

Climate Change

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June 30, 2014

Will the administration's new initiatives be effective?

By [Christina Lyons](#)

Increasingly dire scientific warnings about climate change are propelling international and U.S. panels to recommend heightened, immediate action to reduce manmade causes of greenhouse gas emissions. But the possibility of a unified global approach to climate change appears less likely as leaders continue to debate potential solutions, the reliability of warnings and regional fiscal and social responsibility. The Obama administration is making headway, however, on its climate change agenda despite industry and Republican opposition. Recent court rulings bolster President Obama's efforts, although he still must deal with the possibility of a Republican majority in both houses of Congress next January and sway public opinion regarding the nation's energy and environmental priorities. Progress on that front, and on a potential bilateral agreement with China on reducing greenhouse gas emissions and hazardous pollutants, could help lay groundwork for international treaty negotiations scheduled for 2015.

U.S. and international efforts to reduce planet-warming greenhouse gas (GHG) emissions are proving insufficient. Scientists say rapidly escalating carbon dioxide emissions since the Industrial Revolution is raising average global surface temperatures and creating erratic climate and severe weather conditions affecting human health, agriculture, species survival and more. The World Health Organization (WHO) estimates that increased health costs alone — due to malnutrition and the increased spread of some diseases common to warmer climates — will range from \$2 billion to \$4 billion a year by 2030. ¹



Environmental Protection Agency Administrator Gina McCarthy signs a proposed regulation on June 2, 2014, aimed at reducing carbon emissions from existing power plants by 30 percent from 2005 levels. (Getty Images/Bloomberg/Andrew Harrer)

Industrialized nations have been negotiating since the 1990s on a pledge to reduce GHG emissions. Yet little progress on the agreement has been made since targets were set under the 1997 Kyoto Protocol, an addendum to the 1992 United Nations Framework Convention on Climate Change. Nearly 200 countries — not including the United States — ratified the protocol, which set binding limits on GHG emissions.

Meanwhile, work continues on some bilateral and regional climate agreements before upcoming U.N. climate summits, scheduled for September 2014 and December 2015, where officials are expected to complete negotiations on a climate change treaty. Although the vast majority of scientists agree that climate change is real and caused by human activities such as the burning of fossil fuels, some people continue to debate the reliability of scientific studies, the role of human activity in rising temperatures, the economic costs of solutions and the safety of technological solutions. The much-vaunted International Panel on Climate Change (IPCC), working toward its final comprehensive report in October, suggests a multitude of approaches be included in a global agreement but warns that controlling greenhouse gases can be achieved only if nations act together and leaders don't wait until after 2030 to boost their efforts. ²

President Obama, who failed during his first term to convince Congress to pass a so-called cap-and-trade plan for controlling carbon dioxide emissions, is making climate change a priority in the last half of his final term. In June his administration proposed regulations that would require existing coal-fired power plants to control their carbon dioxide emissions. And the president has taken executive actions to limit a

variety of GHGs, supported by national and international scientific panels and the courts. But the public does not rate climate change among the nation's top priorities, and industry groups and many lawmakers say climate mandates that get ahead of scientific data and technological feasibility could harm the economy.

The Latest Science

“Warming of the climate system is unequivocal,” the IPCC says in one of its latest reports, noting that:

- Each of the last three decades has been successively warmer than any decade since 1850;
- Ice sheets in Greenland and the Antarctic are melting;
- Sea levels are rising;
- Spring snow cover is decreasing, and
- Atmospheric concentrations of the three primary greenhouse gases — carbon dioxide, methane and nitrous oxide — “have increased to levels unprecedented in at least the last 800,000 years.”

3

About half of the cumulative global emissions of carbon dioxide (CO₂) — the main greenhouse gas (GHG) — between 1750 and 2010 occurred in the last 40 years. “Direct CO₂ emissions from the energy-supply sector are projected to almost double or even triple by 2050,” compared to 2010 levels, unless energy

conservation improvements can be significantly accelerated, the IPCC says.

4

Meanwhile, the White House's third National Climate Assessment, released in May, said the evidence is clear that human activities are causing global warming. “The burning of coal, oil, and gas, and clearing of forests have increased the concentration of carbon dioxide in the atmosphere by more than 40 percent since the Industrial Revolution, and it has been known for almost two centuries that this carbon dioxide traps heat,” the report states. The effects of rapid climate change include: longer, hotter summers; shorter, warmer winters; heavier rains, coastal floods and earlier snow melt; increased wildfires in the West and heightened ocean acidification. In addition, the assessment said, the most recent decade was the nation's warmest on record, and U.S. average temperatures could warm from 3 to 5 degrees Fahrenheit by the end of this century if human activity remains unchanged, under a lower-emissions scenario, and 5 to 10 degrees

under a higher-emissions scenario.

5

Days later, the journals *Science* and *Geophysical Research Letters* each published a different study, conducted independently, showing that a large section of the West Antarctica ice sheet is breaking apart and melting. While the melting is likely to be gradual during this century, according to the studies, it could

raise sea levels by 10 feet or more in later centuries.

6

Recent studies show what scientists predicted more than 20 years ago but now can prove due to a significant accumulation of data, says James J. McCarthy, a professor of biological oceanography at Harvard University and chairman of the Board of Directors of the Union of Concerned Scientists. “If you went back to compare the tone and cautiousness from when scientists were drawing data ... you'll see that a lot of what was a strong hunch in the '90s is now known with great confidence.”

Many scientists warn that human activity is accelerating the Earth's advancement toward a new wave of extinction due to carbon dioxide and other emissions and resultant changing temperatures, which are warming faster than species have historically been able to adapt. “Many species will say, ‘That's it,’ ” McCarthy says.

The danger comes not just from emissions but from deforestation, the movements of species by humans and the resulting isolation of habitats and species unable to cope with drastic environmental changes, explained *New Yorker* writer Elizabeth Kolbert in her best-selling new book *The Sixth Extinction: An Unnatural History*. For example, deforestation has reduced the size of available tropical habitats, and as temperatures warm, organisms unable to cope with variations in temperature cannot move north to seek cooler climates. 

Many Republicans and industry leaders call such studies overblown. Scientists are conforming to pressure on the issue of climate change, conservative commentator George Will said on Fox News recently: “If you want a tenured track in academia, don’t question the reigning orthodoxy on climate change. If you want money from the biggest source of direct research in this country — the federal government — don’t question its orthodoxy. If you want to get along with your peers, conform to peer pressure. This is what’s happening.” 

Some scientists argue the situation is less dire than others predict. Three researchers wrote in *Nature Climate Change* that significantly less global warming has occurred in recent years than some climate

models had earlier indicated.  And a government study from The Netherlands indicates that while global emissions of carbon dioxide reached a new record of 34.5 billion tons in 2012, the increase in emissions that year slowed to 1.1 percent — less than half the average annual increase of 2.9 percent during the previous decade. China’s rate of increase in CO₂ emissions plummeted from 10 percent to 3 percent, while rate of increase in the United States fell 4 percentage points and the European Union’s rate dropped 1.6 percent between 2011 and 2012. The report attributed the change in China to, among other factors, falling fuel demand during the 2007-09 economic slowdown and greater use of non-carbon energy. In the United States, experts attribute the change to a shift from the use of coal to natural gas, combined with increased renewable energy production. 

Meanwhile, scientists worldwide are testing new technologies for capturing CO₂ emissions, particularly from coal-burning power and manufacturing plants, and storing it underground, where some scientists say it can be safely stored for thousands of years. In early 2014, 21 large-scale projects to capture CO₂ were operating or being constructed worldwide — 50 percent more than in 2011. China has doubled the number of its carbon capture and storage (CCS) projects since 2011, with 12 large-scale CCS projects. One of the largest, planned with help from the U.S. Department of Energy, is in Inner Mongolia, next to a major coal-to-liquid-fuel facility. 

Many experts say CCS would be a necessary component of coal-fired plants in order to comply with proposed Environmental Protection Agency (EPA) regulations on CO₂ emissions. Former Energy Secretary Steven Chu declared the technology essential, and James A. Edmonds, chief scientist at the Pacific Northwest National Laboratory’s Joint Global Change Research Institute at the University of Maryland-College Park, says tests on the technology are showing great promise.

However, some environmentalists worry that CCS has yet to be tested on a large scale and may turn attention away from cleaner energy alternatives such as wind and solar.

International Treaty?

The United Nations is scheduled to meet in New York on Sept. 23 to discuss potential global solutions to climate change, and final talks are scheduled for 2015 in Paris with a goal of implementing a deal in 2020.

 Such an agreement would require both industrialized and developing countries to reduce their

emissions, but a key debate continues to flourish on whether developing economies should be asked to reduce GHG emissions as much as developed nations.

IPCC reports released in March and April outlined various strategies for reducing and adapting to climate change, reflecting a growing consensus among scientists and economists that a combination of strategies should be pursued. But the reports also suggest that policies should be appropriate to each region's economics, industrial history, societal values and other factors.

“So there's movement away from using one strategy and toward ‘Let's find out what everyone can do, and put together a coordinated but not necessarily unified strategy for addressing climate change,’ ” says the University of Maryland's Edmonds, who serves on IPCC's working group on emissions and mitigation.



Activists demonstrating outside the U.S. Department of State on March 7, 2014, stack boxes filled with petitions opposing the proposed Keystone XL oil pipeline. Environmentalists worry the pipeline — which would transport oil from Alberta, Canada, to the U.S. Gulf Coast — would encourage continued U.S. reliance on fossil fuels. The Obama administration has delayed a decision on whether to grant a permit for the pipeline. (Getty Images/Alex Wong)

To limit the negative effects of climate change, world leaders and scientists suggest reducing global warming to about 2 degrees Celsius (3.6 degrees Fahrenheit) above pre-industrial levels. To do that, the IPCC says, the world must reduce GHG emissions by 40 to 70 percent from 2010 levels by mid-century, and to near-zero by the end of the century. ¹³

Some countries already are pursuing that goal. The European Commission, for instance, has proposed a plan to reduce emissions by 40 percent, which will be taken up by the European Union in October. ¹⁴ A major focus worldwide has been on reducing emissions from burning coal. A 2012 study showed that 1,199

new coal-fired power plants are on the drawing boards, globally, including 363 in China and 36 in the United States. ¹⁵

In September 2013, China's State Council announced it would bar new coal-fired power plants around Beijing, Shanghai and Guangzhou, regions that consume about 28 percent of China's coal and that have the

country's worst air pollution. ¹⁶ The plan also called for reducing fine particulate matter — an air pollutant created by industries and vehicles — in those three cities, along with 10 other regions, and to increase the use of non-fossil fuel energy like solar and wind power. China also has adopted limits for toxic mercury emissions — a major pollutant from coal-burning power plants — which harm human health and can settle into water, building up dangerous toxin levels in fish consumed by humans, birds and mammals

— and has invested in solar and wind industries. ¹⁷

The Obama administration has moved to coordinate some efforts with the European Union, Japan and China. For instance, the United States and China, which together account for more than 40 percent of all GHG emissions, have agreed to work together to:

- Phase out hydrofluorocarbons (gases used for refrigeration and air conditioning that have high global warming potential);
- Reduce vehicle emissions;
- Promote smart-grid power-distribution technology; and
- Develop carbon capture technologies and greater energy efficiency in buildings and industry.

But it is still unclear whether the two countries can agree on the extent to which China should meet emission targets similar to those in advanced industrial nations. ¹⁸

Harvard's McCarthy says a firm U.N.-China bilateral deal “would break this logjam” among international leaders unable to reach a firm climate change agreement — provided U.S. lawmakers don't impede progress.

Columbia Law School Professor Michael B. Gerrard says due to paralysis in Congress, bilateral negotiations with China will have a constructive but limited effect on U.N. negotiations.

“Obama will not be able to go to Paris with a new statute in hand” specifically addressing U.S. climate change policy, he says.

Reigniting a National Agenda

Obama's plans to lead international efforts to address global warming were outlined in his Climate Action Plan, unveiled in June 2013. It detailed proposed steps for cutting carbon pollution in America and eliminating Export-Import Bank funding of overseas coal projects unless there are no feasible alternatives or the plants use carbon capture technology. ¹⁹

House GOP members have called the plan a “war on coal” and that ending support for coal-fired plants worldwide will harm the poor because coal provides the cheapest fuel for developing countries. ²⁰ In

March, the House passed legislation to block proposed EPA federal rules to limit carbon pollution from new gas- and oil-fired power plants. ²¹ Critics of the rules say the carbon capture technologies needed to

comply with the regulations have not been adequately developed or proven and would make the new plants too expensive.

Some Democrats agree. “Don’t try to play a game where we’re supposed to [use] technology that doesn’t even exist,” Sen. Joe Donnelly, D-Ind., said in March.²² But others, including Senate Environment and Public Works Committee Chairwoman Barbara Boxer, D-Calif., and Sen. Sheldon Whitehouse, D-R.I., believe the technology has been “adequately demonstrated.”²³

In the absence of congressional action on the plan during the past year, the administration on June 2 proposed — by 2030 — reducing carbon emissions from existing power plants by approximately 30 percent from 2005 levels. The plan would achieve that by issuing state-specific emission goals and guidelines and calling on states to devise plans to increase fuel diversity, energy efficiency and management of energy demand. Final rules would be due in a year, and states would have another year to submit their plans.²⁴ Columbia’s Gerrard warns that the 2016 deadline is just seven months before Obama leaves office, so any resulting litigation will ensnare his successor.²⁵

The White House also aims to reduce methane emissions — which account for nearly 9 percent of domestic GHGs — from landfills, coal mines, agricultural sites, oil and natural gas production and wells used in hydraulic fracturing (fracking).²⁶

And the administration launched a Climate Data Initiative to provide communities with the latest data compiled by the departments of Homeland Security and Defense, the National Geospatial-Intelligence Agency and the U.S. Geological Survey to help communities prepare for the impact of climate change.²⁷

The administration has delayed a decision on whether to grant a permit for the proposed Keystone XL oil pipeline to transport heavy oil from Alberta, Canada, to refineries on the U.S. Gulf Coast, largely due to concerns raised by environmentalists about the safety of such a pipeline and a continued U.S. reliance on the mining of fossil fuels. In the meantime, the State Department has released a report concluding that the pipeline would not cause a significant increase in carbon pollution, and Senate GOP leaders are pushing for a vote on congressional approval of the pipeline. They argue it will help ensure a continued domestic energy supply and produce jobs.²⁸

In the Courts

The administration believes it has authority to regulate industrial greenhouse gas emissions because in 2007 the Supreme Court ruled that the EPA could regulate GHG emissions as “air pollutants” under the Clean Air Act “if it determines that they endanger public health or welfare,” according to Gerrard.²⁹

A series of recent court rulings has bolstered the EPA’s authority under the Clean Air Act to regulate such airborne pollutants as nitrogen oxide, sulfur dioxide, ozone, mercury and fine particulate matter, or soot, from coal-fired power plants, refineries, manufacturers and vehicles.³⁰

Building on those earlier affirmations of the EPA’s authority to set carbon pollution standards, the Supreme Court on June 23 upheld the agency’s requirement that large, new industrial facilities use the best available

technology to curb all air pollutants, including carbon emissions. The decision did not address the EPA's June proposal to regulate carbon emissions from existing power plants. ³¹

Republicans have balked at the rulings, with Rep. Fred Upton, R-Mich., chairman of the House Energy and Commerce Committee, calling one of the rulings — on nitrogen oxide and sulfur dioxide — the “latest blow to jobs and affordable energy.” ³²

But environmentalists praised the rulings. “The Supreme Court’s ruling means that the largest new industrial facilities will need to limit their greenhouse gas emissions,” the Sierra Club, an environmental group based in San Francisco, Calif., said about the June 23 ruling. It means that, in practice, “all of the biggest polluters will be subject to greenhouse gas limits. These gases cause climate disruption and extreme weather and make other air pollutants more harmful to the health of our children and communities.” ³³

Public Opinion

A January poll by the Pew Research Center indicated Americans rank action on climate change as second-to-last among 20 national priorities. ³⁴

In April, a cast of celebrities sought to raise public awareness with a cable television series called “Years of Living Dangerously.” It follows Harrison Ford, Matt Damon and other celebrities as they set out with scientists, firefighters and policymakers to explore the effects of climate change around the world. ³⁵

On the show’s June 9 finale, President Obama told *New York Times* columnist Thomas Friedman that climate change “could end up having profound national security implications in poorer countries,” which could then affect America’s safety. “[E]ntire countries can be ... unable to feed themselves” due to changing climate patterns, Obama explained, triggering “war, conflict, refugees [and] displacement.... When people are hungry, when people are displaced, when there are a lot of young people, particularly young men, ... drifting without prospects for the future, the fertility of the soil for terrorism ends up being significant. And it can have an impact on us.” The best way to solve the problem, he said, was to put a price on carbon emissions and let the free market come up with solutions. ³⁶

Public concern about carbon dioxide from coal-burning plants may be relaxing somewhat, some say, because of growing availability of domestic natural gas — which emits fewer GHGs than oil or coal — from hydraulic fracturing or fracking. But while the oil and gas industry says fracking helps mitigate climate change by boosting natural gas production, environmentalists question the long-term effects of continuing to depend on carbon-based fuels, as well as the environmental damage and methane leaks from the fracturing process. ³⁷

Political support for alternative or renewable energy efforts could be sparked by policy experiments underway in states and localities, writes Jody Freeman, director of Harvard Law School’s Environmental Law Program, and Kate Konschnik, the program’s policy director. As of mid-2013, some 31 states and Washington, D.C., had standards requiring the use of renewable or alternative energy to help mitigate GHG pollution, and another seven states had renewable-energy goals, according to a forthcoming update to the book, *U.S. Climate Change Law and Policy: Possible Paths Forward*, edited by Harvard’s Freeman and Gerrard. Sixteen states and Washington, D.C., offer rebates for renewable energy installations, and nine northeastern states participate in a carbon-trading program for utilities. ³⁸

Other regions are building multifamily housing and mass transit systems to ease energy consumption, although some conservatives think such projects do not produce significant environmental results and are too expensive. “It won’t do much good to reduce emissions if we bankrupt ourselves in the process, as our descendants will be too busy trying to survive to worry about the planet as a whole,” wrote Randal

O’Toole, a senior fellow at the Cato Institute, a libertarian think tank in Washington.

39

Chronology

2012

- February More than 650 people die during Europe’s worst cold snap in 25 years. At the same time, record-breaking floods in Australia drive thousands from their homes.
- March The warmest March on record is observed across the continental United States, with daily temperature records set in every state and an average temperature 8.6 degrees F above the 20th-century average.
- April A report from the Intergovernmental Panel on Climate Change finds a connection between climate change and extreme weather events.
- June Drought covers more than half of the continental United States.
- August Arctic sea ice shrinks to the smallest level recorded since satellite observations began in 1979.
- October Superstorm Sandy strikes U.S. mid-Atlantic coast, flooding large sections of New York City and the New Jersey shore and causing an estimated \$50 billion in damages.
- December Negotiators in Doha, Qatar, vote to extend the Kyoto Protocol and work toward another treaty that will include all nations, but fail to agree on central questions such as future targets for reducing greenhouse gases (GHGs) or aid to developing countries.

2013

- January President Obama pledges in his State of the Union speech to address climate change even if Congress won’t.
- February An estimated 35,000 people demonstrate on the National Mall in Washington, D.C., against construction of the Keystone XL pipeline.
- March Scientists report that a glacier in the Peruvian Andes that took at least 1,600 years to form has melted in the past 25 years.
- April After receiving strong critical comments from industry, the U.S. Environmental Protection Agency delays release of a planned new rule limiting carbon emissions from newly-constructed electric power plants.
- May A review of more than 4,000 scientific papers published between 1991 and 2011 finds that more than 97 percent of them say human actions are changing Earth’s climate.
- June Obama announces plan to cut carbon pollution and prepare U.S. and other nations to combat climate change.... United States and China agree to work together to reduce use of hydrofluorocarbons (HFCs) and to combat climate change. ... United States and India establish new working group on climate change.
- September Intergovernmental Panel on Climate Change panel says 1983-2012 “was likely the warmest 30-year period of the last 1,400 years.”... At a summit in St. Petersburg, Russia, world leaders agree to phase down use of HFCs.
- October Treasury Department issues guidelines for ending U.S. support for new overseas coal-fired power plants.
- November At Warsaw Climate Change Conference, U.S. Secretary of State John Kerry announces new program sponsored by the United States, Britain and Norway for forest preservation and sustainable land use; the countries pledge \$280 million.... Obama asks federal agencies to help states and localities prepare for climate change.
- December Export-Import Bank stops funding coal projects abroad that do not include

	carbon capture technology.
2014	
January	Congressional Research Service says Obama's Climate Action Plan does not explain how the government would reduce GHG emissions by 17 percent from 2005 levels by 2020, nor how the United States would produce its share of a 2009 international pledge of \$100 billion annually to help developing countries mitigate and adapt to climate change.... Pew Research Center report indicates Americans rank mitigating climate change as second to last among 20 priorities for the president and Congress.
February	Obama tells farmers and ranchers affected by drought in Fresno, Calif., he will propose a \$1 billion "climate resilience fund" to help communities prepare for effects of climate change and to fund research and technology to protect against its impact.... Supreme Court hears arguments in <i>Utility Air Regulatory Group v. EPA</i> on whether the Environmental Protection Agency's (EPA) authority to regulate GHG emissions from new vehicles extends to stationary sources such as existing power plants.
March	IPCC report lists strategies and actions governments and regions can pursue to mitigate climate change. The Netherlands says it will no longer fund coal projects overseas.... White House releases plan to reduce methane emissions, with new regulations due by end of 2016.... House blocks administration's plan to limit carbon pollution from new power plants.... Obama administration launches Climate Data Initiative to present the latest information to help communities prepare for climate change. European Commission launches Mayors Adapt, an initiative to help cities take action to adapt to climate change.... European Council discusses proposal to cut GHG emissions by 2030 to 40 percent of 1990 levels.
April	House passes measure calling on National Oceanographic and Atmospheric Administration to prioritize weather prediction programs over climate change programs.... Republicans release fiscal 2015 budget plan that seeks to reduce funding for federal climate change programs.... Obama administration releases comprehensive strategy document aimed at reducing wildfires, which it says are being exacerbated by climate change.... TV series on climate change, "Years of Living Dangerously," premieres on Showtime.... U.S. Circuit Court of Appeals for the District of Columbia upholds EPA Clean Air Act rule targeting mercury and other pollutants from coal plants.... Obama administration delays Keystone XL pipeline permit decision.... Supreme Court rules 6-2 to uphold EPA's authority to regulate smog pollution that blows across state lines from coal plants.... Federal District Court orders EPA to propose a new rule regarding federal standards for smog, or black carbon, which scientists last year concluded is the number two contributor to global warming made by humans.
May	U.S. Circuit Court of Appeals for the District of Columbia, in <i>National Association of Manufacturers v. EPA</i> , rules unanimously that EPA can tighten standards on fine particulate matter, such as soot, from coal plants, refineries, manufacturers and vehicles.
June	EPA proposes rules for limiting greenhouse gas emissions from existing gas- and coal-fired power plants.... Dairy industry expected to unveil "Biogas Roadmap" for cutting dairy sector's GHG emissions 25 percent by 2020.... Supreme Court upholds EPA's requirement that large, new industrial facilities use the best available technology to curb all air pollutants, including carbon.
Summer	EPA is expected to propose updated standards on methane emissions from new landfills and solicit comments on whether to update standards for existing landfills.
September	U.N. climate summit in New York is slated to be a "solutions summit."
October	European Commission expected to present a plan to EU heads of state to reduce GHG emissions by 40 percent.
2015	

Nov. 30-Dec.11

U.N. climate summit scheduled in Paris.

Footnotes

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About the Author

Christina L. Lyons is a freelance journalist based in the Washington, D.C. area.

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