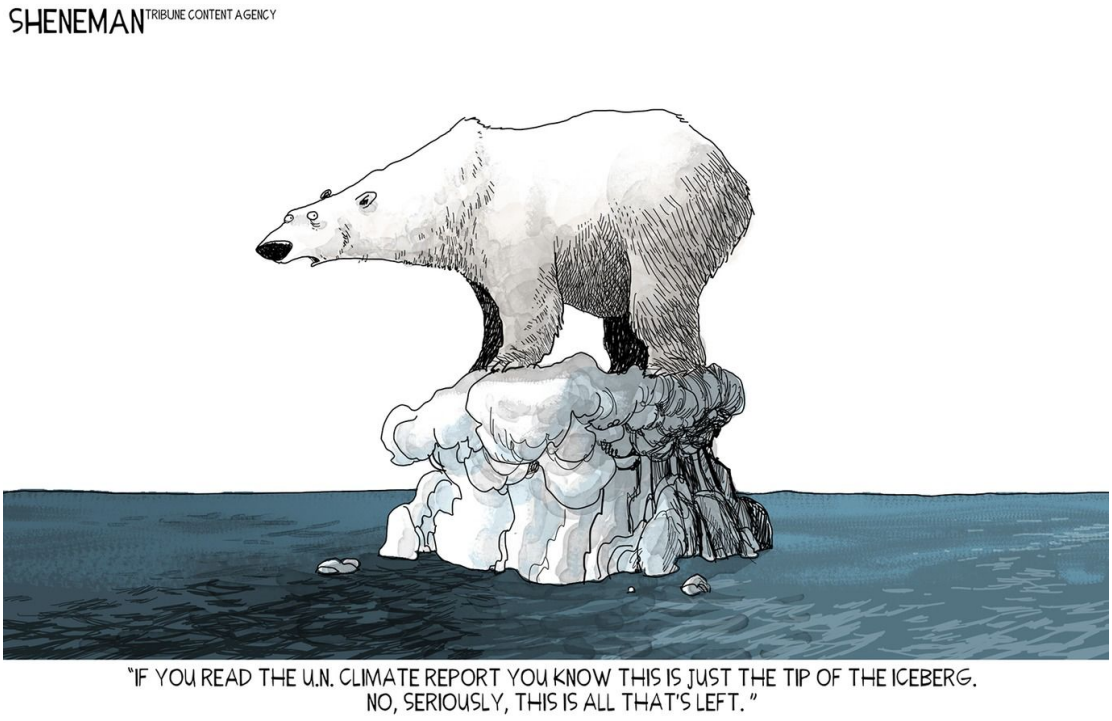
IPCC Report October 8th, 2018

''GLOBAL WARMING OF 1.5 °C(2.7 °F)''

The IPCC Special Report on the impacts of global warming of 1.5 °C(2.7 degree Fahrenheit) above pre-industrial levels and related global greenhouse gas emission pathways, it deals with the strengthening of the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.

and

2018 NOBEL PRIZES IN ECONOMICS



NGO Sustainability, Inc.

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William D. Nordhaus

William Nordhaus is the Sterling Professor of Economics & Professor, School of Forestry and Environmental Studies. Professor Nordhaus completed his undergraduate studies at Yale University and earned his PhD in Economics from Massachusetts Institute of Technology in 1967.

He is the author of many books, among them *Invention, Growth and Welfare, Is Growth Obsolete?, The Efficient Use of Energy Resources, Reforming Federal Regulation, Managing the Global Commons, Warming the World*, and (joint with Paul Samuelson) the classic textbook, *Economics*, whose nineteenth edition will be published in 2009. His research has focused on economic growth and natural resources, the economics of climate change, as well as the resource constraints on economic growth. Since the 1970s, he has developed economic approaches to global warming, including the construction of integrated economic and scientific models (the DICE and RICE models) to determine the efficient path for coping with climate change, with the latest vintage, DICE-2007, published in *A Question of Balance* (Yale University Press, 2008). In 2018 he has been awarded Nobel Prize in Economics for integrating climate change into long run macroeconomic analysis.

Paul Romer

Romer is University Professor at NYU and Director of the Marron Institute of Urban Management. He is also the founding director of the Urbanization Project at the Leonard N. Stern School of Business. The Urbanization Project conducts applied research on the many ways in which policymakers in the developing world can use the rapid growth of cities to create economic opportunity and undertake systemic social reform.

Paul took an entrepreneurial detour, he started Aplia, an education technology company dedicated to increasing student effort and classroom engagement.

He is a non-resident scholar at both the Center for Global Development in Washington, D.C. and the Macdonald-Laurier Institute in Ottawa, Ontario. In 2002, he received the Recktenwald Prize for his work on the role of ideas in sustaining economic growth.

Paul earned a bachelor of science in mathematics from the University of Chicago, and earned a doctorate in economics from the University of Chicago after doing graduate work at the Massachusetts Institute of Technology and Queens University.

In 2018 Paul Romer has been awarded Nobel Prize in Economics for integrating technological innovation into long run macroeconomic analysis.

''What kind of Planet Do We Want''

Erle C. Ellis

Photo Credit: Lorenzo Gritti

This planet is in crisis. The safe limits within which human societies can be sustained, the earth's "planetary boundaries," are being exceeded. The real question is how we can navigate together toward the better futures we wish. Every human action or nonaction generates a labyrinth of consequences, both social and environmental.

One thing is for sure. A better future won't be realized through unquestioning faith in Science. It does not, cannot and should not have all the answers. In the end, it is people, and their institutions — not science — that will decide the future.

Rebuilding energy systems to make them carbon neutral, adapting to climate change and cleaning up pollution don't come cheap.

No better future will be possible if those most able to bear the costs — those who've benefited the most, the wealthy and the vested interests of this world — don't step up to pay for it.

Link to Article: https://www.nytimes.com/2018/08/11/opinion/sunday/science-people-environment-earth.htm

2018 NOBEL PRIZE ECONOMIC SCIENCES

''Economics of Climate Change and Innovation''

Binyamin Appelbaum

Photo Credit: Henrik Montgomery

The Yale economist William D. Nordhaus has been awarded the 2018 Nobel Memorial Prize in Economic Sciences for integrating climate change into long-run macroeconomic analysis. In his work he tries to persuade governments to address climate change by imposing a tax on carbon emissions.

Professor Nordhaus shared the prize with Paul M. Romer, economist at New York University, whose work has demonstrated that government policy plays a critical role in fostering technological innovation. In his work he showed that governments could drive technological change. He noted the success of efforts to reduce emissions of ozone-depleting chlorofluorocarbons in the 1990s.

The award was announced just hours after a United Nations panel said large changes in public policy were urgently needed to limit the catastrophic consequences of rising temperatures.

In the 1970s Professor Nordhaus argued that taxation was the most effective remedy: The government should require polluters to pay for damage to the environment and to public health.

"There is basically no alternative to the market solution," Professor Nordhaus said Monday.

In papers in the 1980s and 1990s, Professor Romer developed the idea that nations could foster innovation by investing in research and by writing laws governing the ownership of intellectual property that rewarded innovation, but not excessively. He argued that differences in policy helped to explain differences in economic growth.

The prize committee emphasized that both men, in their work, have argued that markets are imperfect and that government intervention can improve outcomes.

Professor Nordhaus lamented that:"We understand the science, we understand the effects of climate change, but we don't understand how to bring countries together."

Link to Article:
https://www.nytimes.com/2018/10/08/business/economic-science-nobel-prize.html

''War war is better than jaw jaw''

The Economist

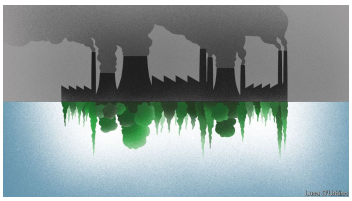


Photo Credit: Luca D'Urbino

The 1,200-page latest IPCC report, written by 91 researchers from 44 countries, presents no truly new science. The panel's brief was to survey all relevant literature more than 6,000 studies, many spurred by the report's commissioning and to synthesise the results. It makes for sobering reading, both in terms of what the half-degree difference between the two targets may mean for the planet, and regarding the effort needed to meet the tougher goal. The alarming conclusions are necessarily subject to the huge uncertainties inherent in climate science, but paint a picture that looks bleak.

The same uncertainties apply to the report's outline of possible pathways to a 1.5°C future. The possible strategies would transform economies beyond recognition. And it would cost money. How much, the IPCC has resisted predicting, blaming limited economic research in the area. The world's press reacted to the IPCC with alarm sometimes verging on hysteria. In a world where even the existing target looks likely to be missed by a mile, how much difference it will make is open to doubt. In climate change, as in so many other areas, words are cheap. It is actions that are eloquent.

Link to Article:
https://www.economist.com/science-and-technology/2018/10/13/the-latest-report-on-global-warming-makes-grim-reading

''Nobel prize in economics''
The Economist

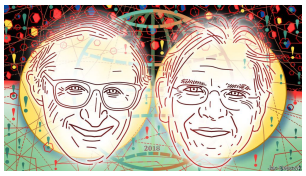


Photo Credit: Jac Depczyk

Why do economies grow, and why might growth outstrip the natural world's capacity to sustain it?

Economists used to think that sustained long-run growth depended on technological progress, which in turn relied on the creation of new ideas. When Mr Romer came into economics, most prominent models of growth relied on "exogenous" technological progress: it was simply assumed, rather than generated by the models' equations. In Mr Romer's work, markets are capable of generating new ideas. But the pace at which they are generated, and the way in which they are translated into growth, depends on other factors—such as state support for research and development.

Mr Nordhaus, for his part, has been a towering figure in the debate about how to respond to one of the biggest challenges that humanity faces. He worked out the complex interactions between carbon emissions, global temperature and economic growth. He combined mathematical descriptions of both climate and economic activity into "integrated assessment models". This allowed him to project how different trajectories for the world's carbon emissions would produce different global temperatures.

Link to Article:
https://www.economist.com/finance-and-economics/2018/10/13/paul-romer-and-william-nordhaus-win-the-economics-nobel

''Why half a degree of Global Warning is a Big Deal''
Brad Plumer and Nadia Popovich

The report from the Intergovernmental Panel on Climate Change has looked at the consequences of jumping to 1.5°C(2.7°F) or 2°C(3.6°F). This rift could expose tens of millions more people worldwide to life-threatening heat waves, water shortages and coastal flooding. Half a degree may mean the difference between a world with coral reefs and Arctic summer sea ice or a world without them. At the United Nations climate negotiations in Paris in 2015, countries promised to hold total global warming to well below 2 degrees C(3.6°F) and agreed to "pursue efforts" to limit warming to 1.5 degrees (2.7°F).

Global greenhouse emissions would need to fall in half in just 12 years and zero out by 2050. To stay below 2 degrees C, emissions have to decline to zero by around 2075. Virtually all of the coal plants and gasoline-burning vehicles on the planet would need to be quickly replaced with zero-carbon alternatives. In addition, the report said, the world would have to swiftly develop and deploy technology to remove billions of tons of carbon dioxide from the atmosphere each year.

Arctic

1.5°C

Sea ice will remain during most summers

2°C

Ice-free summers are 10 times more likely

Extreme heat

World population exposed to severe heat waves at least once every five years:

1.5°C

About 14%

2°C

About 37%

Coral reefs

Status of coral reefs worldwide:

1.5°C

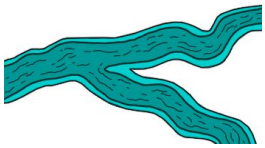
"Very frequent mass mortalities"

2°C

Coral reefs "mostly disappear"

Water scarcity

Increase in urban population exposed to severe drought:



1.5°C

+350 million

2°C

+411 million

Plants and animals

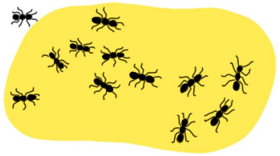
Species losing more than half of their range:

1.5°C

6% of insects

8% of plants

4%of vertebrates



2°C

18% of insects

16% of plants

8% of vertebrates

Sea level rise

Population exposed to flooding from sea level rise in 2100 (without adaptation):

1.5°C

31 to 69 million people worldwide

2°C

32 to 80 million people worldwide

Crops

Global crop yields are expected to be lower under **2°C** of warming compared to **1.5°C**, especially in sub-Saharan Africa, Southeast Asia, and Central and South America.

Link to Article:
https://www.nytimes.com/interactive/2018/10/07/climate/ipcc-report-half-degree.html

''Trump Silent on U.N. Climate Warning''
Mark Landler and Coral Davenport

Photo Credit: Drew Angerer

A day after the IPCC report on global warming President Trump said nothing about it. The United Nations warned of mass wildfires, food shortages and dying coral reefs as soon as 2040.
On Saturday, an American delegation in South Korea joined more than 180 countries in accepting the report's summary for policymakers. However, a statement from the US State Department said that it "does not imply endorsement by the United States of the specific findings or underlying contents of the report."
The authors found that if greenhouse gas emissions continue at the current rate, the atmosphere will warm by as much as 2.7 degrees Fahrenheit, or 1.5 degrees Celsius, above preindustrial levels by 2040.
To prevent 2.7 degrees of warming, the report said, greenhouse emissions must be reduced by 45 percent from 2010 levels by 2030, and by 100 percent by 2050. It also found that use of coal as an electricity source would have to drop from nearly 40 percent today to 1 to 7 percent by 2050.

Link to Article:
https://www.nytimes.com/2018/10/08/us/politics/climate-change-united-nations-trump.html

''New U.N. Climate Report Says Put a High Price on Carbon''
Brad Plumer

Photo Credit: Lucy Nicholson, Reuters

More than 40 governments around the world, including the European Union and California, have now put a price on carbon, either through direct taxes on fossil fuels or through cap-and-trade programs.
The concept of carbon pricing received another implicit endorsement on Monday from the Nobel Prize committee, which awarded Yale's William D. Nordhaus, who said that the most efficient remedy for the problems caused by greenhouse gas emissions would be a global scheme of carbon taxes that are uniformly imposed on all countries."

Link to Article:
https://www.nytimes.com/2018/10/08/climate/carbon-tax-united-nations-report-nordhaus.html

''A triple threat from Climate Change: More Rain in Larger Storms in Rising Seas''
Henry Fountain

Photo Credit: Gerald Herbert/Associated Press

The connection between global warming and larger storms is real.

Scientists are increasingly confident of the links between global warming and hurricanes. Warmer water provides more energy that feeds them.

While there is debate over whether global warming will lead to more frequent hurricanes, scientists agree about the effects of warming on intensity as measured by wind speed.

Researchers also found that human-caused warming has affected the amount of water vapor in the air, and that extreme precipitations events have already increased in many parts of the world.

Furthemore, what is not emphasized enough is the sea level-rise connection. It implies more frequent storm surges as well as more flooding.

The connection between global warming and more dangerous, larger storms is, indeed, real.

Link to Article:
https://www.nytimes.com/2018/10/10/climate/hurricane-michael-climate-change.html

‘’After the IPCC report, what should businesses do next?’’
Madeleine Cuff

Photo Credit: Shutterstock/Kletr

While the message for politicians might be clear, the takeaway for businesses may be less obvious.

Yet firms should not make the mistake of ignoring the report. The findings spell out in stark terms the risks of inaction and the opportunities present in leading the low-carbon transition, each with significant potential impacts on global business. We are going to have to get to zero carbon as a society, which means that businesses are going to have to get to zero carbon.

But setting a net zero target straight off the bat might not be possible for every business, experts acknowledge. For starters, some sectors of the economy need to act further and faster than others in delivering emissions cuts, according to the IPCC. Delivering net zero simply may not yet be commercially or technically possible in some areas.

Of course, the business community alone cannot solve climate change. Much of the impetus to act lies at the door of policymakers and governmental leaders around the world. To ensure governments do respond, businesses must step up their efforts in lobbying for greener policies.

There's a need to let policymakers know that strong action is welcome, that businesses want the rules of the game changed.

Link to Article:
https://www.greenbiz.com/article/after-ipcc-report-what-should-businesses-do-next

‘’There’s one key takeaway from last week’s IPCC report’’
Dana Nuccitelli

Photo Credit: David Burdick/AP

The details in the report are worth understanding, but there's one simple critical takeaway point: we need to cut carbon pollution as much as possible, as fast as possible.
Depending on how we define 'pre-industrial temperatures' and how fast we keep consuming fossil fuels, we'll likely burn through the rest of the 1.5°C(2.7°F) carbon budget within the next 3 to 10 years. To stay below 1.5°C(2.7°F), the IPCC therefore concludes the world must embark on a World War II-level effort to transition away from fossil fuels, and also start removing carbon dioxide from the atmosphere at large scales – anywhere from 400bn to 1.6tn tons of it.
Realistically, this isn't going to happen. We're currently on track for more than 3°C(5.4°F) global warming by 2100.
The IPCC report finds that "Climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are projected to increase with global warming of 1.5°C(2.7°F) and increase further with 2°C(3.6°F)."
The take-home message is that the faster we cut carbon pollution, the less severe impacts we'll face.

Link to Article:
https://www.theguardian.com/environment/climate-consensus-97-per-cent/2018/oct/15/theres-one-key-takeaway-from-last-weeks-ipcc-report

''A deafening, Piercing Smoke Alarm''
By The Editorial Board

Photo Credit: Noah Berger

The U.N.'s climate panel warns leaders the time for dithering on climate change is over. One United Nations official described the report as "a deafening, piercing smoke alarm going off in the kitchen" — an alarm aimed directly at world leaders.
The report, written by 91 scientists from 40 countries, came about at the request of several small island nations that took part in the Paris talks, where 195 countries pledged their best efforts to limit increases in global warming to 3.6 degrees (2 degrees Celsius) above preindustrial levels. Fearing that their countries might someday be lost to rising seas, they asked the intergovernmental panel for further study of a lower threshold, 2.7 degrees Fahrenheit (1.5 degrees Celsius). The panel's report concluded that the stricter threshold should become the new target. But how to achieve that lower threshold? The panel said a mammoth effort is needed.
The next 10 years are absolutely crucial: Emissions will have to be on a sharp downward path by 2030 for any hope of success. The use of coal would need to be phased out, vanishing almost entirely by midcentury.

Link to Article:
https://www.nytimes.com/2018/10/09/opinion/climate-change-ipcc-report.html

''The temperature rises''
The Economist

Photo Credit: Getty Images

The report unveiled this week from the Intergovernmental Panel on Climate Change (IPCC), shows how optimistic we were in the past. The survey was commissioned in 2015 by the then 195 signatories of the Paris climate agreement which commits them to keep warming "well below" 2°C(3.6°F) and to "pursue efforts towards 1.5°C(2.7°F)".

With every passing year scientists amass more data about how the climate has already changed, this new knowledges, together with improved understanding of the complex climate system, makes projections like those the IPCC has compiled more compelling.

The report's message is also beyond doubt: the extra half a degree makes a big difference. The 2°C(3.6°F) target has been baked into climate policy for years but it is too lax.

To achieve 1.5°C(2.7°F), the world would by 2050 need to eliminate all 42bn tonnes of carbon-dioxide in annual emissions. The scale of the effort required is unprecedented.

Some European Union environment ministers want to adopt 1.5°C as a guide to policy. Their Australian counterpart called it "irresponsible" to phase out coal by 2050.

Link to Article:
https://www.economist.com/leaders/2018/10/13/why-the-ipccs-report-on-global-warming-matters

''The week in energy: climate shock''
Ed Crooks, The Financial Times

Photo Credit: Oil Price.com

The IPCC report this week gave a sense of how colossal the efforts to limit the global average temperature to 1.5°C(2.7°F) would have to be. The report's summary for policymakers calls for a "rapid and far-reaching transitions in energy" as well as in infrastructure, land and industrial systems. Industries have been transformed rapidly in the past — but they are unparalleled in terms of the scale of the upheaval that would be needed, with so much having to be changed simultaneously.

It was an appropriate coincidence that one of the two winners of the Nobel Prize for Economics awarded on Monday was William Nordhaus, whose work has been highly influential on th IPCC. His book *The Climate Casino* is a very good primer on the basics of the economics of climate change.

Link to Article:
https://www.ft.com/content/81d2f716-ce35-11e8-9fe5-24ad351828ab

''After Nobel, Economist Talks Climate Tax''
Coral Davenport

Photo Credit: Monica Jorge

William D. Nordhaus, the Yale economist who shared the Nobel in economic science this week, has pointed words for some of the experiments so far with his theories on taxing polluters to fight climate change. The world is becoming a laboratory for theories that Professor Nordhaus developed decades ago, when global warming was an abstract future threat. By contrast, this week's United Nations report amounts to a stark warning of immediate risk.

On Wednesday, Professor Nordhaus discussed his carbon pricing theories and the political landscape.

We found out that one of the problems with cap and trade is that it is dependent on predicting what future emissions will be. But if those projections are wrong, the system fails. The carbon tax has different problems, but not this one. The price of carbon is independent of the amount of emissions.

When I talk to people about how to design a carbon price, I think the model is British Columbia. You raise electricity prices by $100 a year, but then the government gives back a dividend that lowers internet prices by $100 year.

I have to be hopeful that, if we continue to work on this, the public will get there on the science, and make an exception to the toxicity of taxes. It will help if it's tied to something popular — if, as a result of the revenue from a carbon tax, you get a check in the mail, or it funds health care.

It's very unlikely to avoid the warming for 2 degrees. We'd have to be very pessimistic about the economy or optimistic about technology for 2 degrees. If we start moving very swiftly in the next 20 years, we might able to avoid 2 degrees, but if we don't do that, we're in for to changes in the Earth's system that we can't begin to understand in depth.

Link to Article:
https://www.nytimes.com/2018/10/13/climate/nordhaus-carbon-tax-interview.html

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