

NEWSMAKER INTERVIEW

Climate Science Leader Rajendra Pachauri Confronts the Critics

NEW DELHI—It has been a long, hot winter for the Intergovernmental Panel on Climate Change (IPCC) and its chair, Rajendra Kumar Pachauri. E-mails leaked last November cast doubt on the integrity of a few of the 4000 scientists who produce consensus reports for the U.N. body on climate change science (*Science*, 4 December 2009, p. 1329). Then IPCC earlier this month offered regret for having included an unsupported prediction in its fourth assessment in 2007 that Himalayan glaciers would melt away by 2035 (*Science*, 13 November 2009, p. 924).

Pachauri, a 69-year-old industrial engineer and director general of The Energy and Resources Institute (TERI) here, has headed IPCC since 2002. He routinely puts in 18-hour days and is not known to have taken a vacation in 3 years. The workaholic has recently come under attack in the U.K. press for his lucrative stints as an adviser to companies including the Toyota Motor Corp. and Deutsche Bank—earnings that he insists go to TERI. On a cool, smoggy morning here earlier this week, Pachauri defended IPCC's work and shot back at critics who want to see him ousted as panel chair. **-PALLAVA BAGLA**

Q: The big issue dogging IPCC this winter is the inclusion of a prediction in the fourth assessment that Himalayan glaciers would melt by 2035. IPCC has offered regret—but not an apology. **R.K.P.:** We have made a mistake and we have admitted that. Our job is essentially to bring the science into our assessments from the best sources that exist. Look at the extent of the glaciology work that has been done in this country. It is pathetic. I mean, that is really where we need to come up with an apology.

Q: In a 20 January statement, IPCC still says that India's glaciers are melting away. Isn't that a tall claim?

R.K.P.: Our glaciers are under the same influences, the same temperature changes as other glaciers in the world. So you know we cannot possibly assume if all the other glaciers are melting, that for some reason we are insulated from those influences. The lay public ... can see with their eyes what is happening to our glaciers.

Q: What is your stance on linking global warming with extreme events? Has IPCC made a blunder by suggesting the link?

R.K.P.: No, we have not made a blunder, and we are going to issue a statement on that. We decided well over a year ago to do a special report on climate change and extreme events. We would like to assess all the new information and research now available.

Q: Some critics contend that while IPCC was projecting that it was doing great science, it is turning out to have done some sloppy work.

R.K.P.: While I am sure there are some people who believe that, I also can tell you that there is a large body of people who look at the entirety of what IPCC has done. We have placed before the world ... a defining piece of work, which clearly tells you about the scientific reasons for climate change.

The veracity, the honesty, the scrupulousness with which we carry out our assessment has been the hallmark of the IPCC, and we are never going to compromise on that.

Q: What have you learned from these episodes?

R.K.P.: We have got to ensure that all our procedures are followed in letter and spirit and with a huge amount of due diligence. I will personally make sure that all the lead author teams that are going to work on the fifth assessment report and our special reports observe this scrupulously, go the extra mile in making sure that we don't use any information that is questionable. What has happened only highlights the importance of the procedures that we have established. If they had been followed, we wouldn't have got into this unfortunate error.

Q: The other issue that dogged IPCC is the leaked e-mails from the [Climatic Research Unit of the University of East Anglia in Norwich, U.K.].

R.K.P.: Those e-mails represent nothing more than private communications, private airing of anguish or anger or emotion. It was indiscreet.

Q: Has all that has happened this winter dented the credibility of IPCC?

R.K.P.: I don't think the credibility of the IPCC can be dented. If the IPCC wasn't there, why would anyone be worried about climate change?

There are those who would wish to demolish the science of climate change. Our vindication will lie in our performance.

Q: Are you being made a fall guy?

R.K.P.: I am not a fall guy, but you know the buck stops here. I am the chairman; I am not going to shirk responsibility.

Q: Is there a conflict of interest between your role as IPCC chair and your work advising companies?

R.K.P.: I don't see any conflict at all. Science has to be used for decision-making. IPCC's work is supposed to be very clearly policy relevant. How can I establish policy relevance if I shut myself in an ivory tower and say I will not say anything about climate change? I feel totally comfortable in the role of adviser to anybody.

Q: A statement from TERI lists the number of companies you are associated with, the money which has flowed back to you and the organization: €100,000 from Deutsche Bank, \$80,000 from Toyota, and so forth. You don't think this is conflict of interest? R.K.P.: Where is the conflict of interest? I am a paid employee of my institute, not of the IPCC. I don't see why I shouldn't advise anybody anywhere in the world... as long as

I am not making money out of it. [The money] is going to my institute.

Q: Some people disagree; they believe that

you have to be cleaner than Caesar's wife.

R.K.P.: Yeah, but Caesar was also murdered by Brutus, wasn't he? Caesar was murdered by a group of people for their own interest, all right? So I cannot possibly be held accountable for all the lies that the media are writing about in a certain section of the U.K. press. I mean, if they are going to influence public opinion, I can assure you it is not going to last forever. I am absolutely convinced the truth will prevail in the end.

Q: You put up a brave face, but some in the scientific community feel let down. They say

that you are carrying too much baggage, that it's time for you to move on.

R.K.P.: I certainly have no intention to quit. I will continue as the chairman of the IPCC till I have completed the fifth assessment report.

Q: Are you becoming a thorn in the side of vested interests—a thorn they wish to eliminate?

R.K.P.: No question about that. But I have no intentions of backing off. I am not going to tailor the truth to suit the vested interests of those who would like to continue with business as usual.

PHYSICS

NRC Urges U.S. to Rethink Sale of Helium Reserve

In 1996, the U.S. Congress decided to sell the 1 billion cubic meters of gaseous helium specifically the heavier isotope, helium-4 that the country had stockpiled. But conditions it imposed on the sales are keeping the price of helium artificially low and encouraging waste of a substance indispensable for numerous scientific and technological applications, says a National Research Council report released last week.

"Helium is being sold at fire-sale prices, and low prices are not going to encourage the recycling, conservation, and substitution that might prolong the existing supply," says Charles Groat, a geologist at the University of Texas, Austin, and co-chair of the committee that wrote the report.

Produced in radioactive decay, helium collects in the same rock formations that trap other gases and is primarily a byproduct of the natural gas industry. It is the only element that remains a liquid at absolute zero, making it an unparalleled cooling agent, or "cryogen." Without helium, the superconducting magnets in MRI machines won't work and myriad lines of physics research would grind to a halt. Helium is also essential to purge the tanks and lines in rockets that burn liquid hydrogen.

In 1960, Congress told the now-defunct Bureau of Mines to stockpile helium piped from gas fields in Kansas, Oklahoma, and Texas in a rock formation called the Bush Dome Reservoir near Amarillo, Texas. By 1973, the dome held 1 billion cubic meters of gas. But the bureau's helium sales were weaker than expected, and the reserve was losing money. So 13 years ago, Congress told the Bureau of Land Management (BLM), which had taken control of the helium, to sell almost all of it by 2015.

Congress required BLM to sell the gas for

enough money to pay off the reserve's debt— \$1.66 per cubic meter with increases for inflation. At the time, BLM's price for crude helium was above the market price for refined helium. Since 1995, however, global demand for helium has increased by nearly 70%, and BLM's current price of \$2.29 per cubic meter is below the price from private sources.

The 60 million cubic meters pumped from the reserve each year make up half the crude helium brought to market in the United States for big consumers such as NASA and the Department of Defense that would ensure a supply in times of shortage, the report says.

The report even suggests that Congress rethink the sale of the reserve, as the world's resources could be depleted within 40 years and demand could exceed supply within a decade. "Probably 10 or 15 years ago it was heresy to say we need a reserve," Groat says. "Now that the situation has changed, I think that may be revisited." At the least, he says, Con-



Wise use? Helium is indispensable for chilling the superconducting magnets in the Large Hadron Collider (*right*) and manufacturing optical fibers, but not for welding and filling balloons.

and a third of the total worldwide. So, the report says, the low price, which BLM sticks to as a matter of policy, drives the market and spurs needless consumption, such as the 15 million cubic meters used annually by welders in the United States. (Europeans use argon.)

BLM should establish a higher marketbased price, the report says, although that may be tricky, as only four refiners have access to the pipeline to the dome. To soften the blow to scientists, those with grants from agencies such as the National Science Foundation, the National Institutes of Health, and the Department of Energy should be allowed to buy BLM helium under terms currently reserved gress will have to tell BLM what to do after 2015, as the bureau will miss the deadline for selling the remaining 650 million cubic meters of gas by years.

Will Congress heed the report? Maybe, says one congressional staffer. An acute shortage of the lighter isotope of helium, helium-3, has already grabbed legislators' attention, he says, because it may derail the Department of Homeland Security's plan to deploy thousands of helium-3-filled radiation detectors (*Science*, 6 November 2009, p. 778). "At least you can say to members, 'You were working on this, and here's this other part of the problem you should be aware of." **ADRIAN CHO**

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