

The Intersection of Science and Public Policy

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Just about every public policy issue has a scientific component, whether it's hidden or obvious; but the facts and insights science brings to deliberations can often go unaddressed. This happens because elected officials tend to shy away from science and because scientists shy away from politics with the end result being laws based on incomplete information. U.S. Rep. [Rush Holt](#) (D-NJ) sees this occurring in Washington and says it needs to change.

A physicist by training, Holt believes that if his peers would "think like scientists," they would be able to write, vet and implement better public policy. A scientific mind isn't one that just memorizes the periodic table; it's one that is open to asking a question, considering a variety of evidence for solving a problem and engaging in constructive analysis in order to find the best possible answer.

Issues put before the [Committee on Science, Space and Technology](#) are those whose related science will get "reasonable attention," according to Holt. "If it is something that is referred to the Judiciary Committee or the Commerce Committee or the Education Committee, and has scientific components, those components are likely to be overlooked."

One of the reasons this happens is because scientists aren't actively engaged in sharing relevant information with their elected representative. The scientists don't mentor politicians on how to think like a scientist; instead they only lobby, Holt explained.

"Scientists tend to stay away from politics and even policy unless it directly affects their livelihood," he said. "You don't hear from scientists to help deal with these other issues where the science is buried in the issue."

"What should be the funding for NIH ([National Institutes of Health](#)) is clearly an issue of interest to scientists who are funded by NIH. But there (are) lots of issues, like whether annual mammograms make sense, where scientists could help the policymakers understand the issue better. How could it improve public health to have fewer mammograms? I can't remember any scientists coming to me to help explain that."

Politicizing science

The effort to bring science to the fore in order to improve public policy is the focus of the [Center for Science, Technology, and Public Policy](#). A program of the Humphrey School of Public Affairs at the University of Minnesota, the center focuses on "the intersection of policy and science and technology to improve communications, to improve the quality of how people incorporate science into policy making, but also how policy makers and scientists can communicate more effectively," said AAAS member [Steve Kelley](#), director of for the past five years.

Kelley explained that voters in this country believe in the value of science, but they don't do the work of understanding it themselves. "The polling indicates that, in general, Americans still value science," Kelley said. People have to work through the potential contradictions, adding that they need to think consistently about science across multiple subjects, because "they sure like what it can do for delivering electricity to their homes or curing disease. We have to help educate people that the same science and the same scientific processes that do that also yield what we know about climate change and evolution."

A former Minnesota state representative and state senator for a combined 14 years, Kelley differentiated the ways in which science and public policy intersect. He explains this by describing how science influences two different kinds of policy making in two different ways. There is science used for developing public policy, as part of the decision-making process to create laws related to problems such as water quality and clean air (science for policy). And there is policy for doing the work of science, which includes things like rules about which sets of stem cells can be used in government-funded research (policy for science).

An example, the inclusion of animals in research, which has been proven effective for developing new drug therapies that help human beings prevent or fight illness. Animal-rights advocates, however, challenge the ethics of using living beings in clinical drug trials. This conflict plays out in guidelines for federally funded research. The decision comes down to a judgment call about the benefits and risks of using animals. In this case the science for policy is the information used when considering how the use of animals in research benefit or help the science – and how that study harms the animals, while the policy for science is the inclusion or exclusion of animals in federally funded research.

“In the end, it’s a value judgment balancing the ethics of how we treat animals with the ethics of the prospects of benefits for human beings,” Kelley said. “Science can help outline the problem, but ultimately, in a democratic society, citizens and their representatives are ultimately responsible.”

Those policy decisions fall to an increasingly polarized political process. Federal, state and even local politicians are increasingly taking an “us-against-them” stand, which greatly diminishes the opportunity for sharing information and building consensus. This, according to Kelley, is where the facts and information of science that could help build good public policy gets lost.

[James L. Buizer](#), a professor in School of [Natural Resources and the Environment](#) at the University of Arizona, illustrated this point with his particular area of expertise – climate change.

“The scientific debate about whether or not humans are causing climate to change, that debate is over,” he said.

Yet politicians continue to incorrectly speculate about the veracity of climate change data. For 20 years the predictions about rising sea levels and severe weather have been largely ignored in favor of short-term policies that are geared toward reelection success, according to Buizer, eliminating the opportunity to seriously consider and implement long-term, climate-related policies.

“We do it all the time with infrastructure projects like roads and bridges and transportation systems, so we know how to do it,” he said. “Unfortunately, things like (Hurricane) Sandy have to happen before we wake up and realize that dealing with things today, making investments today are actually sound financial and policy decisions to reduce the net impact in the future.”

Scientists on Capitol Hill

A consistent effort by the scientific community to inform and educate policy makers about the science available to help the decision making process when legislation is being prepared and implemented used to occur regularly when there was an [Office of Technology Assessment](#) supporting Congress, according to Buizer. It was defunded in 1995. Now some federal agencies make an effort to compile and share similar material.

One such program was started by Buizer during his time at the [National Oceanic and Atmospheric Administration](#) (NOAA). Now called [Regional Integrated Sciences and Assessments](#), it is set up to bring together “the best scientific understanding and its impacts,” he said. These teams help local government officials and the public to make informed decisions on climate variability and change and its impacts. In 2011, RISA’s Great Lakes Integrated Sciences and Assessments Center (GLISA) completed their review of nearly 50 reports and assessments of the effects of climate change and variability in the Great Lakes region. The report will help to improve science-policy networks and informing decision-making in the region, according to [RISA’s 2011 Annual Report](#) (PDF).

And Kelly would like to see more science organizations like AAAS use their influence to increase the use of science in public policy development, especially at the national level.

Since 1973 AAAS has been sending scientists to work in the offices of Congress through the [Science & Technology Fellowships](#) program funded by approximately 30 scientific and engineering societies and executive branch agencies. Being able to have scientists on the Hill is key, Ellen Bergfeld, CEO of the Alliance of Crop, Soil and Environmental Science Societies, told AAAS. Bergfeld was a 1996-97 [FASFAS Congressional Fellow](#) who witnessed just how important a role scientists can have in policy. "Sometimes you'd only have a 2 hour window to get information to your boss so that it could be either brought up on the floor during a discussion or inserted into a bill being crafted into the middle of the night," she said.

More than 250 scientists spend a year in these "highly competitive" fellowships. Many find the program so rewarding they remain in public policy. In fact, Holt was a 1982-83 [APS Congressional Fellow](#) before embarking on his bid for a house seat.

And what role do voters have in science policy? "We have an obligation as citizens to become more science-literate about the critical issues that are facing the country and communicate our view to the folks that work for us either in Washington, D.C., our state capital (or) our cities," Kelley said.

Kelley pointed to climate change as an example.

"It's important for every American resident to try to learn what the science is behind climate change and try to come to his or her own conclusion about it, trying to understand the different contentions that people are making," he said. "We are, despite the things that sometimes get in the way, still a democracy where representatives pay attention to what citizens think. The best way to change the understanding of science held by our representatives is for the broader public to develop a new understanding of some of these scientific topics."

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