



the House's COMPETES legislation, the final version of the bill contains several compromises and lacks the audacious goal—namely, to double the basic sciences research budget—of the original COMPETES legislation. In fact, funding authorizations were left completely out of the final version of the AICA because incorporating funding levels was expected to have derailed unanimous consent in the House, and may also have upset unanimous consent in the Senate where offsetting increased authorizations has become an expected procedure. But despite these compromises, the bill is much closer to the widely supported Senate version and lacks the provisions from the House's COMPETES bill that were most strongly opposed by the science community.

Indeed, nearly 50 letters and statements from the science community (e.g., professional societies and associations, universities and institutes, and coalitions and consortiums) were submitted in opposition to the House's COMPETES bill, and the overwhelming concern in each stemmed from funding authorizations. From steep cuts in some budgets, to flat funding in others, and complete

elimination of some programs, it was clear that the funding levels authorized in the House bill would prove detrimental to the health of US science and technology, according to those who opposed these mandates. In addition, rather than following recent protocol and setting an overall budget for the NSF, the House's version of COMPETES set specific funding levels for each of the NSF directorates. This move was widely opposed and viewed within the science community as a means to prioritize certain areas over others.

Another of the most broadly opposed provisions in the House version of the bill required adding a provision for "national interest" to the peer review criteria for evaluating grant proposals within the NSF. Conversely, the Senate version of the bill expressed support for the current peer review process that is based on intellectual merit and broader impacts. The final version of the bill reached a compromise by leaving the current peer review process intact but adding that the existing criteria should assure that the NSF's "activities are in the national interest" and by updating several of the

goals that define the broader impacts criterion to include specific reference to the US or the American people.

The remainder of the AICA generally follows the bipartisan Senate version of the bill that was crafted by Senators Cory Gardner (R-Colo.) and Gary Peters (D-Mich.) and informed by a series of roundtable discussions with members of the science community. Unlike the original COMPETES legislation, the AICA does not update policy for the Department of Energy because those provisions were rolled into the a comprehensive energy policy bill (S. 2012) that passed both the Senate and House, but could not clear the final hurdle to resolve differences and died with the end of the 114th Congress.

"While the AICA is not as groundbreaking as the original COMPETES legislation, it is a true bipartisan effort to update US research and STEM education policy," says Dozier. "It was good to see Congress work together to pass this bill, and I hope that this is a good sign for the future—that Congress will work together for the best interests of the science community."

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EU companies' R&D investment grows faster than global and US trends

The "2016 EU Industrial R&D Investment Scoreboard," published by the European Commission, shows that EU companies invested €188.3 billion in R&D in fiscal year 2015/2016. This constitutes an annual increase of 7.5%, which puts EU companies ahead of the global (6.6%) and US (5.9%) trends.

Global industrial R&D investment reached €696 billion worldwide, with sectors such as software, information technology (IT), pharmaceuticals, and automobiles fostering R&D investments and sales. Overall sales, however, declined 3.6% worldwide, mostly due to the performance of low-tech sectors, particularly oil and mining, which suffered from low commodity prices.

Thirty EU companies are among the world's top 100 R&D investors, mainly in the fields of automobiles, pharmaceuticals and biotechnology, information communications technology, and aerospace and defense. The top investors are based in Germany (€69.8 billion), France (€28.5 billion), the UK (€28.2 billion), and The Netherlands (€14.1 billion).

Asian companies showed the highest increases in R&D, especially those based in China (up by 24.7% to €49.8 billion), although their sales decreased as well. Globally, the software sector showed the highest year-on-year growth in R&D, of 12.3%, followed by pharmaceuticals (9.8%), IT hardware (7.6%), and automobiles (6.7%).

The Scoreboard is accompanied by a survey of the 1000 top R&D investors based in the EU. It shows that R&D investments are expected to fall in the coming years in the automobile and parts sector (-0.8%) while growth of 7–8% is expected in high-tech sectors, specifically in health care, pharmaceuticals, and technology hardware.

The "EU Industrial R&D Investment Scoreboard," published annually by the European Commission (DG Research & Innovation and DG Joint Research Centre) collects companies' key R&D and economic indicators. The 2016 edition reviews the performance of the top 2500 R&D investing companies in the world, which account for around 90% of the total R&D financed by business. A focus on the top 1000 R&D investors in the EU is also included. The Scoreboard is accompanied by the "2016 EU Survey on Industrial R&D Investment Trends." □