



U.N.: 2010 among 3 hottest years on record

Posted 3d 22h ago

CANCUN, Mexico (AP) — This year is "almost certain" to rank among the three hottest years on record, and 2001-2010 is undoubtedly the warmest 10-year period since the beginning of weather records in 1850, the U.N. weather agency said Thursday.

Data from the World Meteorological Organization released at U.N. climate negotiations confirmed a warming trend that has gone on for decades, which scientists attribute to man-made pollution trapping heat in the atmosphere.

WMO Secretary-General Michel Jarraud said this year's temperatures through October were at near-record levels. Data for November and December will be analyzed in early 2011 but were expected to be slightly cooler than normal.

USA TODAY INTERACTIVE GRAPHIC: What causes global warming

Still, there is a "significant possibility 2010 could be the warmest," Jarraud told reporters.

Cold winters in Europe — not counting the early snow and freezing temperatures now gripping Britain and northern parts of the continent — meant it was the coolest year for Europeans since 1996, Jarraud said, but that "did not reflect the global average."

The two other extraordinary years were 1998 and 2005. Jarraud said these three steaming years were within a fraction of a degree — 0.036 degree Fahrenheit— of each other.

This year also saw startling weather events: a deadly summer heat wave in Russia with temperatures in Moscow soaring to just above 100 degrees. Devastating floods in Pakistan were part of the same weather anomaly, Jarraud said.

Although there were no catastrophic hurricanes or cyclones this year, heavy rains lashed Australia and

Indonesia, floods swamped Thailand and Vietnam, and drought afflicted the Amazon basin in Latin America and southwest China.

While no single disaster could be traced to human activity and greenhouse gases, Jarraud said natural variation cannot explain the decade-long record. "If you don't take the human emission into account you cannot reproduce what you observe," he said.

Preliminary data, collected from four science centers in the U.S. and Britain, were released as the 193-nation conference negotiated details of a package of measures, mostly designed to help poor countries cope with changes in agriculture, rising sea levels and other effects of a warming world.

Prospects for a limited deal have brightened with the U.S. and China appearing to narrow differences on a key element: how to monitor and verify greenhouse gas emissions.

But other issues that go to the heart of a new global warming treaty — long-term commitments for cutting emissions — proved stubbornly unmoving and out of reach for any resolution during the annual two-week conference.

Nonetheless, analysts said an understanding on measuring emissions would be an important step that could help break the long-standing deadlock on reducing emissions as the negotiations continue in 2011.

Copyright 2010 The Associated Press. All rights reserved. This material may not be published, broadcast, rewritten or redistributed.

Advertisement




60% OFF

The Daily Deal - Los Angeles \$22 for Brow Shaping and Universal Brow Pencil at Billion Dollar Brows

GET DEAL AT: 

www.PrintGroupon.com/541

Time Sensitive Offer

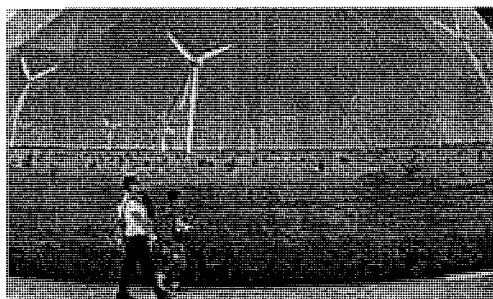
Print Powered By 





Plodding climate talks stepping up to higher level

Posted 1d 12h ago



By Omar Torres, AFP/Getty Images

A family passes by one of the stands promoting green energy at the Climate Village in Cancun, Mexico, on Saturday in the framework of the COP16 summit.

CANCUN, Mexico (AP) — The slow-moving U.N. talks on combating global warming took a step forward Saturday with revised proposals for a \$100 billion-a-year climate aid fund and other issues for debate by the world's environment ministers this week.

Despite that advance, the chairwoman of key closed-door negotiations warned the open conference that obstacles remain to what delegates hope will be a package of decisions next Friday on financial and other side matters under the U.N. climate treaty.

"Progress has been made in some areas," Zimbabwe's Margaret Mukahanana-Sangarwe said. But she said the talks were "going backwards" on important issues. "We need to redouble our efforts."

Environment ministers began flying in Saturday for the final days of the annual two-week climate conference, hoping to put new life in the U.N. talks.

Last week, under Mukahanana-Sangarwe's leadership, a working group from among the 193 treaty nations sought to whittle down the contested

texts of proposed decisions.

In one sign of the work facing them, only 170 words had been undisputed among the 1,300 on two pages of a key text on the "shared vision" of what the treaty nations want to accomplish. The disputed language was options proposed by various parties and placed within brackets.

Some parties, for example, want the world to reduce emissions of global warming gases so that temperatures don't rise more than 2 degrees C (3.6 degrees F) above preindustrial levels, beyond which scientists say serious damage from climate change would set in. Others want to aim even lower, at 1.5 C (2.7 F) above preindustrial levels — a position favored by island states and others most threatened by warming's impacts, such as sea-level rise.

The Zimbabwean's revised text eliminated the 1.5-degree option, drawing an immediate protest from the Bolivian delegation at Saturday's open meeting, a sign of the contentiousness sure to mark the coming days.

Though a step forward, "this paper lacks sufficient ambition for the urgent protection of islands and the world," said Grenada's U.N. ambassador, Dessima Williams, speaking for small island nations.

In many important areas, Mukahanana-Sangarwe's text revisions retained multiple options — on the supervision of the proposed climate fund, for example — setting the stage for further sharp debate.

At last year's climate summit in Copenhagen,

Advertisement

GROUPON

60% OFF

The Daily Deal - Los Angeles \$22 for Brow Shaping and Universal Brow Pencil at Billion Dollar Brows

GET DEAL AT:

www.PrintGroupon.com/541

Time Sensitive Offer



Print Powered By FormatDynamics



Denmark, richer nations promised \$100 billion a year by 2020 to help poorer nations reduce greenhouse gas emissions and adapt to climate change by, for example, building coastline protection and shifting crops to cope with new precipitation patterns.

Firmly establishing a green fund at Cancun is a priority for developing-world delegations, who generally want a U.N. body overseeing disbursement of climate funds, rather than, for example, the World Bank, which is controlled by developed nations.

The issue of reducing carbon dioxide and other greenhouse gases emitted by industry, vehicles and agriculture is the core dispute of the long-running climate talks, and will not be fully resolved at Cancun.

For 13 years, the U.S. has refused to join the rest of the industrialized world in the Kyoto Protocol, a 1997 add-on to the climate treaty that mandates modest emissions reductions by richer nations. The U.S. complained that it would hurt its economy and that Kyoto should have mandated actions as well by such emerging economies as China and India.

For their part those poorer but growing nations have rejected calls that they submit to Kyoto-style legally binding commitments — not to reduce emissions, but to cut back on emissions growth.

This impasse brought last year's Copenhagen climate summit to near-collapse. That conference ended with a nonbinding "Copenhagen Accord," under which the U.S., China and other nations inscribed voluntary pledges to scale back emissions. The agreement has been endorsed by 140 nations, not the treaty's full 193.

Two debates underway in Cancun stem from Copenhagen: how to "anchor" those voluntary pledges more officially under the treaty, and how to monitor and verify that pledges are being met.

Besides the green fund, negotiators hope for agreements on other secondary issues, including making it cheaper for developing nations to obtain climate-friendly proprietary technology from more advanced countries, and pinning down more elements of a complex plan to pay developing countries for protecting their tropical forests.

Copyright 2010 The Associated Press. All rights reserved. This material may not be published, broadcast, rewritten or redistributed.

Advertisement

USA TODAY
AutoPilot ✈️

The new travel app for iPhone® and iPod touch®

Presented by:

SEE HOW IT WORKS >>

Print Powered By FormatDynamics™



SCIENTIFIC AMERICAN

Permanent Address: <http://www.scientificamerican.com/article.cfm?id=how-are-china-and-the-us>

How Are China and the U.S. Building a Clean-Energy Workforce?

Compared with Europe and the U.S., China has a key advantage in aiming to deliver a generation of new professionals and workers who are literate in the demands of clean energy

By Coco Liu and Climatewire Friday, December 3, 2010 11

SHANGHAI—When President Obama last year proposed a "historic commitment" to empower Americans with a clean energy education program, his speech appeared to have reminded Chinese leaders of their own educational needs.

A few months later, China's prime minister, Wen Jiabao, gave a speech in Beijing, calling for creating more world-class scientists here to work in cutting-edge fields. And clean energy topped Wen's list.

But their similar pitches had different outcomes: The proposed \$170 million American energy education program, called "RE-ENERGYSE," is still on the launching pad in Congress, which rejected it last year and appears to be in an even more tightfisted mood this year. Meanwhile, in China, newly established programs focused on clean energy are sprouting on campuses like bamboo shoots after the rain.

After it led the world in clean energy investment last year and manufactured about one-third of the global solar panels and wind turbines, China has been moving full-speed toward creating more clean energy professionals, from Ph.D.-level engineers to well-trained technical operators.

"The Chinese government and Chinese firms are using a number of different strategies to attract and develop talent in clean energy," said Kelly Sims Gallagher, an associate professor at Tufts University's Fletcher School who follows China's energy and climate policy.

Moreover, Western technology giants have come to help. As their research centers mushroom in China, they are fostering Chinese researchers in advanced clean energy technologies.

While China may not be at the cutting edge in terms of having the best talent yet, its knowledge base in clean energy is growing rapidly, said Gallagher. And compared with Europe and the United States, China has a key advantage in aiming to deliver a generation of new professionals and workers who are literate in the demands of clean energy. "No other nation has so many engineering professionals [as China has], and so this provides a strong foundation for development," she said.

Such development can speed up the further expansion of China's clean energy industry. "Barring any significant policy changes by other nations, China-based companies are poised to increasingly dominate as clean-tech employers," according to an October report from Clean Edge, a research firm in Portland, Ore. The report points out that this year, China already dominated a list of top 10 global clean-tech public companies in terms of total employment.

Hunting for more students and reassigning professors

For years, universities in China have had clean energy research, but most of them had never bothered to develop outreach programs. That changed earlier this year.

In March, China's Ministry of Education urged universities to establish more educational programs focused on advanced technologies, clean energy among them. Less than half a year later, dozens of universities set up clean energy faculties and scheduled to enroll undergraduates starting from 2011.

Meanwhile, Chinese universities that already offered degree programs in clean energy are expanding student enrollment. Lin Boqiang, director of China Center for Energy Economics Research at Xiamen University -- which provides studies in clean energy economics -- said their enrollment in 2010 alone almost caught up with the total enrollment number in the previous years.

But there is a downside to this sudden rise. Lin mentioned that most universities found it difficult to come up with enough high-qualified professors to lecture in clean energy, adding that many had to be converted from other majors. U.S. experts report that China's crash training program has run into other peculiar problems. For example, only a small percentage of recruits for automotive engineering courses know how to drive (*ClimateWire*, Nov. 24).

But Beijing is ready to seek help from outside. The China-E.U. Institute for Clean and Renewable Energy (ICARE), a multimillion-dollar cooperative education project signed two years ago, is a case in point.

According to the project's press materials, clean energy experts from the two sides will work arm-in-arm at central China's Huazhong University of Science and Technology, where the ICARE faculty is located. Over the next five years, their endeavors will generate 650 postgraduates and retrain 1,000 energy professionals for the local industry. And this year, the university said, more than 60 students have already registered for the courses.

"Such cooperation will improve China's ability in training clean energy talents, in terms of quality and quantity," commented Wang Zhengyu, ICARE project officer from the Delegation of the European Union to China.

Scrambling to build a green labor force

Unlike its newfound passion for degree programs, Beijing gave little attention to vocational training in clean energy, but a local business has taken this matter into its own hands.

Himin Solar, China's largest solar water heater maker, has put over \$57 million into building a private vocational school. Based in northern China's Dezhou city, Himin Solar Engineering & Technology College imparts manufacturing skills to young Chinese and helps them gain hands-on experience through internships at the company's production lines and sales agencies.

"China's solar industry grows fast ... but it lacks vocational programs to create skilled work force that the industry needs badly," Zhang Qingyu, the college's president, said of why Himin Solar opened its wallet to support education.

"Lagging in clean energy education could eclipse China's competitiveness in the global race during the next decade," claimed Zhang. Already, China's solar industry productivity is under threat. In the past three years, the industry's in-and-out revolving door has been turning fast, with an up to 60 percent employee turnover rate, Zhang said. That's mainly because those coming from different fields failed to bring the needed technical background, he added.

To groom more Chinese to become solar energy professionals, Zhang's college provides a three-year vocational program free of charge and offers scholarships to those from poor families. In 2009 alone, Himin Solar poured more than \$2.5 million into education incentives. With such support, the number of students there climbed to nearly 2,300 this year, up from fewer than 100 in 2007, when the college had just started.

Himin Solar may have a significant role to play in filling the green-collar labor pool, but it is not alone. Other Chinese clean energy companies have also taken action. LDK Solar, a NYSE-listed solar photovoltaic producer, provides technical training courses at a local college in central China.

Getting help from the U.S. and Europe

Besides its direct support for education, China has found shortcuts to get the country's brightest minds more quickly engaged in clean energy innovation.

China, which recently surpassed the United States to take the position as the world's largest energy consumer, declared that 15 percent of its power supply should come from renewable energy by 2020. Such market potential, together with cash-rich local manufacturers

who are hungry for technology, is luring Western companies to come and launch research centers.

That, in turn, helps Chinese get trained by international giants and acquire knowledge of the world's more advanced clean energy technologies.

"[General Electric Co.'s] huge research center in Shanghai's Pudong district is staffed by smart young Chinese engineers and scientists, and they are getting lots of practical training by working for GE," said Jennifer Turner, director of the China Environment Forum at the Woodrow Wilson International Center for Scholars, a Washington, D.C.-based think tank.

Along with the GE team that currently tests materials used to make solar panels, "there has been a lot of international investment and effort to develop China's clean energy education," said Turner.

The latest news came from Denmark's Vestas, a world leader in wind energy. In October, Vestas celebrated the establishment of its new research center in Beijing.

The ceremony was attended by Cao Jianlin, vice minister of China's Ministry of Science and Technology, who welcomed the new center as it "brings in world's leading technology as well as focusing on fostering local talents."

Reprinted from Climatewire with permission from Environment & Energy Publishing, LLC. www.eenews.net, 202-628-6500

© 2010 Scientific American, a Division of Nature America, Inc.

All Rights Reserved.



ECO

Dow Jones Reprints: This copy is for your personal, non-commercial use only. To order presentation-ready copies for distribution to your colleagues, clients or customers, use the Order Reprints tool at the bottom of any article or visit www.djreprints.com

See a sample reprint in PDF format.

Order a reprint of this article now

THE WALL STREET JOURNAL

WSJ.com

OPINION | DECEMBER 7, 2010

A Mexican Stand-Off in Cancun

Rich and poor nations have never agreed on CO2 cuts.

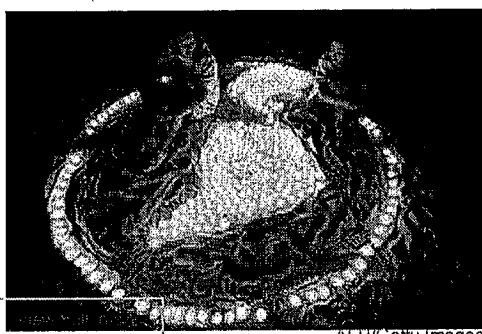
By RUPERT DARWALL

Few will be surprised if the United Nations Cancun climate talks end in failure. The real surprise is that for the last two decades people seriously believed there was a realistic prospect of securing broad international agreement to restrict CO2 by all the major emitters.

Ever since the West first raised concerns about environmental degradation (specifically acid rain) in Stockholm at the 1972 U.N. Conference on the Human Environment, the position of developing nations has been the same: They would not agree to anything that compromised their economic development. To avoid a Third World boycott, the organizers of the Stockholm conference came up with a political formula: In the developed world, environmental degradation was caused by excessive development but in the Third World it was caused by underdevelopment.

A straight line runs from the 1972 Stockholm conference to last December's Copenhagen Accord, which—while it failed to reach a binding agreement on carbon emissions—stated that the world's developed nations should take the lead in raising \$100 billion per year by 2020 to help developing countries cut their carbon emissions.

In 1981, Ronald Reagan and Margaret Thatcher stood shoulder to shoulder at the U.N. Conference on Trade and Development in Cancun, which was billed as the first international North-South summit. They both argued against the proposed "New International Economic Order," which was designed to institutionalize huge aid transfers from the North to the South. Mrs. Thatcher told the summit that she wasn't going to put British money into a bank run by those on overdrafts.



AFP/Getty Images

Members of the World Wildlife Fund lit candles forming a representation of the Earth during a demonstration in Cancun.

In 1988, when NASA scientist James Hansen published his findings that the four warmest years on record were all in the 1980s, global warming took center stage. But the bottom-line negotiating position of developing countries remained unaltered.

Shortly before the 1997 Kyoto conference, the U.S. Senate voted 95-0 to reject any treaty that didn't also bind developing countries to lower greenhouse gas emissions. This was a clear rejection of the only basis on which developing countries were prepared to enter into agreements on environmental issues.

Last year's attempt at Copenhagen to extend a successor to the Kyoto Protocol was more about avoiding the blame for failure than actually agreeing to a comprehensive greenhouse gas emissions package.

China and the other large developing nations proved more nimble at this than developed nations, which bore the brunt of criticism from nongovernmental organizations.

The international community's success in implementing the 1987 Montreal Protocol on ozone-depleting gases turned out to be a blind alley when applied to global warming. A cost-benefit analysis conducted by the Reagan administration showed that the benefits of sharp global cuts in consumption of chlorofluorocarbons massively outweighed the costs for the United States. In Montreal, America led the way.

But decarbonizing the world economy presents an entirely different challenge from finding substitutes for chlorofluorocarbons and compensating Third World countries. The refusal of the Third World en bloc to agree to verifiable emissions targets suggests that they see the notion of "green growth" as an environmentalist fairy tale.

History also suggests that last week's announcement of Japan declining to sign a follow-on to the Kyoto Protocol should not come as a complete surprise. Twenty years ago, when governments started debating carbon caps, Japan joined the U.S. in opposing them, alongside the Soviet Union. Russia's opposition to Kyoto persisted until it was granted huge additional carbon credits for forestry management, enabling one of the world's largest hydrocarbon exporters to be paid a second time by its customers for its exports of carbon.

This leaves the European Union as the sole remaining large emitter committed to carbon caps, and the United Kingdom as the only country with a legally binding framework to cut CO₂ emissions. What's the point of unilateral emissions controls? Speaking ahead of this week's Cancun conference, the U.K.'s chief scientific adviser said it's about taking the moral lead, which would not come at "zero cost."

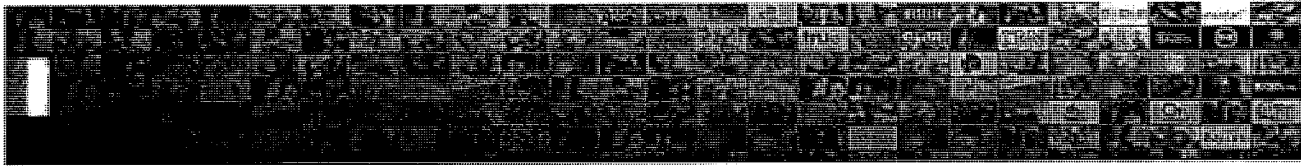
With no one believing an accord will be reached, Cancun might be a good place to explain to the EU and the U.K. that unilateral emissions caps have an economic and environmental value of less than zero.

Mr. Darwall's "Global Warming: A Short History" is being published by Quartet next year.

Copyright 2010 Dow Jones & Company, Inc. All Rights Reserved

This copy is for your personal, non-commercial use only. Distribution and use of this material are governed by our Subscriber Agreement and by copyright law. For non-personal use or to order multiple copies, please contact Dow Jones Reprints at 1-800-843-0008 or visit www.djreprints.com





[Back to Article](#)  [Click to Print](#)



Tuesday, Dec. 07, 2010

Compromising as Climate Talks Close Up

By AP / CHARLES J. HANLEY

(CANCUN, Mexico) — It may not last, but a spirit of compromise seems to have settled over the annual U.N. climate conference as negotiators enter its final days looking for agreements on secondary tools for coping with global warming.

The open sniping between the U.S. and China that marked periodic talks earlier this year was not in evidence Monday as the second week of the two-week meeting got under way. (See why the climate summit has been all about the Kyoto Protocol.)

"There were heated discussions at Copenhagen. Here the atmosphere is relatively mild," China's climate chief, Xi Zhenhua, told reporters. He was referring to the intense talks in the Danish capital last December that failed to produce a hoped-for binding pact requiring substantial cuts in emissions of carbon dioxide and other industrial, agricultural and transport gases blamed for global warming.

No such overall emissions deal is expected at the negotiations under the U.N. climate treaty here, where environment ministers and other negotiators from the 193 treaty nations are to wrap up their talks on Friday.

They are aiming to reach agreements on such side issues as laying the groundwork for a "green fund" of \$100 billion a year by 2020. Financed by richer nations, the fund would support poorer nations in converting to clean energy sources and in adapting to a shifting climate that may damage people's health, agriculture and economies in general. (See TIME's Ecocentric blogger Bryan Walsh discuss environmental and climate change.)

Underlining the climate challenge, the U.N. Environment Program on Monday reported on the impact of global warming in Latin America. "The effects of climate change in the region are already significant," it said, citing a surge in extreme climatic events, with a sharp rise in the number of people affected by extreme temperatures, forest fires, droughts, storms and floods growing from 5 million over the 1970s to more than 40 million in 2000-

2009.

It also said that malaria and other mosquito-borne diseases that 40 years ago afflicted just a few countries in the Caribbean and Latin America can now be found, with warming, in the vast majority.

Cancun's spirit of compromise may be most needed in the coming days' debates over limited gestures proposed in the area of emissions reductions.

The U.S. has long refused to join the rest of the industrialized world in the Kyoto Protocol, a 1997 add-on to the climate treaty that mandates modest emissions reductions by richer nations, and whose commitments expire in 2012. The U.S. complained Kyoto would hurt its economy and should have mandated actions as well by such emerging economies as China and India. For their part, those poorer but growing nations have rejected calls that they submit to Kyoto-style legally binding commitments — not to reduce emissions, but to cut back on emissions growth. Their first obligation, these governments say, is to develop their economies, not hobble them. "We still have 150 million people under the poverty line," Xie told reporters Monday.

In a nonbinding Copenhagen Accord last December, an agreement not accepted by all treaty parties, the U.S. and other industrial nations announced targets for reducing emissions by 2020, and China and some other developing nations set goals, also voluntary, for cutting back on the growth of their emissions. ([See more about the hurdles last winter's summit presented this year in Cancun.](#))

Many parties now want to have those voluntary targets "anchored" more formally in a document emerging from the Cancun talks. At the same time, developing countries are pressing for the industrial nations to commit in Cancun to a second Kyoto period, further mandatory cutbacks beyond 2012 — a demand resisted by Japan, Russia and others who won't submit to more legally binding emissions cuts until the U.S., China and some others take on binding targets under treaty. It's the kind of negotiating impasse custom-made for creative diplomacy and lawyerly wordcraft.

Late Monday, looking for a middle ground on these post-2012 commitments, diplomats searched "for some kind of a political message from Cancun included in the Cancun final decision that there will be a second commitment period for the Kyoto Protocol, although no numbers will be decided upon at this stage," said Brazilian negotiator Sergio Serra.

The wordcraft was already being practiced by China's Xie. With linguistic sleight-of-hand, he told reporters that his country's ambitious energy-efficiency plans represented "binding" targets — although the obligation will be owed only to China's National People's Congress, not to the international community.

[See the world's most influential people in the 2010 TIME 100.](#)



SCIENTIFIC AMERICAN

Permanent Address: <http://www.scientificamerican.com/article.cfm?id=retreating-mountain-glaciers-pose>

Retreating Mountain Glaciers Pose Freshwater Shortage

Climate's influence on Himalayan glaciers is still a looming concern for many scientists and governments, which worry about how warming will affect the region's water cycle

By Lauren Morello and Climatewire | Wednesday, December 8, 2010 | 0

Norway said yesterday it will spend \$12 million to expand monitoring of Himalayan glaciers and help the region's communities adapt to climate change.

The Hindu Kush-Himalayas Climate Impact Adaptation Assessment Programme will run for five years, carried out by Norway's Centre for International Climate and Environmental Research, the U.N. Environment Programme and the Katmandu, Nepal-based International Centre for Integrated Mountain Development.

"The overarching theme is people plagued by either too much or too little water in these regions," said Bjorn Brede Hansen, deputy director-general of the Section for Environment and Sustainable Development within Norway's Ministry of Foreign Affairs. "This is really the framework for everything -- agriculture, livelihoods ... [the role of] women."

Himalayan glaciers are sometimes referred to as Earth's "third pole" because they supply fresh water to communities throughout Southeast Asia. Roughly 210 million people live in the region, and another 1.3 billion people who live downstream depend on rivers fed in part by glaciers and mountain snowpack.

The plight of Himalayan glaciers briefly dominated news headlines last year, after news broke that the Intergovernmental Panel on Climate Change erred by stating the region's ice could disappear by 2035, instead of 2350. But while the IPCC bungled its numbers, climate's influence on Himalayan glaciers is still a looming concern for many scientists and governments, which worry about how warming will affect the region's water cycle.

Yesterday, the U.N. Environment Programme said the majority of glaciers in the Hindu Kush-Himalayas and on the Tibetan Plateau are retreating, with some exceptions. Some glaciers in the Karakoram mountains, for example, recently advanced into areas that had been ice-free for a half-century. But in the northern Karakoram, in China, glaciers are receding. The thaw there is increasing the frequency of glacial lake outburst floods, or "glofs," caused by runoff that forms into lakes that burst suddenly and inundate nearby areas.

Major risks for nearby communities

"We need to get the numbers right on [Himalayan] glaciers," Madhav Karki, deputy director of general programs at the International Centre for Integrated Mountain Development, said yesterday at a news conference in Cancun, Mexico, at U.N. climate talks. "The fact is that glaciers are retreating. Some are advancing, but by and large, they are retreating, and we need to study them. And they are an important element in our future adaptation."

That point is underscored in a recent report by the U.S. Agency for International Development, which last month warned that even relatively slow shrinking of Himalayan glaciers presents major risks for nearby communities and those that depend on rivers fed by the alpine ice.

"Even small changes in glacier melt will result in large impacts downstream from High Asia," the USAID report cautioned.

But efforts to understand the interplay between the climate and the glaciers are hampered by a lack of data. Scientists have data about

specific glaciers and are able to pick out some trends, but the information is too sparse to paint a clear picture of how fast glaciers are melting throughout the region -- sometimes, even within a single mountain range -- and how that compares to how they behaved in the past.

Part of the problem is reaching glaciers that sit at high altitudes. The most-studied Himalayan glaciers are largely the most accessible, often those at lower altitudes, the USAID report said.

High-altitude puzzles

That's crucial because glaciers at the highest altitudes, where temperatures are more likely to stay below freezing, are behaving differently than their counterparts at lower elevations. For glaciers that extend from low to high elevation, measurements taken at the low end -- the glacier's "snout" -- may not tell scientists much about how the same ice sheet is behaving higher up the mountain.

Scientists are also trying to figure out the role that aerosol particles -- including a component of soot known as black carbon -- play in influencing the behavior of Himalayan glaciers.

William Lau, who heads the atmospheric science laboratory at NASA's Goddard Space Flight Center, says his research suggests black carbon could rival greenhouse gases as a cause of warming in the Himalayas.

Particles of black carbon absorb heat from the sun, warming the atmosphere. When black carbon lands on white ice or snow, it reduces a glacier's ability to reflect sunlight -- adding another source of heat to the mix.

"Up to now, most people thought, 'OK, greenhouse warming is the reason these high mountain glaciers are moving faster,'" he said. "But another possibility is a contribution from the black carbon and other absorbing aerosols, including dust."

Still, he said, "we're not saying global warming is not important."

Reporters Lisa Friedman and Jean Chemnick contributed from Cancun, Mexico.

Reprinted from *Climatewire* with permission from *Environment & Energy Publishing, LLC*. www.eenews.net, 202-628-6500

© 2010 Scientific American, a Division of Nature America, Inc.

All Rights Reserved.



Join the New Conversation in Science Education

Decade2 education

SCIENTIFIC AMERICAN

Click here for a multimedia discussion with experts

SCIENTIFIC AMERICAN

SEARCH

Log In or Register
Log In to SA Digital



THE PRINT EDITION
View Latest Issue »
Give Scientific American »
Give Scientific American Mind »

Energy & Sustainability Evolution Health Mind & Brain Space Technology More Science Blog & Columns Multimedia Magazines

Home » Climatewire »

Climatewire | More Science

How Will Clouds Respond to Climate Change?

How well do computer climate models predict the behavior of clouds?

By Lauren Morello and Climatewire | December 10, 2010 | 28

Share Email Print

Clouds will respond to climate change in ways that further heat the planet, a new study suggests.

The research, published yesterday in the journal *Science*, appears to solve one of the biggest remaining mysteries in climate science: How well do computer climate models predict the behavior of clouds?

That's important because clouds can work to cool or heat the Earth, depending on the type of cloud and where it sits in the atmosphere. Clouds cool the planet by reflecting incoming radiation from the sun. They heat it by trapping outgoing radiation from the planet's surface. The question scientists have been struggling to answer is which of these two effects will dominate as climate change intensifies.

"Clouds are really, I would say, the biggest uncertainty in understanding how much warming we're going to get in the future," said study author Andrew Dessler, an atmospheric scientist at Texas A&M University. "And up until my paper, all we really had were the models. We had no idea if the models were completely wrong."

Computerized climate models vary widely in their predictions of how clouds will respond to long-term climate change. A few models predict clouds will be neutral players, neither compounding warming nor counteracting it, while others predict clouds will exacerbate warming.



CLOUDY FORECAST: New research suggests that clouds will exacerbate the global warming causing climate change.
Image: Kevin Dooley

ADVERTISEMENT

Join the New Conversation in Science Education

Decade2 education

SCIENTIFIC AMERICAN

Click here for a multimedia discussion with experts

Follow Scientific American



Scientific American Newsletter

Get weekly coverage delivered to your inbox.

Enter your email address

Sign Up Now

Latest Headlines

Old and Wise: Why Do Smarter People Live Longer?

Scientific American Mind 1 hour ago 1

Cyborg Beetles: Merging of Machine and Insect to Create Flying Robots

Scientific American Magazine 3 hours ago 0

Power Plants: Engineers Mimic Photosynthesis to Harvest Light Energy

News 5 hours ago 5

Most Read

Most Commented

TRY A RISK-FREE ISSUE

YES! Send me a free issue of Scientific American with no obligation to continue the subscription. If I like it, I will be billed for the one-year subscription.



Some climate skeptics have alleged that models "got clouds completely wrong," Dessler said. He believes that his paper, which suggests long-term climate change will create a positive feedback from clouds that produces additional heating of the planet, "shows that models are doing a reasonable job as a group."

A bolt from Cancun

One of those skeptics is Roy Spencer, a climatologist at the University of Alabama, Huntsville. He issued a statement yesterday attacking Dessler's study, calling its "central evidence weak at best, misleading at worst."

Spencer has published a paper arguing that clouds will cool the planet and counteract warming. He drew on that work to argue that Dessler's study confuses the cause and effect of warming by failing to take into account the idea that changes in clouds drive temperature, rather than temperature changes driving cloud behavior.

Dennis Hartmann, a professor of atmospheric sciences at the University of Washington, agreed with Dessler.

"I do think it's very significant that this analysis shows that a strongly negative, short-term cloud feedback is very unlikely, based upon the evidence, and that positive cloud feedback is more likely," said Hartmann, who did not contribute to the new study. "Current climate models vary widely on their assessments of cloud feedback. But if you were forced to draw consensus on what models are saying so far, they're saying that cloud feedback is moderately positive."

The new analysis is based on the first 10 years of data collected by an instrument flying aboard NASA's Terra satellite that monitors how much radiation is entering and leaving Earth's atmosphere. The instrument, known as CERES (short for "Clouds and Earth's Radiant Energy System"), began collecting information in March 2000.

Dessler used the data to determine how the El Niño-Southern Oscillation weather cycle affected the amount of radiation leaving the atmosphere over a 10-year period -- an indirect measurement of cloud behavior and the ensuing climate response.

A 10-year glimpse of cloud behavior

That's not a precise analogue for cloud behavior in response to long-term climate change, he said.

The latter "is really what we care about," Dessler added. "In order to understand how clouds are going to respond to long-term warming, you have to wait until there is long-term warming. That will take decades. Looking at the short-term is the best we can do right now."

Hartmann noted that the warming observed during an El Niño cycle of a year or two is different than the long-term climate change prompted by human activities that produce greenhouse gases like carbon dioxide.

El Niño warms the tropics, whereas climate change driven by greenhouse gases warms the planet up everywhere, Hartmann said. But the scientist said he thought Dessler's approach still amounted to a "useful diagnostic tool" for trying to understand whether climate models' representation of clouds is on the right track.

Email Address

Name

Address 1

Address 2

City

State

Zip

Science Jobs of the Week

Technical Writer
Kelly Scientific Resources
Juncos, Puerto Rico

QC Technician
Kelly Scientific Resources
Carolina, Puerto Rico

Project Engineer - Wind Energy
German ProfEC GmbH
Germany, Honduras, Mexico, Peru

Scholarships for Masters Degree in Materials
Science and Technology
Instituto Sabato
Instituto Jorge A. S. Sabato - Villa Maip, Buenos Aires,
Argentina

Scholarships for Materials Engineering
Instituto Sabato
Instituto Jorge A. S. Sabato - Villa Maip, Buenos Aires,
Argentina

More jobs from Naturejobs.com »

ADVERTISEMENT



Meanwhile, Dessler said his next step is aimed at identifying how well individual climate models do predicting cloud behavior, by examining their output for different regions of the globe -- such as land versus ocean, or high latitudes versus low latitudes.

"This is a significantly harder problem, and it's a tougher test of the models," he said. "My hope is that looking at the spatial distribution will allow me to say, "These models are doing a good job. These models are doing a terrible job."

Post a Comment | Read Comments (28)

1 2 Next >

Reprints and Permissions »

0 Share

28 Comments

Add Comment

Show All | Jump To: 1-10 | 11-20 | 21-30 | Next

View Oldest to Newest

1. doug l
01:41 PM 12/10/10

No surprises here. The world could awake to find the sun blotted out by cosmic dust, while temperatures plummet, and some researcher will point to it as further evidence of warming. Color me even more skeptical than usual.

Reply | Report Abuse | Link to this

2. Trent1492
02:22 PM 12/10/10

@Doug

Did you read the article? Dr. DCESSLER's work is based on real world data. Data that indicates a positive feedback.

While Dr. Spencer is ONCE again clinging to an interpretation that is not borne out by the observation. Dr. Spencer took the time to hold a public press conference to denounce Dr. Dessler's work and has invoked conspiracy theories to impugn Dr. Dessler.

IT is pretty clear that Dr. Spencer is religiously motivated in his behavior and words. He belongs to an evangelical organization of fundamentalist Christians who denounce environmentalist as representatives of the Antichrist. They call the environmental movement the "Green Dragon".

You can see Dr. Spencer in of their videos:
<http://www.youtube.com/watch?v=WqraZawCWsY>

It is apparent to me that as the evidence continues to mount up ideologues are going to resort more and more to accusations of conspiracy and being in league with the Devil than admit that humanity is inducing climate change at the present.

Reply | Report Abuse | Link to this

3. jtdwyer

The article quotes Dessler:



SCIENTIFIC AMERICAN

Permanent Address: <http://www.scientificamerican.com/article.cfm?id=future-of-kyoto-protocol-in-doubt>

Future of Kyoto Protocol in Doubt as Cancun Climate Talks Enter Final Day

If a compromise is not reached, negotiators and analysts say, carbon markets will falter and the quest for an even broader global climate treaty could be in ruins

By Lisa Friedman and Climatewire | Friday, December 10, 2010 | 2

CANCUN, Mexico -- There are several deadlocks still to be broken in the final 24 hours of U.N. climate talks, but one that matters most: the future of the Kyoto Protocol.

As negotiators from nearly 200 countries greeted Friday's dawn, still stuck on a range of issues, an impasse over whether Japan, Russia and Canada will commit to new emission targets after 2012 appears to be bringing the U.N. process to the edge of a cliff. If a compromise is not reached, negotiators and analysts said, carbon markets will falter and the quest for an even broader global climate treaty could be in ruins.

"If they don't get the [Kyoto Protocol], then everything crashes," said Albert Binger, science adviser to a group of small island nations.

"Today is a crucial day," said Brazilian negotiator Sergio Serra. "If we don't get an agreement today, I think it will be difficult. I can't say we will have failed, because some miracle may happen tomorrow."

The stalemate on Kyoto has been brewing for some time. But Japan brought the issue to a head on the first day of negotiations in this Yucatan peninsula resort town when it declared unequivocally that it would not submit new greenhouse gas emission targets under a second phase of the treaty in 2012.

By late Friday at least 20 leaders, including Mexican President Felipe Calderon, had tried to telephone Japanese Prime Minister Naoto Kan to implore him to soften his country's stance, Japanese media reported and a delegate from the country confirmed to ClimateWire. Kan reportedly was too busy to take calls, indicating his chief negotiator had full authority.

Nevertheless U.S. Deputy Special Envoy for Climate Change Jonathan Pershing as well as other negotiators and ministers said they remain optimistic that the final 24 hours of the 16th Conference of the Parties (COP) to the U.N. Framework Convention on Climate Change will bring an agreement.

"There's always a place for compromise. We just have to find it," Pershing said as he hurried off to a meeting.

Adrian Macey, former New Zealand lead negotiator who now is the vice chairman of the Kyoto Protocol part of the global talks, said despite the drama, climate talks are following a well-worn path.

"Right now they stand where they always stand at a COP. We're at the immediate post-crisis phase. It's only now that people are ready to compromise," he said, adding, "More people than not want to preserve the multilateral system."

Indeed, "compromise" has been the word of the day at this seaside megaresort where the talks are being held. And by Thursday afternoon with the arrival of more ministers and a growing sense that certain stalemates could only be broken by political leaders, the mañana pace of the two weeks-long talks have stepped up considerably.

Shuttle diplomacy on bicycles

Throughout the day ministers and delegates rushed back and forth between the luxury Moon Palace hotel and a nearby conference hall for press conferences, plenary sessions and working group meetings. The European Union's Climate Commissioner Connie Hedegaard pedaled swiftly across the sprawling hotel grounds on bicycles provided to participants on her way to delegation offices. And actress Daryl Hannah stopped by to implore U.S. Envoy Todd Stern to "get it done."

The environmental activist and star of "Blade Runner" and "Wall Street," who has been living off-grid in her Rocky Mountains home for the past 20 years, said she is frustrated by what she sees as the "poker game" of global climate talks.

"It's incredibly frustrating to see the lack of action," she said while waiting for a meeting with U.S. Envoy Todd Stern. Introduced to Environment Minister Jairam Ramesh, Hannah reacted quickly to Ramesh's comment that he hoped negotiators could soon put "to bed" a climate agreement. "Bring it to life," the actress implored.

But for all the hustle, the day ended close to where it began. Countries are close to agreements on a fund to help vulnerable countries adapt to climate change; technology development; and protecting tropical forests. But overriding issues between the United States and emerging powers -- particularly China -- remain unresolved.

On technology, countries are working to create hubs or networks -- possibly one on each continent -- that will help developing nations figure out how to employ low-carbon technology instead of fossil fuels and meet the costs to do so, said Jake Schmidt of the Natural Resources Defense Council. Protecting intellectual property rights remains a major issue for the United States and others, but Schmidt said he believes that will get kicked down the road to be dealt with another time.

"The only way you can deal with the IP issue is not to deal with it," Schmidt said, predicting either nonexistent or vague text on the issue.

On finance, the creation of a "green fund" turns on some bottom-line positions from the United States that the board be comprised at least half of donor nations and establishing the World Bank as trustee. Those talks have generated fierce resentment toward the United States, which delegates said has been resisting language that long-term funding for vulnerable countries be "new and additional" and pushing back on transparency provisions.

U.S.-China dispute may stymie others

Neither those issues nor others like protection of forests will get solved at all, though, until the United States and China work out their own dispute. That centers on how transparent developing countries' efforts at lowering emissions should be and whether they will allow international analysis of those efforts.

By late Thursday, Ramesh -- who earlier this week proposed a compromise that won wide support -- said a deal on transparency is in the works.

"It's not a theological issue. It's a matter of dotting the Is and crossing the Ts," he said.

The Kyoto Protocol, on the other hand, "that's more of a sticking point," Ramesh said.

As of Thursday night, Japan's director of international strategy in the Ministry of Environment said there has been no change to his country's opposition to the 1997 treaty that only requires industrialized nations to cut emissions. The treaty's first five-year phase ends in 2012. The treaty itself automatically continues on, but countries must decide whether or not to submit new emission targets.

Japan will not, and by Thursday evening it was looking increasingly likely that Russia would make a similar announcement. Developing nations also say they are worried about whether Canada will stick with Kyoto.

Ailun Yang of Greenpeace China said an impasse would leave countries with two choices: approve watered-down language that would keep the machinery of the UNFCCC moving along; or acknowledge that countries had failed to find an agreement.

Venezuelan Amb. Claudia Salerno said neither option is acceptable.

"We cannot go back to our countries on December 12 and we open the door to our homes and talk to our children and say we were not able to do anything because it was very difficult," she said. "My girls are waiting for me at home to do something for the world I brought them into."


Reprinted from Climatewire with permission from Environment & Energy Publishing, LLC. www.eenews.net, 202-628-6500

© 2010 Scientific American, a Division of Nature America, Inc.

All Rights Reserved.



The Wall Street Journal
for the gadget lover
on your list.



THE WALL STREET JOURNAL.
live in the know

Dow Jones Reprints: This copy is for your personal, non-commercial use only. To order presentation-ready copies for distribution to your colleagues, clients or customers, use the Order Reprints tool at the bottom of any article or visit www.djreprints.com

See a sample reprint in PDF format.

Order a reprint of this article now

THE WALL STREET JOURNAL.

WSJ.com

WORLD NEWS | DECEMBER 11, 2010, 3:43 P.M. ET

Nations Approve Cancun Climate Package

By CASSANDRA SWEET

CANCUN, Mexico—The world's nations on Saturday agreed to a package of climate initiatives, including billions of dollars in funding for poor countries, although they failed to adopt a binding climate treaty amid a stalemate among the U.S., China, Japan and other nations.

The agreement calls on rich countries to cut their greenhouse gas emissions by amounts nations pledged a year ago, although the cuts aren't legally binding. Developing countries are to come up with plans to cut their emissions in a worldwide effort to limit global warming to less than 2 degrees Celsius (3.6 Fahrenheit) above pre-industrial levels. The agreement includes plans for a green fund and \$100 billion a year that wealthier countries would provide by 2020 to help poor countries finance programs to cut emissions and cope with drought and other effects of global warming.



Environment ministers in Cancun welcome climate pact reached at talks, while Bolivia is isolated in objecting. Video courtesy of Reuters.

Felipe Calderon, the president of Mexico, which hosted the conference in Cancun, commended the delegates for forging a new path in the fight against climate change.

"Today, with this conference, we have the opportunity to begin building a new history in which economic growth, the conquest against poverty and living in harmony with the environment is within reach," he said at the conference.

Mr. Calderon added that while the agreement fell short of a treaty that would ensure steep cuts in emissions, the trust and upbeat mood among participants at the Cancun conference would help countries reach a more ambitious agreement.

A stalemate among the U.S., China, Japan, India and other countries has frozen talks on a global climate treaty and thrown into question the future of the existing Kyoto Protocol climate treaty. But diplomats said they hoped the Cancun plan could pave the way for a legally binding climate treaty when governments reconvene at next year's U.N. climate summit in Durban, South Africa.

View
Full
Image

U.S. climate envoy Todd Stern said the U.S. made a lot of progress in talks with China and India on key issues, such as ensuring transparency in the tracking and reporting of emissions reductions and reaching a mutual agreement on such cuts. He pointed out that while the promises made in the Copenhagen Accord were important, that agreement was not adopted, whereas the Cancun agreement has been adopted and has a legal basis.

"It's a positive thing to see a worldwide agreement, one that includes all the major economies," Mr. Stern told reporters after the conference. "The commitment to take action by the Chinese is a pretty significant agreement, and to do so in an international manner."

Japan has said that it wouldn't commit to a second phase of the Kyoto treaty unless the world's largest greenhouse-gas emitters, namely China, the U.S. and India, agreed to cut their emissions under a legally binding treaty. The first phase of the treaty ends in 2012.

ZUMAPRESS.com

The world's nations on Saturday agreed to a package of climate initiatives.

The U.S., which signed but never ratified the Kyoto treaty, has long argued that it wouldn't agree to mandated emission cuts unless China and other fast-growing economies also agreed to limit emissions. But

at climate negotiations a year ago in Copenhagen, both the U.S. and China made voluntary commitments to cut their greenhouse gas emissions.

China has maintained that as a developing country, it doesn't have the resources—or responsibility—to aggressively cut emissions while growing its economy.

India initially had a similar position, although the country softened it this week, saying it would consider agreeing to mandated cuts at some point in the future.

The emissions reduction targets are aimed at a second phase of the Kyoto Protocol, while leaving the door open for an alternative agreement based on promises the U.S., China and other countries made at a climate summit last year in Copenhagen.

The U.S. has suggested that it might agree to binding greenhouse-gas emissions cuts if they were part of a deal based on the Copenhagen Accord.

Bolivian climate envoy Pablo Solon criticized the Cancun package for not going far enough to ensure that rich countries cut their greenhouse gas emissions, for being too vague on where the \$100 billion a year would come from, and for including too many market-based financing programs.

Write to Cassandra Sweet at cassandra.sweet@dowjones.com

Copyright 2010 Dow Jones & Company, Inc. All Rights Reserved

This copy is for your personal, non-commercial use only. Distribution and use of this material are governed by our Subscriber Agreement and by copyright law. For non-personal use or to order multiple copies, please contact Dow Jones Reprints at 1-800-843-0008 or visit www.djreprints.com



Dow Jones Reprints: This copy is for your personal, non-commercial use only. To order presentation-ready copies for distribution to your colleagues, clients or customers, use the Order Reprints tool at the bottom of any article or visit www.djreprints.com

See a sample reprint in PDF format.

Order a reprint of this article now

THE WALL STREET JOURNAL.

WSJ.com

POLITICS | DECEMBER 17, 2010, 12:57 A.M. ET

California Adopts Cap And Trade

By CASSANDRA SWEET

SAN FRANCISCO --California regulators late Thursday adopted the first large-scale cap-and-trade program in the U.S., in a move officials say will protect the environment without hurting the state's still-struggling economy.

In a 9-1 vote, the state Air Resources Board voted to adopt rules, scheduled to start in 2012, that place a limit on greenhouse-gas emissions for the state that will decline over time.

Power plants, refineries and other industrial facilities that emit carbon dioxide and can't cut their emissions by the required amount will be able to obtain pollution allowances from the state or buy them from other emitters with excess allowances.

Gov. Arnold Schwarzenegger said the cap-and-trade rules will help fight climate change and also boost California's clean-technology industry and overall economy.

"Billions of dollars are being poured into California in clean technology venture capital investment," Mr. Schwarzenegger said. "Of course, we have to be sensitive because it's an economic downturn, and this Air Resources Board knows they have to be sensitive. But we have to reach our goals by 2020."

Companies with facilities that emit carbon dioxide could also purchase carbon credits, or offsets, tied to emission-reduction projects, such as forests that are managed to contain carbon dioxide, to comply with required emission cuts.

Air Resources Board Chair Mary Nichols said there was still work to be done, including ensuring safeguards against manipulation of the market-based program and establishing a "community benefits fund" that would use some auction funds to help low-income families manage potential increases in energy prices.

She added that the board was mindful of proceeding with the rules without overburdening consumers, businesses or the economy. "We are being cautious and careful within the context of a very bold effort," Mrs. Nichols said.

The new rules come less than a week after the world's nations reached agreement on a package of climate initiatives last week at a United Nations-sponsored summit in Cancun, Mexico. And they come six weeks after a referendum in which Californians voted to keep the state's climate law intact. A federal proposal to limit U.S. greenhouse-gas emissions, however, has stalled in Congress amid political bickering.

Recent scientific studies have found that many of the earth's largest lakes have been warming more quickly

than the air around them in the last 25 years, and that many glaciers around the world have been melting at an increasingly rapid pace, particularly in southern South America and Alaska.

California's Global Warming Solutions Act of 2006 requires the state to cut greenhouse gas emissions to 1990 levels by 2020. In addition to the proposed cap-and-trade program, the state has established an aggressive renewable-energy mandate and a requirement that the carbon content of the state's vehicle fuels be cut by 10% by 2020, as part of efforts to achieve the emissions-reduction goal.

Under the proposed cap-and-trade rules, the state would give away most allowances in the first few years of the cap-and-trade program, then sell many allowances in auctions in later years. Industries that could prove the regulations were putting them at a significant competitive advantage to companies in other states could be eligible for additional free allowances. The proposed rules would establish a floor on the price of allowances sold at auction of \$10 per metric ton of carbon dioxide.

Environmental groups argued for greater auctioning of pollution allowances, while heavy industry groups pressed for more allowance giveaways.

"We don't need an auction," said Dorothy Rothrock, a spokeswoman for the California Manufacturers and Technology Association. "We think it's an extra burden on industries attempting to comply with this regulation."

But the Sierra Club said the provision would benefit companies that were unlikely to leave the state.

Other environmental groups lauded the cap-and-trade program.

"It's a step forward that will make our country more competitive and make California a leader in the clean technology industry," said Fred Krupp, president of the Environmental Defense Fund in New York.

Greenhouse-gas emitters could purchase carbon offsets--which are expected to trade at a discount to emission allowances--to comply with 8% of their annual emission obligations.

Carbon market participants said carbon offset prices have jumped in anticipation of California's adoption of the cap-and-trade rules.

Lenny Hochschild, a carbon broker with Evolution Markets, said offset prices have doubled from about \$4 a ton of carbon dioxide to \$8 a ton amid much higher volumes of trade in recent weeks.

Environmental groups and residents of California's forest regions have asked the ARB to exclude companies that clear-cut forests from participating in the offset program.

The ARB has said it will consider allowing carbon credits from a range of other types of projects, from forest protection projects in Mexico and other countries, to projects aimed at destroying ozone-depleting substances.

Some carbon market participants say the agency should act quickly to approve more types of projects to avoid a lack of supply of such credits to meet demand.

Write to Cassandra Sweet at cassandra.sweet@dowjones.com



SCIENTIFIC AMERICAN

Permanent Address: <http://www.scientificamerican.com/article.cfm?id=will-australia-choose-coal-or-climate>

Will Australia Choose Coal or Climate?

Coal exports become a burning economic and environmental issue down under

By Joel Kirkland and Climatewire | Tuesday, December 21, 2010 | 7

SYDNEY -- Earlier this month, as Sydney's financial district hummed during the early-morning rush hour, Greenpeace activists unfurled a banner outside of ANZ Bank that read, "ANZ Polluting Your World."

It sought to saddle the bank with a bad reputation for financing large coal-fired power projects, and put the nearby Reserve Bank of Australia on notice that public investment in projects that expand coal's role in the economy is just as unacceptable.

This isn't the first time environmental activists have upbraided ANZ in recent months. Each time, the bank refused to stop financing power projects that burn coal but insisted it is gradually shifting its portfolio toward renewable energy.

"It's an evolution, not a revolution, and we cannot turn the lights off overnight," said ANZ spokesman Stephen Ries.

A few days earlier, a caravan of Australian government officials traveled into the Latrobe Valley, a couple hours east of Melbourne, to see the 1,600-megawatt Hazelwood power plant. There, researchers are testing technology that captures carbon dioxide emissions tied to climate change. In time, if the technology to clean up power generation is successful, Australia hopes to export the knowledge to coal-burning stations in China, India and Asia's other big economies.

Hazelwood is nearly 50 years old. It burns lignite coal, a brown coal that is high in carbon compared to other fuels used in steam-electric turbines. Owned by the United Kingdom's International Power, Hazelwood's fleet of towering smokestacks is among Australia's largest sources of greenhouse gas emissions. It has at times been listed as the highest carbon-emitting power station in the world.

A short drive from the Hazelwood plant is another large facility, the Loy Yang power station. Each power plant relies on coal scooped from a gaping canyon across the road. Coal moves across the arid landscape on conveyor belts to feed boilers that keep the lights on in Melbourne and its suburbs.

Officials visiting the power plants that day manage an expanding Australian bureaucracy built around the government's desire to scale up the use of technology that strips carbon from coal before it's released into the atmosphere. To some of them, the sight of the massive centralized power stations, and their adjoining open-cut coal mines, reinforced the magnitude of the challenge. An estimated 500-year supply of cheap brown coal to fuel those power plants sat under their feet.

"We could easily survive another 30 years in this condition, no problem," Neil Bates, manager of station operations at Loy Yang, said about the plant's maintenance during a briefing for the group. "The real question is: How long will we last in the current political environment?"

Coal exports become a burning economic issue

The climate change issue burns hot in Australia. And both the Greenpeace rally in Sydney and the clean coal projects at Hazelwood and Loy Yang underscore the nation's deepening paradox: Developing a plan to transition to cleaner fuels and energy technologies is a major political priority in Australia. But the resource-rich continent has a lot of coal. It also happens to be the largest exporter of coal in the Asia-Pacific region and is positioning itself to be the major supplier of seaborne coal to China, the world's biggest producer of greenhouse gas emissions.

To the Australian government, extending the life of the country's coal export boom means continuing a strong economy. But it also

wants to join other nations in cutting greenhouse gas emissions. It has a public-private partnership to develop carbon capture and storage (CCS) technology. One of the hopes is that the world coal market can continue to boom if CCS costs can be brought low enough to be widely deployable at Asia's giant power stations.

"The government's job is to bring certainty to this debate," Martin Ferguson, Australia's minister of resources and energy, told *ClimateWire*. "The industry has said this decision has to be resolved. As they say, we are mainly a coal export nation."

With a population of 21 million, Australia generates a small fraction of total global emissions contributing to climate change. But among industrialized nations, its power sector is the largest emitter on a per capita basis. About 80 percent of the nation's electricity comes from burning domestic coal.

Australia also ships coal to Asia's major economies: Japan, South Korea, China and India. Exporting coal has become a dominant force in its economy. Conventional wisdom here is that natural resource exports -- coal, iron ore, metals and petroleum -- shielded Australia from the worst of the global financial crisis. To add to that, the nation is building the region's largest terminals for shipping liquefied natural gas.

Voracious consumption of steel-making coal and fuel to power cities in China and India is expected to support a lucrative Asia-Pacific coal trade for decades.

Preparations for long-term export deals

Billions of dollars of planned mine, rail and port expansions are on the table in Australia, and buyers from Asia's economic powerhouses are negotiating long-term supply deals. In the northeastern state of Queensland, huge thermal coal basins once thought to be too remote and too far from coastal ports will be shipping the rock to China and India by 2014.

"It puts Australia in a very difficult position, on the one hand participating constructively in global climate talks, but at the same time, letting the international coal corporations have free rein to exploit our coal reserves," said Georgina Woods, director of Climate Action Network Australia.

Public opinion polls suggest Australians accept the science of global warming. A record-breaking, decadelong drought, a fragile ecosystem and coastal environment -- where 80 percent of the population lives -- and parliamentary wrangling tying political fortunes to coal exploitation have kept proposed carbon taxes and emissions standards high on the agenda in the nation's capital, Canberra.

Prime Minister Julia Gillard vows that 2011 is the year Australia will put a price on carbon. And on Friday, in a speech before an investor group in Sydney, Climate Change Minister Greg Combet talked about decoupling carbon pollution and economic growth.

"Over time, a carbon price will transform the most carbon-intensive sectors of the economy," Combet said. "In Australia's case, it will fundamentally transform the way we generate electricity."

Combet last week returned from U.N.-sponsored climate negotiations in Cancun, Mexico, where he brokered deals on mitigation and adaptation financing for developing countries. In Mexico, Australia stuck to its pledge to cut between 5 and 25 percent of its emissions below 2000 levels by 2020, depending on emissions cuts made by other countries.

Australia also has a 20-percent renewable energy target by 2020. Along the sun-drenched coast, solar power has big potential. The government provides subsidies to install solar panels; but as in Europe, the program has raised red flags about the impact on overall power prices and public finances.

For Gillard and Combet, public support for addressing climate change and enthusiasm about Australia's role in global talks don't translate easily into policy wins.

Tough issues for a fragile coalition

Bruising political battles over the issue this year scrambled party positions and resulted in the ousting of top leaders in Parliament. It also handed Gillard a minority Labor Party government and a fragile governing coalition that includes independents and Australian

Greens, who are pushing for aggressive emissions cuts and policy timelines.

"Even those progressive businesses took it for granted that something would get through, clean energy and insurance companies and financial institutions that see physical and policy risks," said John Connor, chief executive of the Climate Institute, a nonpartisan think tank in Sydney. "The government will be very mindful of business groups. So we're trying to act as a broker between business and environmental groups."

Gillard, Australia's first woman prime minister, was swept into power in late June after Labor leaders ousted her predecessor Kevin Rudd for, among other things, failing to get his emissions trading program through Parliament. Gillard has soft-pedaled the climate issue since then, as she tries to reset the debate.

Next year, policy committees are expected to recommend a fresh plan for pricing carbon emissions for major polluters, which could come in the form of a tax, and rolling in a market-based program for cutting emissions.

But the climate fights in the past 18 months also swept in an opposition leader, Tony Abbott, who has taken a sharper tone against adopting any climate policy that would increase electricity prices. Power prices have been steadily rising, becoming a political issue, as steep costs for upgrading the nation's old and inefficient power systems are driving up monthly bills.

Nine members of the Australian Greens will take their seats in July, holding the balance of power in a 76-member Senate. To pass anything, say political analysts in Australia, Labor leaders must accommodate Greens and unions on one end and, on the other, industrial and resource sectors that want protection from cost run-ups and global economic competitors.

Huge mining company wants a price on carbon

In September, the chief executive of Australia's largest mining company, BHP Billiton, surprised the universe of business and environmental interests that waged battle in 2010.

In a speech before the Australian-British Chamber of Commerce, CEO Marius Kloppers said BHP "acknowledges that the mainstream science is correct, and that we need to stabilize -- and eventually reduce -- the carbon concentration in the atmosphere."

While BHP prefers an international climate framework, he said, the more likely path will eventually harmonize local policies aimed at cutting emissions into a unified global action. "We believe that such a global initiative will eventually come," he told his audience.

Kloppers urged Australia to impose a high enough cost on carbon pollution to drive investment in energy alternatives and technology. He urged the power sector to start weaning itself from coal. "Failure to do so will place us at a competitive disadvantage in a future where carbon is priced globally," he said.

BHP's decision to publicly push for a price on carbon has been viewed in industry and environmental circles as a signal that diversified miners operating in the global market are shifting to a more nuanced view on climate change. BHP, Anglo-Australian Rio Tinto, South Africa's Xstrata and St. Louis, Mo.-based Peabody Energy profit primarily from their coal and metals exports, not the domestic electricity market.

From that perspective, the coal giants win if Australia keeps an economic edge by using more gas and renewable energy and adopting cleaner energy technologies. They also need public support to keep expanding their mines, rails and ports to ship more coal to China and India.

Coal exporters need public support to ship more

"Our license to operate in Australia depends on public support," said Ralph Hillman, president of the Australian Coal Association, which speaks for coal companies on climate change. "We want there to be a long-term future for coal. We don't want people suddenly saying, 'Coal is an energy source of the past.'"

In principle, Hillman said, the group supports a carbon price that ushers in new technology and phases out Australia's oldest coal-fired generators. But it opposed the plan under former Prime Minister Rudd's government in late 2009 and early this year. "The coal industry

was unfairly excluded," he said, from protections for high-polluting export industries. Rudd's emissions trading plan covered about 70 percent of the economy.

Its "Cut Emissions -- Not Jobs" campaign warned that the "tax on coal mines" would cause mines to shut down in the Hunter Valley outside of Sydney and devastate local communities.

Rio Tinto, Xstrata and Peabody haven't yet followed BHP's lead, and Hillman says he knows of no such plans. If they do, the willingness of individual coal companies to lend strong support for cutting carbon emissions in Australia would stand in sharp contrast to the coal lobby's pitched battle against a similar policy in the United States.

"We might get some business leadership for a change," said Tony Maher, president of the Construction, Forestry, Mining and Energy Union's mining and energy division.

Maher and environmental groups say they expect some repeat of "scare tactics" by industrial advocates, but that an air of pragmatism is developing ahead of next year's debate.

The economic picture for coal companies has improved, which they say has created more breathing room to negotiate. The global financial crisis cut commodity prices in half in 2009. "That meant producers didn't want to pay one cent for a carbon scheme," Maher said.

"What I say to workers is there's no future for the old way of doing things, old conventional coal plants," he said. "People get it."

Environmental groups that met in Sydney a few weeks ago are also gearing up. After being caught flat-footed and unable to combat opposition campaigns earlier this year, groups interested in everything from saving the Great Barrier Reef to wildlife preservation, water and farming are trying to pull together.

"We were unanimous in wanting to talk about investment and setting a vision," said Kellie Caught, the World Wildlife Fund-Australia's acting head of climate change. "\$1.50 a day would save the Great Barrier Reef. It starts to defuse the 'great big tax' argument."

Following China's lead; not waiting for the U.S.

Yet it's business interests that the Gillard government is reaching out to. Right around when environmentalists went searching for their voice, a business roundtable convened by Gillard's treasury chief met for the first time. It includes the resource kings, BHP, Rio Tinto and Royal Dutch Shell, alongside other energy, farm, industry and small business groups.

Nathan Fabian, chief executive of the Investor Group on Climate Change Australia and also a member of the 20-person roundtable, said most in the room agreed Australia is heading toward a price on carbon. But the debate will revolve around the impact on Australians' cost of living.

"It has to be China, India, the United States and Europe that make the deep cuts in emissions," said Hillman, head of the coal group. "The best thing we can do is provide good policy and develop good technology that works, but there is no point slitting our economic wrists thinking we're going to save the reef."

Still, the cost of living argument is a "simplistic and simple message to sell," Fabian said. "Those wanting progress will have to argue it's going to cost less in the long term if we do it early."

John Quiggin, an economist at the University of Queensland in Brisbane, said Australia has seen tougher economic adjustments. "The cost is 1 to 2 percent of GDP. It's a big number, but on the other hand, compare it to the kind of rhetoric that alarmists put up," he said.

China's investment in clean energy companies and research, and the idea that China appears more interested in tackling climate change than the United States, is elbowing into the debate.

"We understand that the Chinese are going to catch up quickly. We're not going to wait for the U.S.," Fabian said.

The United States is Australia's strategic national security ally and cultural cousin, but China has rapidly become its chief economic partner. If in its next five-year plan China turns sharply toward an energy and technology policy that emphasizes lower emissions, it could pressure trading partners to show they're also committed.

"As China commits itself to this, it isn't very long before they look over their shoulders and say, 'What about the free riders?'" Ron Oxburgh, a geologist and climate adviser to Singapore and investment groups in the United Kingdom and Germany, said in Melbourne.

Europe, Japan and smaller Asian economies will go along with China in its effort to cut carbon intensity. "I would be surprised if, at that stage, China didn't start flexing its muscles and saying, 'We're going to exercise economic and political sanctions, directly or indirectly, against those that won't join the party,'" Oxburgh said.

Reprinted from Climatewire with permission from Environment & Energy Publishing, LLC. www.eenews.net, 202-628-6500

© 2010 Scientific American, a Division of Nature America, Inc.

All Rights Reserved.



SCIENTIFIC AMERICAN

Permanent Address: <http://www.scientificamerican.com/article.cfm?id=can-australia-afford-carbon>

Can Australia Afford Carbon Capture and Storage for Coal?

The world needs it, but strict budgets have forced Australia to scale back or cancel plans to advance the technology

By Joel Kirkland and Climatewire | Thursday, December 23, 2010 | 15

BRISBANE, Australia -- Environmental groups sounded the alarm when the government of the northeastern state of Queensland announced it would stop funding a zero-emissions power plant.

In those circles, rumors had been floating for weeks before the Dec. 19 decision that Queensland's budget deficit-conscious premier and the coal companies were ready to pull the plug on the \$4 billion ZeroGen plant.

"Unless you commercialize it, it's not going to contribute," Kellie Caught of the World Wildlife Fund-Australia said about carbon capture technology needed to reduce coal plant emissions.

Cutting power plant emissions that contribute to climate change is an uphill climb unless carbon capture and storage (CCS) technology can be made cheap enough for electric utilities to buy and use. The technology traps carbon dioxide produced from burning coal, before it's released into the atmosphere, and buries it or uses it for industrial purposes.

About one-fifth of the emissions reductions needed to cut the global output of greenhouse gases 50 percent by 2050 would have to come from CCS technology at coal-fired power plants, according to the International Energy Agency (IEA). In Australia, high carbon-emitting coal is the primary source of electricity.

"Without CCS, the IEA projects that the cost of reducing global emissions will be around 70 percent higher," said a November report by Australia's National Low Emissions Coal Council.

Australia's experience with CCS mirrors technical, financial and political hurdles experienced in the United States. Public-private partnerships in both countries have struggled to secure financing for zero-emissions power plant demonstration projects, but energy agencies in both nations are mapping out and testing sites for storing carbon emissions.

In the past two years, Australia has erected several layers of programs meant to jump-start carbon capture technology, and the focus is turning toward identifying storage sites. Still, Queensland's decision to scrap ZeroGen reinforces the sense by some industry and environmental advocates for the technology that Australia's commitment to cleaning up coal-fired power plants remains tenuous.

New politics puts CCS on shaky ground

Australian states are operating on tight budgets, and state political control is switching from the Labor Party to more conservative coalition governments. That could put CCS on fragile footing. And, advocates say, power plant operators and electricity regulators simply don't have the economic incentive to increase the capacity to squelch carbon emissions unless the federal government places a high price on carbon pollution.

Further, commercial-scale CCS cost estimates are getting pricier as they approach the \$4 billion mark.

"The aspirational 2015 target for an integrated commercial-scale project now proves unrealistic," Ralph Hillman, president of the Australian Coal Association, told researchers and CCS program directors meeting in Melbourne in late November.

"This will increase the political and funding challenge," Hillman said.

Hillman, a former Australian diplomat, represents coal producers that know their long-term future could turn on whether clean coal technology can be widely deployed. If it is not, coal at power plants could be replaced by natural gas, nuclear power and large-scale renewable energy projects.

Coal producers operating in Australia have pledged to contribute \$1 billion by 2016 to a fund for CCS technology development.

Australia's CCS adherents press ahead on the belief that the government will eventually impose a cost on carbon emissions through a tax or emissions trading scheme. If the price on carbon is high enough to penalize coal consumption, the theory is it creates economic incentives to retrofit coal plants or use gas or wind power to generate electricity.

The 'realism' of fossil fuels

In time, successful demonstrations will drive down the cost and energy use now stifling full development.

"In order to get the CCS deployed, ultimately you're going to need a carbon price," said Nick Otter, chief executive of the Global CCS Institute, based in Canberra. "In the end, the big driver will be a good, strong carbon price."

Since Sunday, Queensland Premier Anna Bligh has taken some heat, answering critics by reiterating that the ZeroGen project isn't necessarily dead. She said it could be revived if carbon storage sites are identified and costs can be brought down more quickly.

It's in the "best interest and prosperity of future generations" to deploy clean coal technology by 2015, she said, but she added that "early research has shown us this is not viable at this time on a commercial scale."

The project envisions an integrated coal gasification plant with the capacity to capture 90 percent of its emissions. About \$190 million has been invested so far, about \$90 million of which comes from coal companies contributing to a CCS fund. Japan's Mitsubishi Corp. has offered to help fund the project if it can get an ownership stake.

ZeroGen and the Callide Oxyfuel Project, which is a \$200 million project to convert an existing 30-megawatt unit into a carbon capture plant, are in the heart of Australia's coal country. In every direction, in the coal fields northwest of Brisbane, the world's largest producers are preparing to expand their mines, rails and ports so they can ship billions of tons of coal to East Asia and India.

If coal industry projections are right, Queensland will help supply Asia's churning steel mills and power plants for decades, as hundreds of millions of people migrate from the countryside to the cities of China and India.

"In the end, you have to have some realism in there," CCS Institute's Otter said. "Fossil fuels will continue to be used, we know that. So how do you use it in a low-carbon market?"

CCS advocates say large demos critical to building confidence

With the highest emissions per person in the industrialized world, Australia has elbowed its way on the world stage of CCS development.

The Global CCS Institute, a public-private partnership that started a little over a year ago, has about 250 global organizations participating in information sharing, including China. It's joined the nation's science agency, CSIRO, and the Cooperative Research Center for Greenhouse Gas Technologies in a full-steam-ahead approach to getting at a couple of CCS demonstration projects up and running.

About 15 carbon capture or carbon storage projects are up and going. The \$50 million Otway Project northwest of Melbourne is a carbon sequestration demonstration project the government hopes will open the door to others around the country.

Chevron Corp., Royal Dutch Shell PLC and Exxon Mobil Corp. are also in the final planning stages for the Gorgon Liquefied Natural Gas Project, an LNG export project off the coast of Western Australia. The LNG terminal would inject 3.3 million metric tons of carbon

emissions into the ground.

The fact that there's only one onshore storage project in Australia is seen as a significant hurdle for deploying carbon capture technology at the nation's power plants.

Directors of clean coal projects at Australia's power plants boil their future down to confidence: "We have to address urgently the need for large demonstrations to get that confidence," said one during Australia's first national CCS conference in Melbourne. "Without them, we will never have the confidence to go forward."

An expensive political football

Critics of throwing billions of dollars at the technology, including Australia's Green Party and some conservative coalition members, argue it will be developed too late to address climate change and is too expensive. Still, advocates said cleaner coal is the only way to other forms of electricity.

"We don't believe CCS should do the job alone," Paal Frisvold, chairman of the European environmental interest group Bellona Europa, said at the conference. "But when the goal is to decarbonize, we'll need a lot of energy to produce aluminum for the solar cells, cast iron for the windmills, and the fertilizers for biomass. Those things require energy. If we go straight to renewables, we'll shoot ourselves in the foot and delay the transition."

Policy promises made during Australia's August elections were stark with regard to CCS. A party either intended to protect the nation's growing stake in deploying the technology or intended to kill it because it's too expensive and success is too uncertain.

In the latest round of federal elections, the governing Labor Party promised to implement power plant emissions standards and carbon capture requirements for new coal-burning generators.

The National Low Emissions Coal Council, which advises Australia's ministries, in its recent progress report said the cost of climate measures "is increasingly being built into companies' investment planning decisions."

Reprinted from Climatewire with permission from Environment & Energy Publishing, LLC. www.eenews.net, 202-628-6500

© 2010 Scientific American, a Division of Nature America, Inc.

All Rights Reserved.

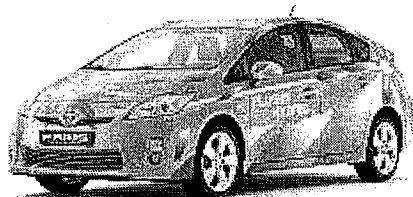




Prius plug-in prototype offers glimpse of future hybrids

Updated 13h 41m ago

By James R. Healey



Toyota

A Toyota Prius Plug-In Hybrid demonstration car.

Toyota plans to begin selling a plug-in version of its Prius gasoline-electric hybrid in 2012. To get a final round of data to help on the car's tuning, the automaker deployed 500 prototype Prius plug-in hybrids worldwide — 150 in the U.S., and one of those in our driveway.

Short version: Seemed to work well and delivered about 45 mpg overall in mildly hilly terrain. It was climbing close to 50 mpg before very cold winter weather required more use of the juice-draining heater, seat warmers, defrosters, headlights.

The last non-plug-in Prius we drove got about 51 mpg, but in warm weather, on flat ground, in broad daylight.

Based on our experience with hybrids, we'd bet a careful user could get 70 mpg in this Prius plug-in hybrid vehicle (PHV) in more amenable conditions.

Also planned for 2012: Ford Focus PHV, Honda "midsize to larger" PHV.

PHVs are designed to go a few miles on battery-

power alone — 13 in the case of Prius — then become normal hybrids, blending gas and electric power. You have to plug in the battery for more electric-only miles.

PHOTOS: More views of the Toyota Prius Plug-In Hybrid

MORE TEST DRIVE: Archive of Healey's columns

SIDE BY SIDE: Compare this vehicle to others

The electric range sounds short, but if you take mainly short trips, you might never trigger the gas engine. In longer trips, overall fuel economy is much better if you use no gas for the first 10 miles.

The Prius recharges in two or three hours on a standard 110/120-volt household outlet, vs. six to eight or more on 240 volts for a pure electric car such as the Nissan Leaf. The Leaf needs a longer drink from the kilowatt spigot to fill its bigger battery pack to go 100 miles.

So, the Prius PHV prototype was a glimpse of near-future hybrid technology. And it seemed fairly attractive. The only bother was taking a few moments to plug it in.

In the Prius, that involved popping open a door like a gasoline filler flap, on the left front fender. A fat, round plug snapped into the car receptacle, and the other end plugged into a standard household outlet. We attached the Prius cord to a hefty extension cord and left the connections exposed to days of rain and snow. No problem.

Advertisement

Mom Dilemma #36:
Your daughter insists on wearing her princess costume to the grocery store. Allow it or not?

YES, it's just a dress!

NO, I have some rules!

momlike me score
where moms talk about it

Print Powered By FormatDynamics™



Driving the prototype was a bit different from a conventional Prius. For one thing, the gas engine had about the ugliest automotive sound this side of a car crash. Hit the gas pedal hard, and the gas engine delivered but roared out a strained protest.

You could call that a fuel-economy benefit, but it seems a reach to think Toyota would make a bad-sounding gas engine to keep you from using it.

The instrument panel provided different info than in a regular hybrid. It showed how many miles you could go on the battery, for one thing.

Drivers who prefer other arrangements could choose among several display configurations.

In "power" mode, the car was peppy. In "normal," it was as expected. In "eco," acceleration was slower and the gas engine more reluctant to start and add power. We used "normal" nearly all the time but found "eco" not as dreary as expected.

Our tester never got all 13 electric-only miles that Toyota says are possible. Instead, it went a few miles on the battery, then switched to gas, then a bit later back to electric mode, and so on.

In other words, it acted like a normal hybrid once it provided as much electric range as it could.

The transition from electric-motor-only to electric and gas was usually smooth, though sometimes the light shudder common among hybrids was felt.

While we're inclined to agree with General Motors CEO Dan Akerson's now-infamous characterization of Prius as a "geek-mobile," we'd limit that description to the styling.

Otherwise, Prius is an appealing car, regardless of powerplant. A high-roof hatchback, it opens up generous interior room on a compact-car footprint. Thus, four or five people fit easily.

In addition to that horrid engine sound, here's what we'd hope to see changed for production:

- Interior trim.** Handsome enough but much off-putting hard plastic.
- Squeaks.** On the tester, a prototype, the hatch and the instrument panel creaked.
- Seat-heaters.** Tucked down and under the dash, the switch was hard to see, harder to use. Only two

settings, off and sitting-on-a-bonfire.

•**Brake feel.** Less numb, more like well-tuned conventional brakes would be welcome. Should be easy enough with the electronic controls at the heart of any hybrid's "regenerative braking" system that puts electricity back into the battery pack.

Toyota has not priced the plug-in Prius, and that could be tricky as it tries to compete for the eco-conscious buyer. The Prius starts at \$23,560 now. The plug-in is likely to be several thousands more.

But the Nissan Leaf's price of about \$33,000 is cut to about \$25,500 by the \$7,500 federal tax credit for buying electric cars.

Toyota expects Prius PHV to qualify for a little less than \$3,000 of the maximum \$7,500 federal credit. Its battery isn't big enough to get the full credit.

Compact, four-door, front-wheel-drive hatchback, same as the non-plug-in Prius.

What stood out ...

- Comfy:** Just like a regular Prius.
- Noisy:** Especially the horrid gas engine sound.
- Satisfying:** Because the fuel bill was low.
- What?** Prius hybrid with high-tech lithium-ion battery and plug-in recharging system designed to run as far as 13 miles on electricity before the gasoline engine is needed (vs. a mile or 2 on electricity in a conventional hybrid).

Advertisement

Mom Dilemma #36:
Your daughter insists on wearing her princess costume to the grocery store. Allow it or not?

YES, it's a princess! It's a princess!

NO, I have some rules!

momslike.com
where local moms meet

Print Powered By FormatDynamics™



•**When?** Toyota says the plug-in hybrid vehicle (PHV) will go on sale in 2012, after Toyota analyzes data on driving and recharging patterns from 500 prototypes in operation now worldwide (150 in the U.S.).

•**Why?** Adding even a few battery-only miles dramatically reduces gasoline use, especially for short trips or short commutes.

•**How much?** Toyota won't say. Expect a few thousand dollars more than the current Prius hybrid, which starts at \$23,560.

•**What makes it go?** Electric motor rated 80 horsepower, 153 pounds-feet of torque and 1.8-liter gasoline engine rated 98 hp at 5,200 rpm, 105 lbs.-ft. at 4,000 rpm. Both are the same as used in the current Prius.

Electric motor draws power from a 5.2 kilowatt-hour lithium-ion battery pack that Toyota says can hold enough energy for 13 electric-only miles.

Gas engine burns regular-grade gasoline; holds 11.9 gallons.

•**How do you fuel it?** Pump gas into the tank for the engine, plug the battery into a 110/120-volt outlet for a full recharge in three hours.

Works the same as a non-plug-in hybrid when the battery pack is low: Battery recharges somewhat when the brakes are used or the car is slowed without braking.

•**Overall:** It's a little fussier than driving an ordinary hybrid, but it's likely to improve fuel mileage enough to be worth the bother of plugging it in.

Advertisement



Mom Dilemma #36:

Your daughter insists on wearing her princess costume to the grocery store. Allow it or not?

YES, at least she's dressed!

NO, I have some rules!

momslike ms.com
where moms make moms

Print Powered By FormatDynamics™