White House Begins to Map Course toward Bio-Based Economy

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Source: BioScience, 62(2) : 121-122

Published By: American Institute of Biological Sciences

URL: https://doi.org/10.1525/bio.2012.62.2.5

White House Begins to Map Course toward Bio-Based Economy

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Politicians and pundits clogged the airwaves last year with rhetoric about the state of the nation's economy. Amid this noise, a few economic policy initiatives did begin to take shape. For instance, last fall, the White House Office of Science and Technology Policy (OSTP) issued a request for comments on a draft policy to stimulate the bioeconomy.

Scientists have long asserted that research is an investment that yields economic prosperity. A growing number of scientists and engineers have more recently advised that the biological sciences are poised to inspire transformative discoveries that can solve persistent problems while stimulating new economic opportunities. Indeed, in 2009, the National Research Council (NRC) released a 112-page report, *A New Biology for the 21st Century: Ensuring the United States Leads the Coming Biology Revolution*, which offered recommendations intended to harness the potential of the biological sciences to solve society's grand challenges in the areas of energy, environment, food, and health.

The NRC report received a tepid response from many in the research community. Some scientists and agency research managers felt that the report stated the obvious or failed to make a compelling argument for fundamental research or specific lines of research. Many in the science-policy community, however, welcomed the report as a useful tool for triggering an important policy discussion.

To a degree, the NRC report provided a roadmap for policymakers interested in cultivating a bioeconomy. In September 2011, President Obama announced his intent to develop a National Bioeconomy Blueprint, a framework that would identify government actions to harness biological research innovations to address national challenges in health, food, energy, and the environment. It appears, therefore, that policymakers, including those in the White House, are indeed considering the roadmap offered by the NRC.

"Biological research underpins the foundation of a significant portion of our economy. By better leveraging our national investments in biological research and development, the Administration will grow the jobs of the future and improve the lives of all Americans," the OSTP stated in a Federal Register notice soliciting public input on the draft plan. "Twenty-first century advances in biological research and technologies are poised to return tremendous public benefits… advances in human-genome-informed personalized medicine and data analytics could be combined to improve human health in novel ways. In bio-based industry, biological design can create new opportunities for biofuels, chemicals, materials, and energy-efficient manufacturing processes," wrote the OSTP.

According to administration documents from last fall, the National Bioeconomy Blueprint will identify, among other things, strategies to meet grand challenges, promote commercialization and entrepreneurship, focus research and development investments in areas that will provide the foundation for the bioeconomy, and expand workforce training to prepare the next generation of scientists and engineers.

Some scientists have been concerned that a bioeconomy policy focus during a period of significant federal budget pressure could threaten investments in fundamental scientific research, such as that supported by the National Science Foundation (NSF). However, others see opportunity on the horizon. This camp suggests that the OSTP's initiative demonstrates that policymakers recognize that investing in the biological sciences is in our national interest.

Biology is "integral to understanding and solving the challenges of sustainable food production, reversing damage to our natural resources, developing alternatives to fossil fuels, and moving toward health care that takes an individual's environment and microbiome into account," states Nadine Lymn, director of public affairs for the Ecological Society of America. "A national focus on harnessing biological research to meet these challenges offers an opportunity to strengthen resources for the biological community," Lymn asserts. Investments in the NSF would have to be included, because it funds the foundational research that leads to the discoveries that inform developments in the bioeconomy.

Even scientists who are eager to embrace the bioeconomy concept worry about how a national policy might affect science and society. Karl Glasener, director of science policy for the American Society of Agronomy, the Crop Science Society of America, and the Soil Science Society of America, says that "crop scientists are interested in developing biocrops through both plant breeding and genetic manipulation that are best suited for conversion to ethanol." However, Glasener warns, soil scientists "are concerned that

any effort to develop a bioeconomy not compromise the environment." Many soil and environmental scientists worry that a push to generate biofuels or other products from crop residues could lead to soil erosion, loss of organic matter, and water-quality issues.

Glasener believes that the OSTP is genuinely interested in obtaining answers to specific questions that can inform bioeconomy policy development. Some policy experts suggest, however, that an ongoing process for considering new issues and concerns and refining policy objectives is necessary to ensure public confidence in whatever bioeconomy policy the nation may pursue.

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doi:10.1525/bio.2012.62.2.5