



Drumbeat: July 18, 2012

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[Utility Chiefs Worry U.S. Rush to Gas Will Crowd Out Other Fuels](#)

The U.S. is at risk of relying too much on natural gas as transportation, manufacturing and electric-power industries vie for the cheap fuel, top executives of three power utilities said.

While greater use of gas instead of coal for generation cuts air pollution and carbon-dioxide emissions linked to climate change, the executives said the U.S. needed a diverse fuel mix to hedge against cost increases in any one source.

“Having one focus is never good, just like a portfolio having one stock,” Michael Yackira, chief executive officer of Las Vegas-based NV Energy Inc., said today at a Bloomberg Government breakfast in Washington.

[Oil Drops From Seven-Week High on Outlook for Economy](#)

Oil fell from a seven-week high in New York on concern fuel demand may falter after China signaled more economic weakness and analysts cut their profit forecasts for European companies at the fastest rate since 2009.

Futures slid as much as 0.7 percent after advancing a fifth day yesterday, the longest run of gains since April. The labor situation in China, the world’s second-biggest crude user, will become more “severe,” Premier Wen Jiabao said, according to a statement on the government’s website. Profits at Euro Stoxx 50 Index companies will rise 6.8 percent this year, more than 12,000 estimates compiled by Bloomberg show. That compares with a 19 percent gain predicted at the start of the year.

[Oil-Tanker Charters Seen 17-Month Low as China Demand Slides](#)

The number of oil-tankers booked to haul 2 million-barrel cargoes of crude from ports in the Persian Gulf is poised to slump to a 17-month low as Chinese charters decline, commodities broker Marex Spectron Group said.

Charters of very large crude carriers to ship Middle East crude will probably fall by 10 percent from June to 115 shipments this month, the lowest tally since February 2011, Kevin Sy, a Singapore-based freight derivatives broker at Marex Spectron, said by e-mail today. A reduction in bookings to China will be the biggest contributor to the slump,

he said.

[Iraq inaugurates prized southern oil field](#)

BAGHDAD (AP) — Iraq has inaugurated a prized oil field in its oil-rich south, the latest major step in developing the country's untapped energy resources.

[Brazil's Petrobras Raising Prices as Rivals' Sales Drop](#)

Petroleo Brasileiro SA, the worst- performing major oil stock this year, is raising fuel prices even as a recession in Europe and slowdown in China reduces revenue at global energy providers.

Petrobras (PETR4) said July 12 it would boost diesel prices by 6 percent, three weeks after it increased gasoline and diesel prices for the first time in seven months. The government, which controls Petrobras with a majority of voting shares, had resisted higher prices to avoid fanning inflation in the world's second-largest emerging market. Petrobras has sold fuel below international prices since the start of 2011.

[Sabic Misses Estimates as Second-Quarter Profit Declines 35%](#)

Saudi Basic Industries Corp. (SABIC), the world's biggest petrochemicals maker, posted a 35 percent decline in second-quarter profit on lower product pricing and higher raw materials costs, missing analysts' estimates.

[What will we do when all the oil is gone?](#)

One day, the oil will run out. It's only logical. It's a finite resource, so unless we can figure out a way to make more, we'll use it up eventually.

And probably soon. According to the UK Energy Research Centre (UKERC), conventional oil production is likely to peak within the next 20 years, and could possibly do so within the next decade.

It's a difficult future to imagine. We're just so used to being able to switch on the lights, drive to work, have our grocery shopping delivered.

[EOG Resources: A Hidden Gem In A Tumultuous Market](#)

With peak oil fading fast in the rear-view mirror, investment in energy exploration and production companies is more focused on the quality and life of the energy assets, and the ability of a company to exploit those assets in cost-effective ways.

[Energy Revolution 2: A Post Post-American Post](#)

Forget peak oil; forget the Middle East. The energy revolution of the 21st century isn't about solar energy or wind power and the "scramble for oil" isn't going to drive global politics. The energy abundance that helped propel the United States to global leadership in the 19th and 20th centuries is back; if the energy revolution now taking shape lives up to its full potential, we are headed into a new century in which the location of the world's energy resources and the structure of the world's energy trade support American affluence at home and power abroad.

[Peak Oil author launches new book on "one of the greatest problems ever to face mankind"](#)

A NEW book launched in Schull recently by Ballydehob-based author Colin Campbell aims to shed light on what has been described as "one of the greatest problems ever to face mankind".

Peak Oil Personalities is a collection of biographical essays by some of those who have played – and continue to play – a crucial role in raising awareness about the impact of Peak Oil.

[Peak oil debunked? The mechanisms of denial at work](#)

A couple of decades ago people started referring to the "Limits to Growth" study as "Club of Rome's mistake". Are we going to see Peak Oil described as "ASPO's mistake"? It is too early to tell, but we can't rule out this possibility. Especially if oil prices were to collapse in the near future - as they did in 2008 - most people would take that as a vindication of Maugeri's thesis. Never mind that the price collapse would also cause a decline in production - as Maugeri himself clearly states in his study. Most people perceive the problems with oil only in terms of prices, not of production. If we are going to see this kind of events unfolding, it will take a lot of time and effort to redress the public perception on Peak Oil, just as it is taking a lot of time and effort to fight the perception that the "Limits" study had been "wrong".

[The Paradox of Energy Efficiency](#)

A new report, *The Rebound Dilemma*, for the Institute for Energy Research (IER) by California State University, Fullerton economist Robert Michaels analyzes the implications of depending on energy efficiency improvements to reduce carbon dioxide emissions as a way to mitigate future climate change. Michaels looks at studies of direct, indirect, embedded energy, and economy-wide rebounds. The Melbourne heating case is largely an example of direct rebound effect in which better insulation and more efficient heaters apparently resulted in no reduction of energy use. An indirect rebound occurs when efficiency improvements raise the productivity of other goods and inputs that, in turn, boost the demand for relatively cheaper energy. Embedded energy is the energy used to produce, distribute, and maintain more energy-efficient capital goods.

And economy-wide rebounds result from the ways in which people use their savings on energy to purchase other goods and services that also consume energy to produce. For example, cheap gasoline enabled suburban living.

[Final decision on South Stream pipeline in sight](#)

A consortium backing the Gazprom-led South Stream pipeline expects to make a final investment decision within months, says the head of one of its second largest shareholder, Italy's Eni energy.

Eni chief executive Paolo Scaroni was quoted on Sunday (15 July) as saying that all four partners were interested in the natural gas pipeline project, but that they still needed to see all the details before making the investment decision. A decision, he said, is expected by early 2013.

[Syrian defense minister killed in bombing, state-run media report](#)

(CNN) -- Syria's defense minister, Dawood Rajiha, was killed Wednesday in a suicide bombing at a national security building in Damascus, state-run media reported.

The bombing took place during a meeting of ministers and security officials, state-run TV said.

[Syrian rebels 'shoot down' helicopter in Damascus](#)

The rebel Free Syrian Army said it shot down on Tuesday a helicopter gunship in Damascus, scene of violent battles between army and rebel forces.

"Yes, we have shot down a helicopter over the district of Qaboon," the FSA's Joint Command spokesman told AFP via Skype, without elaborating.

[Ship with helicopters for Syria heads back to Russia](#)

A Russian ship that tried to supply attack helicopters to Syria last month before being forced back was Sunday sighted sailing back home after unexpectedly starting a new voyage.

The privately-chartered Alaed had to return to Russia after its initial attempt to deliver the controversial cargo to President Bashar al-Assad's regime in June was exposed by the US State Department.

[State Department Rep.: US sorry for damaging Iran oil reserves, but no other choice](#)

U.S know that sanctions imposed on Iran's oil export has forced Iran to shut off some oil wells which would damage the Iranian citizens' national energy assets in long term, but the current situation is caused by Iran's avoidance to engage its international commitments in the nuclear issue, Persian language spokesperson of the U.S State Department Alan Eyre told Trend on July 16.

The United States sanctions over the Iranian Central Bank came to force on 28 June whereby a new US law penalises countries that do business with the Central Bank of Iran (CBI) by denying their banks access to the United States financial markets. Blacklisting the CBI which involves transferring payments for exported Iranian crude oil is leading to a decrease in Iran's oil exports by 50 per cent to 1.1 million barrels per day, costing more than \$3 billion which the Iranian government lost per month. Its 50 per cent of revenues relies on oil exports.

[Iran Offers \\$1 Billion Insurance on Oil Tankers to S Korea -Hyundai Oilbank Official](#)

Iranian officials have offered accident insurance coverage worth a maximum of \$1 billion for Iranian tankers shipping Iranian crude oil to South Korea, a Hyundai Oilbank official, who declined to be named, said Wednesday.

Hyundai Oilbank and SK Innovation, which fully owns the nation's other refiner, SK Energy, are considering Iran's offer, officials from both companies said.

[Navy Cmdr.:US security to face danger if Iran threatened](#)

We are witnessing some "slight" military movements in the region and all of the enemies' actions are under Iran's supervision, Commander of Islamic Revolution Guard Corps (IRGC) Navy Rear Admiral Ali Fadavi said on July 18.

[U.S., Allies to Stage Persian Gulf Region Minesweeping Drill](#)

The U.S. and 20 allies will stage a minesweeping exercise in September in the Middle East as tensions build in the region over Iran's nuclear program.

Planning was completed last week for the exercise that will focus "on a hypothetical threat to mine the international strategic waterways of the Middle East, including the Red Sea, the Gulf of Aden, the Gulf of Oman, and the Persian Gulf," the U.S. Central Command said in a statement to be released today.

[U.S. Envoy Vows Probe After Navy Firing Kills Indian Off Dubai](#)

U.S. Ambassador to India Nancy Powell called the country's foreign secretary, Ranjan Mathai, to offer her regret for the loss of life after an American navy ship opened fire on

a fishing boat off the coast of Dubai.

Powell vowed a full investigation, according to a statement from India's foreign ministry. The shooting killed one Indian fisherman and wounded three others, the ministry said in the statement, citing U.A.E. officials it didn't name.

[Why the U.S. Fracking Industry Worries About the Weather in India](#)

Workers in America's oil patch pay little heed to the weather. They know for a certainty that down in the South Texas Eagle Ford Shale fields the metal rigs will turn red hot in triple digit summer temperatures, while up north in the Bakken Shale, winter will come with a fury to North Dakota. But these days they do have an eye on the weather forecast 8,500 miles away on the other side of the world in Rajasthan, India, home to a little green bean that is proving vital to the oil and gas industry in the U.S.

[UAE's first nuclear power plant gets green light](#)

The nuclear regulator has given the green light for the construction of the UAE's first nuclear plant.

Emirates Nuclear Energy Corporation (Enec) is set to pour the first concrete today at the coastal site of Baraka, where four nuclear reactors supplied by a South Korean consortium are scheduled to come online between 2017 and 2020.

[So, How Hot Was It?](#)

It was so hot last week, a twin-unit nuclear plant in northeastern Illinois had to get special permission to continue operating after the temperature of the water in its cooling pond rose to 102 degrees.

...The problem, said Craig Nesbit, a spokesman for Exelon, which owns the plant, is not only the hot days, but the hot nights. In normal weather, the water in the lake heats up during the day but cools down at night; lately, nighttime temperatures have been in the 90s, so the water does not cool.

Asked whether he viewed Braidwood's difficulties as a byproduct of global warming, Mr. Nesbit said: "I'm not a climatologist. But clearly the calculations when the plant was first operated in 1986 are not what is sufficient today, not all the time."

[Hokuriku Electric Falls Most Since at Least 1974: Tokyo Mover](#)

Hokuriku Electric Power Co. plunged 21 percent, the most since 1974, in Tokyo trading after seismologists said there may be an active earthquake fault line under the No. 1 reactor at its Shika power station.

[Gulf cities need to rethink the best ways of cooling it](#)

Dubai, Abu Dhabi and Doha would not exist without air conditioning.

Large, cosmopolitan cities, centres for finance and tourism, demand an equable indoor climate through the fierce Gulf summers. But the energy and environmental impacts of air conditioning mean the region needs to rethink keeping cool.

By one estimate, the world's energy consumption for air conditioning could rise 10 times by the middle of the century. Global warming means a hotter Gulf climate, requiring even more cooling.

Mohammed Badri, the director of the Emirates Authority for Standardisation and Metrology, indicated last year that 70 per cent of all electricity used in the UAE was for air conditioning. The peak demand during a summer's day may be three times that of a winter's night, demanding a fleet of power stations that stand idle for much of the year.

[Trees, what a powerful knockout](#)

The best long-term solution to the dilemma of trees is to be proactive with new construction and landscaping projects. When trees aren't in a completely natural environment, "the kind of care they need is heightened by the fact that they're competing with power lines, with concrete, with households," says Sean Barry, spokesperson for the Arbor Day Foundation. "We can't take it for granted that trees will survive and thrive without attention." To get the benefits of shade while minimizing the risk of limbs falling on lines, you need to put, as the foundation has titled a campaign, the "Right Tree in the Right Place."

Here's what that means: First, choose species that have evolved to deal with the weather your region gets. Second? Consider height. Put tall shady oaks by buildings, where they can keep you cool. Plant lofty spruces and pines outside your windows so you can hear the wind whistling through. Choose shorter trees, such as crabapple and dogwoods, to put near or under lines. The trees' height when mature are often less than 20 feet — meaning that, from a geometrical perspective, they can't fall down on the lines.

[The Power Grid: From Rickety to Resilient](#)

In his new book Resilience, Andrew Zoll — the director of the global innovation network PopTech — uses the electrical grid as an example of a system that lacks just that. And in an increasingly interconnected world — financially, ecologically, politically — one in which small errors in one place can cascade into broader system failures, the ability to adapt, accommodate and bounce back is only going to become more important. From climate change to overpopulation to recessions, the threats facing the world are as unpredictable as they are varied — which is why we need to craft systems that are nimble, that can bend under stress rather than break. "If we cannot control the volatile

tides of change, we can learn to build better boats," writes Zolli. "We can design — and redesign — organizations, institutions, and systems to better absorb disruption, operate under a wilder variety of conditions, and shift more fluidly from one circumstance to the next."

[Apple: No wait, we're green again](#)

(CNN) -- Calling its decision to abandon a green certification system for electronics "a mistake," Apple on Friday announced it would again submit its products for EPEAT certification.

[7 most common gas-guzzling mistakes](#)

With the national average price of gas nearing \$4 a gallon, drivers are feeling the sting, but there's no need to cancel your vacation. We sifted through mounds of data from the government, automotive consumer advocates and car-rental agencies to find out how to squeeze every last penny out of what you put in your tank. Here is what you need to know before your next summer driving adventure.

[25 Million Light Duty Natural Gas Vehicles Will Be On Roads Worldwide by 2019, Forecasts Pike Research](#)

The current high costs of gasoline and diesel fuel, along with the substantial and growing supplies of low-cost natural gas in many countries, are leading to renewed interest from both consumers and fleets in natural gas vehicles (NGVs). What's more, NGVs produce lower greenhouse gas (GHG) emissions, particulate matter, and nitrogen oxide than gasoline or diesel-powered vehicles, giving governments looking to reduce GHGs a tool to meet those objectives. According to a new report from Pike Research, a part of Navigant's Energy Practice, the worldwide market for light duty NGVs will grow steadily over the next 7 years, reaching 3.2 million vehicles sold in 2019. This will result in a cumulative total of 25.4 million light duty NGVs on the road by 2019, the market intelligence practice forecasts.

[GM's Chevrolet Volt ads aim for gay, lesbian buyers](#)

Gay and lesbian consumers prefer fuel-efficient cars, account for 5% of new car purchases and have average household income in the six figures -- more than that of heterosexual households, according to a recent marketing survey.

So it's little surprise that General Motors ran a gay-themed advertisement in Detroit last month for the Chevrolet Volt, a pricey extended-range electric, the type of car studies show gay and lesbian consumers tend to like.

[European bicycle lobby set to deliver](#)

More than 30 companies from across Europe have launched a European Cycle Logistics Federation (ECLF), aimed at improving urban bike deliveries and lobbying for cycle-based delivery policies.

“We will be able to influence and convince stakeholders that freight bikes are a feasible option for delivering cargo in congested inner city areas,” said Rob King, the founder of Outspoken Delivery, a Cambridge, England-based company that hosted the UK conference at which the launch was announced.

[Electric Plane Turns to Drones as Flying Batteries](#)

An aviation pioneer wants to recreate aviator Charles Lindbergh's flight across the Atlantic and show the world why electric planes can fly long-distance. His shrewd plan for success involves replacing the plane's batteries in midair using no less than five drones.

[US Navy Great Green Fleet trials fire new salvo in battle against climate change](#)

One hundred and five years ago the US Navy was flexing its muscles by sending the 16 ships of what would become known as The Great White Fleet to tour the world. Its goal was to inspire fear and admiration in equal measure.

In 2016, The Great Green Fleet aims to do the same, only powered entirely by alternative energy sources. It moves a step closer to reality this week as the enormous biennial RIMPAC naval exercise gets underway off the coast of Hawaii.

[New Database from NREL Makes Costs of Energy Technologies More Transparent](#)

A new web application collects cost and performance estimates for electric generation, advanced vehicles, and renewable fuel technologies and makes them available for utilities, policy makers, consumers, and academics. The Transparent Cost Database (TCDB) app provides technology cost and performance estimates that can be used to benchmark company costs, model energy scenarios, and inform research and development decisions.

In keeping with the Obama Administration's commitment to open and transparent data, the TCDB provides cost comparisons to make it much easier to view the range of estimates for what energy technologies such as a utility-scale wind farm, rooftop solar installation, biofuel production plant, or electric vehicle might cost today or in the future. The new database will help companies and investors make informed decisions supporting the commercialization and deployment of clean energy.

[Offshore Wind Slump Means No Firm Orders for GE, Siemens](#)

Sales of offshore wind turbines collapsed in the first half, a sign the power industry and its financiers are struggling to meet the ambitions of leaders from Angela Merkel in Germany to Britain's David Cameron.

[In wake of Fukushima, Japanese village goes all-solar](#)

A small village in Japan has become the first in the country to provide for its power needs entirely through renewable energy, after a number of factors convinced villagers to build a large solar installation. According to The Japan Times, Sanno, a rural community of less than a dozen households, decided to go renewable shortly after the Fukushima nuclear disaster, and now, just over a year later, has done so.

The national disillusionment with nuclear, combined with some pressing financial issues, made residents of Sanno opt to take the risk of building a solar array that would power their whole community. They had the space, the inclination and — thanks to the local government's purchase of land from residents — a little money. They got a quote, got another quote, and started building in January with estimated costs of around ¥17 million, roughly \$215,000.

[Sustainable Tech Saw Ancient Maya Through Drought](#)

The Maya are well-known for their complex calendar system, which some say predicts the end of the world in December 2012 (an interpretation that experts on the civilization call absurd). But the Maya's own fate was sealed by the weather. Eventually, a growing population and an increasing level of drought spelled the end for Tikal. The city peaked in population by A.D. 700, and by A.D. 900, "the show is over," Scarborough said.

Nonetheless, modern people may be able to take lessons from the long-lived Tikal technology, he said. In developing nations where water and energy are scarce, simple solutions may work better than new, costly technologies that are prone to break, Scarborough said. Looking at history can also reveal the consequences of certain water strategies, he added.

[The war over coal is personal](#)

(CNN) -- Amanda Sedgmer, mother of five and daughter of coal country, believes that in this presidential election, her way of life is at stake.

"If you ask anybody in the coal industry what would happen if Obama is re-elected, they'd say the coal industry is done," said Sedgmer, whose husband, Ryan, is a coal miner and whose family has depended on the industry for at least four generations.

[Our microbes are under threat — and the enemy is us](#)

Although scientists can't yet prove direct cause-and-effect, researchers have linked changes in our microbial inhabitants with rising rates of obesity, allergies, autoimmune diseases and other chronic illnesses.

Scientists note that developed countries have drastically altered our environment in the past century or so. Our water is cleaner. Our food is more processed, so that our guts have less need for bacteria to help us digest leafy plants and whole grains. We use more antibiotics, to treat disease, fatten livestock, even wash our hands, and spray our counters with antibacterial cleaners, Blaser says.

So scientists aren't surprised to find that the microbes of people in industrialized countries are very different from those living in developing ones.

[5 Ways Mother Nature Is Impacting Your Wallet](#)

All of a sudden, much of the country seems to have turned into Arizona, with a hot, dry summer coming on the heels of a remarkably mild winter. Here are five ways that months of odd weather have affected—and will continue to affect—costs around the house, at the supermarket, in restaurants, and beyond.

[Grocery prices headed higher as drought lingers](#)

Shoppers across the country should stand up and take notice of the Midwestern drought that has already hurt supplies of corn and soybeans.

The drought will lead to higher supermarket prices for everything from milk to meat. How high will depend on what happens with rain and high temperatures in the Corn Belt in the next few weeks.

[Midwest drought threatens crops, livelihoods and food prices](#)

CLUNETTE, Ind. – Ask Craig Ganshorn how his corn crop is faring and he winces before replying. "Basically, it's burnt up," he says.

Ganshorn, 62, who has farmed 500 acres of corn and soybeans here since 1976, is confronting the grim realities of a drought that he says is worse "by far" than the one in 1988 that's remembered as among the worst in U.S. history.

[Lose the Crust, Inherit the Wind](#)

While state agencies grapple with the public safety problem, scientists are studying the root causes of dust storms. Just as poor farming practices, including plowing up the prairie to plant crops, created Dust Bowl conditions in the 1930s in the driest regions of the Great Plains, the erosion of Arizona's "desert crust" is contributing to dust storms

today. The trick is getting people to care about a terrain that some people think of as barren or lifeless, and perhaps not as worthy of preserving as, say, a rainforest.

“My whole life, I’ve been trying to get people to see this wasteland as a wonderland,” said Jayne Belnap, a research ecologist with the United States Geological Survey who is an expert on desert soil.

[Alaska drilling: From 'hell no!' to ... 'OK'](#)

Practical and personal considerations influenced Itta's decision, he says. Growing up, he had no electricity, no running water. "You'd get back and forth from where you need to with dog teams."

"I started dealing with looking at my grandkids and my kids and what I had gone through ... and I wanted them to have what I have, if not better."

If production dips from the region's Prudhoe Bay wells and pipeline, "our tax revenues go way, way, way down," Itta admits. In an era when reliance on foreign oil is seen as a security threat, President Barack Obama's support of offshore drilling also helped Itta decide. "I think it's inevitable that action is going to happen out here -- in the name of national security if for nothing else."

[Fake Crowdsourced Ad Campaign Celebrates Shell Oil](#)

As the energy giant pushes into the Arctic, the Let's Go Public! Arctic Ready ad contest, involving user-submitted captions paired with photos of the pristine north, has drawn attention with a clever simulation of corporate social media engagement going off the rails.

[Profiteers of climate change in the Arctic](#)

Climate change has made it easier to gain access to the Arctic for the extraction of fossil fuels. It is also opening up shipping routes that were once mostly covered by ice. As an analysis by ETH Zurich's 'Center for Security Studies' (CSS) now shows, the main winner from these new realities in the Arctic is Russia.

[Salazar on Parks, Arctic Drilling and Clean Energy](#)

Visiting New York City for an urban parks conference, Ken Salazar, the secretary of the interior, stopped by The New York Times on Tuesday to discuss the partnership his department has forged with the city on revitalizing parkland around Jamaica Bay.

[Oil: Only part of the Arctic's massive resources](#)

Asked about the window of opportunity for Shell's offshore oil drilling in the Arctic this summer, he said he would make a final decision on whether to issue drilling permits by Aug. 15. While the permits might be issued earlier, he said, the department is still awaiting outstanding tests on equipment including an oil-spill-response barge.

The secretary would not say definitively whether drilling would begin this summer. "We have not yet given the final permits to Shell," Mr. Salazar said. "We don't know if it will occur, and if it does occur, it will be done under the most watched program in the history of the United States," he said, referring to safety precautions.

[How Barry Bonds helps explain why it's so hot](#)

Yes, there were hot summers, cold winters and other extreme weather events long before anyone heard the term "greenhouse gas." And people hit home runs without the aid of steroids. Pittsburgh's Barry Bonds, for example, hit 16 as a skinny rookie in 1986.

But in 2001, when the bulked-up Mr. Bonds was playing for San Francisco, he hit 73. Just as steroids made it more likely that he would hit the ball extremely far, greenhouse gases make it more likely that there will be extreme weather events.

[Federal Court backs government over Kyoto pullout](#)

The Conservative government's decision to pull out of the Kyoto Protocol was legal, and it wasn't obliged to consult Parliament before doing so, the Federal Court has ruled.

Daniel Turp, a former Bloc Québécois MP and former Parti Québécois member of the province's national assembly, went to Federal Court to challenge the government's withdrawal from the Kyoto Protocol.

[Trial Balloon: A Tiny Geoengineering Experiment](#)

Two Harvard professors said Tuesday they were developing a proposal for what would be a first-of-its-kind field experiment to test the risks and effectiveness of a geoengineering technology for intervening in the earth's climate.

The experiment, which would be conducted from a balloon launched from a NASA facility in New Mexico, would involve putting "micro" amounts of sulfate particles into the air with the goal of learning how they combine with water vapor and affect atmospheric ozone.



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