back to the Moon. Yet under the continuing resolution, the agency must keep spending on the Constellation programme, which is budgeted at around $7 billion per year. Keith Cowing, editor of NASAWatch.com, says it is hard to see how NASA can finance the shuttle flight while juggling everything else. "It's like trying to take a large truck and do a sudden left turn," he says. NASA may be especially susceptible to political wrangling in the new Congress because many influential Republicans, including Gordon's successor on the science committee, Ralph Hall (Texas), have NASA centres in their districts or states and support a strong manned-spaceflight programme. Their resistance will make it harder for Obama to give the agency a fresh direction.

Hall spoke against the reauthorization of America COMPETES, arguing that he would rather scrutinize and vote on each science programme funded by the bill than give agencies such as the NSF a wholesale increase. He has already singled out for criticism the $900-million allocated to ARPA-E, a new agency of the US Department of Energy that promotes advanced energy research. ARPA-E originally had bipartisan support and Hall's scepticism came as a disappointment to Charles Vest, president of the National Academy of Engineering, who has championed COMPETES. "I believe the uniqueness and full importance of ARPA-E was missed," Vest says.

A battle over energy policy may well be inevitable because several incoming Republicans have expressed scepticism about climate change. Incoming chairman of the House Committee on Energy and Commerce, Fred Upton (Republican, Michigan), represents a moderate voice, but he has appointed more conservative lawmakers to chair his subcommittees.

John Shimkus (Republican, Illinois), who heads the new environment and economy subcommittee, made headlines in November when he quoted scripture to make the case that God would not destroy Earth through global warming. Ed Whitfield (Republican, Kentucky), who will head the new energy and power subcommittee, has already attacked the Obama administration's regulatory initiatives, in particular suggesting that the Environmental Protection Agency has not provided "compelling scientific evidence" to justify its climate regulations.

With government scaling back spending, and concerns about economic growth at the forefront, any attempt to curtail emissions is likely to face strong opposition on economic grounds. Abraham Lincoln famously observed that "a house divided" cannot stand. For US scientists, 2011 may be the year that demonstrates that a government divided cannot move. ■

C. OWEN/NATURE

Q&A Bart Gordon
Going out on a high

After 25 years in the US Congress, Bart Gordon (Democrat, Tennessee), the chairman of the House Committee on Science and Technology, officially stepped down on 3 January. An ardent champion of science, he has served on the committee throughout most of his time in Washington DC and has led it since 2007. In 2007 he was instrumental in creating the America COMPETES Act, which aims to double funding for basic research in the physical sciences over a ten-year period and improve science education in US schools. One of his final acts as chairman was successfully shepherding a renewal of COMPETES through a politically polarized Congress. The act will be signed into law by President Barack Obama this week.

Why is America COMPETES so important to you?

The United States needs to be able to increase its investment in research. Research leads to innovation; innovation leads to jobs; jobs leads to more taxes, which then pay for more research. I have a 9-year-old daughter and I am concerned about her future and our country's future. There are approximately 7 billion people in the world, and half of those who are working make less than $2 a day. So unless we continue to innovate and unless we have a skilled workforce, we are going to see our standard of living decrease.

How will it be possible to invest more in research when many are calling for cutbacks?

It's going to be a challenge. We're seeing a little increase in the public-sector research dollars and we're seeing a decrease in private-sector funding. In the rest of the world many are trying to do both: their private and public sectors are investing more. We're going to have to rally the private sector, the universities and everyone who cares about this to show its importance.

Is science playing a greater or lesser part in US policy-making?

I think President Obama has put a strong marker down that he wants to see science take a greater role. He has brought together an unheard of number of high-calibre scientists [in his administration] that I think are helping to do this. The thing that I've found is that whether it's John Holdren [director of the White House Office of Science and Technology Policy] or [energy secretary] Steve Chu, you have these top-notch scientists in their own fields

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that, prior to coming to Washington, have come to know each other, and so it really gives them the ability to talk outside their bureaucratic silos.

Are there examples of where science can lead to better policy?

I think the business community is very interested in seeing science play a larger part in policy-making. Take nanotechnology and synthetic biology, for example. They are going to be big growth industries for our future. But there are health and safety concerns — and there can either be a perceived risk to health and safety or an actual one. So it is important that we get an early start on transparent research in health and safety in these two areas so that the public can feel comfortable that if there is a problem, then we're getting it off the shelf, and if there isn't, then there's a body of evidence that they can see.

Are you disappointed that Congress has not passed a climate bill?

I voted for the House bill but I'm less interested in a particular bill than I am in trying to deal with the problem. I'm very concerned that we're outliers compared with the rest of the world. In term of our international stature, that really has hurt, particularly in Europe.

You are known for reaching out to European legislators. What has been your aim in doing so?

Between the European Parliament and the US Congress, you have two legislative bodies that represent 800 million people and over half the world's GDP. The European Union and the United States also share similar cultures and wage scales. I really think it's important for us to be collaborating, intellectually and financially, in bringing more symmetry to standards and regulations and reducing barriers between our two regions. We have a common interest, for example, in clean energy. Some of those areas, such as next-generation nuclear power, carbon capture and sequestration, and fusion are hugely expensive. I think those are areas where we can collaborate.

Do you have any advice for your successor as chairman?

Try to maintain the civility that allowed us to work together. I tried to bring the Republicans in early to make them a part of the process. It made our bills better, and because of that we were able to go to the floor with a unified effort and pass legislation in a bipartisan manner — and if you want legislation to continue here, it needs to be bipartisan. ■

INTERVIEW BY IVAN SEMENIUK

LATIN AMERICA

Chávez squeezes scientific freedom

A string of new laws and a presidential power grab unsettle researchers in Venezuela.

BY ANNA PETHERICK

Venezuela's beleaguered scientists are facing renewed pressure from their government, which this week assumes control of levies from private companies that represent one of the main sources of research funding in the country. Meanwhile, President Hugo Chávez has gained fresh powers to enact legislation by decree, which some researchers fear he will use to close universities or curtail academic freedom.

These changes were hurried through Venezuela's National Assembly following the national elections on 26 September — when Chávez's party lost its two-thirds majority. The new assembly convenes on 5 January. "There are problems particularly for us in science," says mycologist Gioconda San-Blas, an emeritus professor at the Venezuelan Institute for Scientific Research in Caracas. "First we have a new law for science and technology, then restrictions to the Internet. Now there is a new law relating to universities as well."

The changes to the science and technology law, known as LOCTI, are manifold. Enacted in 2005, LOCTI provided a boost to science funding in Venezuela by requiring larger companies to plough money into research — which could be done either in-house, or at a university or research institute chosen by the company. Today, LOCTI funds amount to 3–4% of Venezuela's gross domestic product (GDP), compared with government science funding of about 0.5% GDP. Although LOCTI funds did not always reach the best public labs, some companies "gave generously to university projects with very good results", says Jaime Requena, a former president of the Institute for Advanced Studies in Caracas, who was dismissed in 2009 after criticizing the government. But "the new version forces all private enterprises to surrender their LOCTI contribution to an office within the Ministry of Science and Technology", he says. "Now the destiny of all collected funds from private sources will be decided by the government according to the 'Socialist Plan for the Nation'."

The amendments also narrow the fields of enquiry that can receive LOCTI funds to just four categories — climate change, energy innovation, building materials and urban development — and enable almost anyone to carry out the research, regardless of their qualifications. "According to the government, everyone can do science," says San-Blas, who worries that science in the country will become less professional as a result. The changes were approved without consultation with the research community.

Other legal changes mean that university budgets will now be controlled by 'communal councils' made up of local citizens, which will also elect university vice-chancellors. A new telecommunications bill mandates Internet providers to censor web pages according to government guidelines, potentially restricting scientists' access to information.

Orlando Albornoz, a sociologist at the Central University of Venezuela, Caracas, fears that Chávez's augmented presidential powers could be used to close universities that host professors who vocally oppose him. "If he closes down the autonomous universities he may face an ugly fight, but having the power in his hands he will oblige his enemies to negotiate on his terms," he says. "I see more and more control." ■

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