In February, a group of Nobel laureates urged Juncker to reverse what they termed a "misguided and short sighted policy." Cutting Horizon 2020 funds "send[s] a message that Europe is not the place to do high level science," they wrote.

Juncker's plan requires the approval of both the Parliament and the Council of Ministers. However, in a vote on 20 April, members of the European Parliament (MEPs) agreed to set up EFSI but opposed devoting Horizon 2020 funds to it. The Parliament "appears as the only E.U. institution defending Horizon 2020," said Kurt Deketelaere, secretary-general of the League of European Research Universities, in a statement.

"It is completely unnecessary to transfer money from Horizon 2020," says Kathleen van Brempt, a Belgian sociodemocrat MEP who sits on the Parliament's industry, research, and energy committee. Van Brempt instead wants EFSI to use unspent E.U. funds that are normally returned to national governments at the end of each year. "There are large enough leftovers to pay for the [EFSI] guarantee fund," which the Parliament could watch over year after year, she says. However, national finance ministers like their annual E.U. refund, and so will certainly oppose van Brempt's plan during the coming weeks of "trilogue" negotiations between the commission, Parliament, and member states. Juncker said he wants to finalize the plan before the summer.

Although the Parliament has often flexed its muscles this way since its powers were extended in 2009, the Council of Ministers usually has the upper hand in negotiations over the E.U. budget. "We can expect weeks of high political games," Deketelaere says. "The question is who is going to give in." The Parliament is showing a united front to protect research funds from cuts, but "I don't know if that will hold until the end," he adds. ■

European Commission chief Jean-Claude Juncker says scientists shouldn't worry.

RESEARCH FUNDING

House science chief unveils contentious vision for science

Authorization bill would cut climate and energy research and reshape science agency policies

By **Jeffrey Mervis** *and* **Adrian Cho**

Representative Lamar Smith (R–TX) has never hidden his desire to reshape federal research policy—often over the objections of much of the scientific community—since he became chair of the House of Representatives science committee 2 years ago. Last week, he introduced legislation that lays out those plans in unprecedented detail, and the reaction was predictable. Although academic leaders say that some parts of the new, 189-page bill are better than previous versions, they believe it would seriously damage the U.S. research enterprise.

Research on hurricane prediction could be affected by proposed geoscience cuts.

The bill not only sets out funding levels for several research agencies that in some cases depart sharply from those the Obama administration requested for 2016; it would also reshape key policies and priorities guiding those agencies. In particular, researchers complain that the bill (H.R. 1806), called the America COMPETES Reauthorization Act of 2015, would:

- Narrow the scope of research at the National Science Foundation (NSF) by designating some scientific disciplines as more important to the nation than others;
- Sharply reduce NSF's authority to fund the social sciences and the geosciences;
- Restrict NSF's ability to build large new scientific facilities by requiring the agency to follow new, controversial, accounting practices;
- Curtail climate change research at the Department of Energy (DOE);
- Block the government from using DOE research findings in writing regulations;
- And squeeze the budgets for DOE's applied research program and its fledgling Advanced Research Projects Agency-Energy (ARPA-E).

Smith doesn't have the authority to impose that vision on Congress. The Senate has yet to draft a matching authorization bill, and the path to congressional passage is uncertain. But his committee's oversight of several key scientific agencies means his ideas will play an important role in the debate.

The first America COMPETES Act, passed in 2007 and renewed in 2010, enjoyed bipartisan support from presidents George W. Bush and Barack Obama. In contrast, the new version has no Democratic co-sponsors, was not shown to Democratic committee members before it was unveiled, and has triggered a bitter partisan debate.

"The original American COMPETES Act was one of the crowning achievements of the science committee," says Representative Eddie Bernice Johnson (D–TX), the top-ranked Democrat on the panel. "This bill is an America COMPETES bill in name only. It does nothing to further our scientific and innovation enterprise."

Smith disagrees, saying the legislation "reestablishes the federal government's primary scientific role to fund basic research [and] prioritizes taxpayer investments." In offering additional spending—often at odds with what the administration has requested (see table, p. 381)—he cites the country's need to catch up in supercomputing and particle physics and preserve its lead in other areas. Smith offsets those increases by cutting "later-stage" technology and commercialization programs that he believes "are more effectively pursued by the private sector." The bill authorizes spending levels for the 2016 and 2017 fiscal years, with no increases in the second year.

Some science advocates object to Smith's assertion that legislators can do a better job than the scientific community itself in identifying the most promising research areas. They are angry that he has proposed funding levels

PHOTOS: (LEFT TO RIGHT) AP PHOTO/RONALD ZAK; NASA GODDARD MODIS RAPID RESPONSE TEAM

for each of NSF's seven directorates rather than giving the agency a top-level number and allowing it to distribute funding as appropriate. They are angrier still that he wants to cut more than $100 million from two of those research directorates—geosciences and social sciences—shrinking the latter by more than half.

"I think it's ironic that the science committee would mark up this bill on Earth Day," says Sherri Goodman, president of the Consortium for Ocean Leadership in Washington, D.C., referring to a meeting this Wednesday of the panel. "Before they take such a drastic step, I hope they reconsider the adverse consequences it would have to the environment, the economy, and national security."

The bill also targets NSF's oversight of big new scientific facilities. Smith and other Republicans believe that NSF has been lax in this regard, and the bill requires the agency to "correct" any problems identified by an independent audit of a project's expected cost before starting construction. That language could seriously delay new projects, say NSF officials, who add that the bill also contains rules about the use of contingency funds that are at odds with existing federal policies.

Within DOE's Office of Science, the bill's impact would be limited to two of the office's six research programs. It would move more than $60 million from biological and environmental research into fusion research. That money would presumably come out of DOE climate change efforts, as the bill would require DOE to eliminate any climate research deemed to overlap with what other federal agencies are doing.

When it comes to DOE's applied research efforts, however, the new COMPETES act takes out a hatchet. It calls for cutting spending on DOE's energy efficiency and renewable energy (EERE) program by 37% from its current level, to $1.2 billion in 2016. In contrast, the White House has requested a 42% boost, to $2.7 billion. Similarly, it would slash the budget for ARPA-E, devoted to translating the best results from basic research to budding energy technologies, by 50%, to $140 million, rather than increase it by the 16% the administration has sought. The House bill also zeros out numerous smaller applied research projects such as DOE's next generation lighting initiative, building standards program, and efforts to find additional uses for electric-car batteries.

Those changes are in line with the argument by many Republicans that private industry, not the federal government, should pick up the tab for translating the most-promising basic research into commercial technologies, says Michael Lubell, a lobbyist with the American Physical Society (APS) in Washington, D.C. But that assumption is unrealistic, he says. A 2008 APS study showed "that some federal money had to be provided because nobody else would do it," he notes.

Smith and his Republican colleagues do back government support for early-stage technologies outside the energy arena. Last December, in the final 2015 spending bill for all federal agencies, Smith championed a network of manufacturing innovation research centers, to be run by the National Institute of Standards and Technology, that would tap money now going to DOE's EERE. The original plan called for spending $250 million over a decade on several new centers. But the COMPETES reauthorization would speed up that timetable, making $150 million of the total available over the next 3 years.

Research funding levels aren't all that troubles Lubell and other science advocates. The bill also proclaims that "the results of any research, development, demonstration, or commercial application projects or activities of the [Energy] Department may not be used for regulatory assessments or determinations by Federal regulatory authorities." That clause, although it appears within a section on fossil energy research and development, would prevent the federal government from using any of the DOE research it paid for to inform policy. "That's absolutely bizarre," Lubell says.

The committee was scheduled to take up the bill on Wednesday, and Democrats are expected to offer a raft of amendments. Although few, if any, are likely to pass, science advocates are hoping that the Obama administration will object to enough of the bill's provisions to reject anything that manages to clear both houses of Congress. "At this point, this White House is poised to veto anything that threatens the president's priorities," Lubell says. "I don't really think there's a snowball's chance in hell of getting the president's signature on it." ■

COMPETEing visions for U.S. research

A bill drafted by House Republicans matches White House spending priorities for science in some areas but diverges greatly in others.

2016 funding levels, in $ billions

	PRESIDENT'S REQUEST	COMPETES DRAFT	COMPETES COMPARED WITH REQUEST
COMPETES would boost:			
DOE fusion	0.420	0.488	16%
NSF biology	0.748	0.835	12%
NSF engineering	0.929	1.034	11%
NSF computer science	0.954	1.050	10%
NSF math/physical sciences	1.366	1.500	10%
COMPETES would reduce:			
NIST science	0.755	0.745	–1%
NSF overall	7.723	7.597	–2%
NSF education	0.962	0.866	–10%
DOE bio/environment	0.612	0.550	–10%
NSF geosciences	1.365	1.200	–12%
NIST	1.120	0.934	–17%
DOE renewables/efficiency	2.722	1.199	–56%
ARPA-E	0.325	0.140	–57%
NSF social/behavioral*	0.237	0.100	–58%
No change:			
NSF research account	6.186	6.186	0%
DOE Office of Science	5.340	5.340	0%
DOE advanced computing	0.621	0.621	0%
DOE Basic Energy Sciences	1.849	1.850	0%
DOE High Energy Physics	0.788	0.788	0%
DOE Nuclear Physics	0.625	0.625	0%

* Excludes funding for NSF's statistical agency

DATA SOURCE: OMB/CONGRESS

House science chief unveils contentious vision for science

Jeffrey Mervis and Adrian Cho

Science **348** (6233), 380-381.
DOI: 10.1126/science.348.6233.380