DAY ✔ ONE PROJECT

Improving Science Advice for Executive Branch Decision-Making

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Summary

The COVID-19 pandemic has highlighted the crucial need for science to inform policy. However, the science-policy interface has a broader history of systemic challenges spanning sectors, from climate, to energy, to water resources, to cybersecurity and beyond. The academic science community has valuable input to offer federal decision-makers, but its expertise is underutilized due to a lack of clear pathways for science advice. Targeted policy interventions to create such pathways would make policy-relevant science easily accessible to relevant actors across the Executive Branch in a timely manner, systematically improving the government's capacity for evidence-informed decision-making. The near-term policy window created by the pandemic offers an ideal time to act while the attention of policymakers and the public is focused on the key role of science in policy.

A range of policy interventions, taken separately or in aggregate, would create meaningful progress in carving improved pathways for science advice. There are five key areas of action:

1) Sharpening the focus of the Foundations for Evidence-Based Policy Act (P.L. 115-435) to define scientific knowledge as a key subset of "evidence" and develop formal structures for non-federal academic experts to participate in the development of the required agency learning agendas.
2) Widening the role of Federally-Funded Research and Development Centers (FFRDCs), especially the Science and Technology Policy Institute (STPI).
3) Leveraging the Intergovernmental Personnel Agreement (IPA) to bring more non-federal subject matter experts into key government positions.
4) Reducing administrative barriers to the establishment of Federal Advisory Committees under the Federal Advisory Committee Act (FACA).
5) Revising the Broader Impacts Requirements for National Science Foundation grantees to include more direct pathways for the outputs of scientific research to reach decision-makers.

Each policy objective can be achieved through multiple pathways, all of which target specific barriers to advance the use of science in Executive Branch decision-making.

Challenge and Opportunity

Complex environmental, health, and social challenges require evidence-informed decision-making at all levels of government. The increasing incidence of extreme heat, drought, and intense storms, the current COVID-19 pandemic, and the accelerating need for strong cybersecurity regulations are among the issues for which the scientific community can offer deep expertise and cutting-edge research to facilitate effective governance and avoid the damaging consequences of making decisions with suboptimal knowledge.

Challenges at the science-policy interface are not new. To illustrate the scope of the problem, in 2014, the World Bank did a study to take an introspective look at its own reports, most of them which had been developed with the explicit objective of informing public discourse or government policy, which differs from most scientific publications. The World Bank asked the simple question: Is anyone reading what we are writing? What they found is that nearly one-third of their PDF reports had never been downloaded—by anyone—not even once. Another 40% of their reports had been downloaded fewer than 100 times. The Washington Post reporter Christopher Ingraham characterized this finding in the pithy title of his news article about the World Bank study, "The solutions to all our problems may be buried in PDFs that nobody reads."[1]

Today, the pandemic has brought renewed attention to the urgency of reform and to the scale of the disconnect—unlocking a near-term policy window for action. To bridge the gap requires a dynamic relationship between science and policy and a fluid and sustained exchange between the production and use of knowledge for specific decisions in specific contexts.[2] This proposal identifies several key entry points for governance change at the science-policy interface, with a focus on the Executive Branch. It is intended to provide an implementation "menu" rather than a prescribed set of recommendations, to allow for flexibility and compromise.

Plan of Action

The proposed plan of action identifies several potential intervention points. These actions, taken together or separately, would improve federal decision-makers' access to science advice, and help the non-federal scientific community more nimbly contribute relevant input to decision-makers.

1) **Enhance the implementation of the Foundations for Evidence-Based Policymaking Act (P.L. 115-435)** to (1) define scientific knowledge as a key subset of "evidence" and (2) develop pathways for non-federal scientists to participate in the development of agency research agendas.
   a) Explanation: The Foundations for Evidence-Based Policymaking Act became law in early 2019, signifying a bipartisan commitment to robust evidence-building in support of decision-making. However, the Act defined "evidence" as constituting predominantly statistical data, thereby limiting the potential gains of a broader engagement with science. The Act also requires federal agencies to develop "learning agendas" which specify the policy questions best answered through research, representing an important opportunity to include non-federal expertise.

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[1] Doemeland, Doerte; Trevino, James. (2014). Which World Bank Reports Are Widely Read? World Bank. Available at http://documents1.worldbank.org/curated/en/387501468322733597/pdf/WPS6851.pdf; Christopher Ingraham (2014). "The solutions to all our problems may be buried in PDFs that nobody reads. Washington Post. https://www.washingtonpost.com/news/wonk/wp/2014/05/08/the-solutions-to-all-our-problems-may-be-buried-in-pdfs-that-nobody-reads/.

[2] Bednarek, A.T.; Wyborn, C.; Cvitanovic, C; et al. (2018). Boundary spanning at the science–policy interface: the practitioners' perspectives. Sustainability Science 13: 1175–1183. DOI: https://doi.org/10.1007/s11625-018-0550-9.

b) <u>Policy Pathway #1:</u> Clarify the role of scientific knowledge, defining it as a type of "evidence" under P.L. 115-435, and integrate this definition across the implementation guidelines authorized by the Act.

c) <u>Policy Pathway #2:</u> Invite, engage, and sustain meaningful non-federal scientific contribution to the development of learning agendas,[3] specifically in identifying policy questions and in coordinating internal and external research plans.

   i) Effectively engaging the academic knowledge community will require a systematic approach supported by mechanisms and incentives (such as funding and recognition) to ensure that non-federal input is valued, rewarded, and utilized.

   ii) The Office of Evaluation Sciences (OES), within the General Services Administration (GSA), could provide additional leadership on the incorporation of external expertise in agency learning agendas. This would be a natural extension of the OES' current role in supporting the implementation of the Evidence Act through the coordination of evaluation resources among federal agencies and housing the Evidence Act Toolkit.[4]

d) <u>Policy Pathway #3:</u> Conduct a thorough review of the interagency <u>Science.gov</u>, which aggregates federal science publications, with the goal of developing an action plan to consolidate science from across agencies to avoid redundancies, identify gaps, and amplify insights.[5] This process could be modeled on the concept of a "National Secure Data Service,"[6] which would have facilitated data access across federal agencies to support evidence-building.

e) <u>Potential Champions:</u> Office of Management and Budget (OMB) Evidence Team, the Bipartisan Policy Center, the National Council for Science and the Environment, and the Data Foundation.

2) **Expand the impact and reach of Federally Funded Research and Development Centers (FFRDCs)**, especially the Science and Technology Policy Institute (STPI).

   a) <u>Explanation:</u> STPI currently provides analysis in support of policy development for the White House Office of Science and Technology Policy (OSTP) and other agencies across the Executive Office of the President (EOP) in response to specific requests. With an expanded role, STPI staff could also operate proactively as a bridge ('boundary spanner') between the academic scientific community and decision-makers. Beyond the STPI, a range of FFRDCs have been in place for more than 50 years. A review of the focus and scope of these centers would offer an opportunity to revitalize existing centers and create new ones.

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[3] Vought, Russell. (2019). Phase 1 Implementation of the Foundations for Evidence-Based Policymaking Act of 2018: Learning Agendas, Personnel, and Planning Guidance (M-19-23). Office of Management and Budget. Available at https://www.whitehouse.gov/wp-content/uploads/2019/07/M-19-23.pdf.

[4] Office of Evaluation Sciences. Evidence Act Toolkits. Available at https://oes.gsa.gov/toolkits/.

[5] "About Science.gov. Available at https://www.science.gov/about.html.

[6] Abraham, Katherine; Haskins, Ron; et al. (2017). The Promise of Evidence-Based Policymaking. Commission on Evidence-Based Policymaking. Available at https://www.cep.gov/report/cep-final-report.pdf.

    b)   <u>Policy Pathway #1:</u> Increase STPI's staff capacity, training, and support to act as a conduit for non-federal science enterprise contributions to decision-makers, including regular convenings between federal and non-federal entities.

    c)   <u>Policy Pathway #2:</u> Conduct a new, comprehensive review of the existing 42 FFRDCs—including their governance structure, budget, sponsoring agencies, management contracts, performance, facilities, etc.—to determine whether the current centers are strategically deployed, individually or in aggregate, to provide the most timely and relevant science and technology input across sectors.

    d)   <u>Policy Pathway #3:</u> Encourage FFRDCs to expand the use of Cooperative Research and Development Agreements (CRADAs). Traditionally used to facilitate technology transfer processes between the Federal Government and private companies or universities, CRADAS could be used more broadly as a mechanism to invite the scientific input of the non-federal community in federal decision-making.

3) **Increase the use of the Intergovernmental Personnel Agreement (IPA)** to bring more talented subject matter experts into key government positions for temporary assignments.

    a)   <u>Explanation:</u> The IPA mechanism, established in 1970, offers an under-utilized tool for bringing talented, non-federal, subject matter experts into key positions of service. While several agencies do use it effectively to engage academic scientists (e.g. National Science Foundation) in rotation positions, other agencies take a more ad-hoc approach, where agencies are in a better position to take personnel from external organizations (e.g. non-profits or think tanks) with accompanying funding, than to proactively create and recruit for positions, with or without funding provided by the loaning institutions.

    b)   <u>Policy Pathway #1:</u> Encourage either the Office of Personnel Management (OPM) or the Government Services Agency (GSA) to systematically optimize the application of the IPA to engage the most talented thinkers to advise policymakers and inform decision-making. This could involve establishing structure for a coordinated OPM mechanism for non-governmental "talent-scouting."

    c)   <u>Policy Pathway #2:</u> Conduct a comprehensive review of the effectiveness of the existing IPA mobility program, modeled off a similar report[7] issued by GAO to Congress in 1989. GAO is working on an update, which should be aimed at relevant OPM and GSA leadership.

    d)   <u>Policy Pathway #3:</u> Elevate the role of the Office of Evaluation Sciences at GSA in IPA mobility program (perhaps moving the function away from OPM), while leveraging the IPA mobility program to advance implementation of the Evidence Act, especially with respect to federal agency learning agendas.

    e)   <u>Policy Pathway #4</u>: Align the current use and original intent of P.L. 91-648, by asking Congress to clarify the primary purpose of the IPA mobility program today—whether it will focus on its statutory intent to improve the personnel capabilities of state and local

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[7] Unger, Bernard. (1989). INTERGOVERNMENTAL PERSONNEL ACT OF 1970: Intergovernmental Purpose No Longer Emphasized. U.S. Government Accountability Office. Available at https://www.gao.gov/products/GGD-89-95

governments or help federal agencies in engaging personnel from colleges and universities, along with think tanks and other non-profits.[8]

   f) <u>Policy Pathway #5</u>: Consider re-instating funding for the Intergovernmental Personnel Act Grant Program. The rescission of the grant program in 1981 reduced the capacity of OPM to oversee and manage the IPA mobility program and might be a pathway for enhanced function.

   g) <u>Potential Champions:</u> Our Public Service.

4) **Reduce administrative barriers for establishing Federal Advisory Committees under FACA.**
   a) <u>Explanation:</u> Federal Advisory Committees (FACs) are among the few formal mechanisms for non-federal scientists to directly advise policymakers and provide input in federal decision-making. However, creating an FAC can be time-intensive and administratively cumbersome.

   b) <u>Policy Pathway #1:</u> Eliminate: (1) the cap on the number of FACs and (2) requirements that agencies consult with the GSA Administrator prior to forming, renewing, or altering a FAC. Many additional recommendations were provided by the Administrative Conference of the United States in 2011[9], and could be considered for implementation.

   c) <u>Policy Pathway #2:</u> Enable alternate paths for external scientific contributions to federal organizations. For example, FACA requirements do not apply if non-federal organizations operate the advisory body in question, or if federal agencies rotate the non-federal personnel that are invited to participate in existing FACs. Effectively enabling alternate paths will require educating stakeholders about the instances in which FACA applies.

   d) <u>Potential Champions:</u> Administrative Conference of the United States.

5) **Revise and enhance the National Science Foundation (NSF)'s Broader Impacts requirement** to empower NSF-funded scientists to produce and disseminate more "decision-ready" research.
   a) <u>Explanation:</u> NSF funds research based on two criteria: (1) intellectual merit and (2) broader impacts. The latter is defined as the potential to benefit society and contribute to the achievement of specific, desired societal outcomes. The America COMPETES Reauthorization Act of 2010 reaffirmed the importance of the broader impacts criteria, encouraging institutions of higher education and nonprofit organizations to take an institutional approach to achieving societal benefits through the prioritization of broader impacts. However, many researchers lack knowledge about how to make the results of their research societally relevant, as well as how to disseminate them in a manner that optimizes their uptake.

   b) <u>Policy Pathway #1:</u> Provide coaching for scientists with the goals of framing research questions that answer societally relevant questions and designing implementation pathways for that research to link to decision-makers.

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[8] Ibid.
[9] Administrative Conference of the United States. (2011). Administrative Conference Recommendation 2011-7 The Federal Advisory Committee Act – Issues and Proposed Reforms. Available at https://www.acus.gov/sites/default/files/documents/Recommendation-2011-7-Federal-Advisory-Committee-Act.pdf

c) <u>Policy Pathway #2:</u> Structure grants so that design and implementation of the Broader Impacts requirement are built into the funds distribution process.

d) <u>Policy Pathway #3:</u> Create a Broader Impacts Liaison Officer within each Directorate to provide advice and coaching on how to produce proposals with societally-relevant potential benefits.

e) <u>Potential Champions:</u> National Alliance of Broader Impacts (NABI), National Council for Science and the Environment, and the Center for Advancing the Societal Impacts of Research (ARIS).

Frequently Asked Questions

Why should process changes in the science-policy interface be prioritized?

Developing effective policies is impossible without being appropriately informed on the problem at hand. As it stands, we have a robust scientific and a robust policymaking enterprise—but the science-policy interface itself, which is critical to harmonizing the outcomes of science and policy, is disproportionately weak. Process changes will enable improved science-policy cohesion, enhancing federal decision-making across all policy and issue area domains over the long term. This is critical to leveraging the full potential of science across the Federal Government, in a manner similar to the widely-supported Evidence Act, which enhances the use of data to inform decision-making. This proposal adopts a strategic approach to strengthening science advice, aiming to refine existing structures by focusing on frequently-overlooked barriers. The proposed changes are inexpensive, high impact, and likely to garner bipartisan support. The pandemic makes the need for widespread structural improvements in the use of science in decision-making more obvious than ever.

Why aren't more people already pushing for these changes?

Public policy questions are usually framed in broad terms, as opposed to how changes should be developed, explored, and implemented. This reduced focus on how policies will be implemented often results in less-than-optimal final outcomes. Further, the community that has expertise in the scholarship and practice of "science policy boundary spanning" is relatively small and niche (though growing), and does not garner much visibility – with the exception of specialized communities (e.g., Science and Technology Studies or Science of Science and Innovation Policy). So far, science-policy interface changes have also predominantly focused on the scientific capacity of Congress (GAO[10], CRS[11], OTA[12]), reducing the policy focus on the executive branch. Voices within the science community (along with comprehensive reports from GAO, CRS, and ACUS[13]), however, clearly stress the need for refining the federal scientific enterprise to better support decision-making.

How do these measures ensure that better access to science leads to stronger policy?

Each recommended policy change targets the particular structural lever (within that component of the executive scientific enterprise) that currently blocks progress, acting on which would bring about stronger federal scientific policymaking. The Evidence Act should apply to science and not just data; STPI needs increased capacity to meet the demands of its work; the IPA could be more widely and strategically utilized to bring in non-federal talent; Federal Advisory

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[10] Government Accountability Office.
[11] Congressional Research Service.
[12] Office of Technology Assessment.
[13] Administrative Conference of the United States.

Committees could improve by alleviating administrative constraints; greater emphasis on the NSF Broader Impacts requirements can lead to the production of more 'decision-ready' science.

Further Reading, Resources and References

Reports from the Congressional Research Service are crucial to understanding the fundamentals of the S&T policymaking enterprise, along with current issues in key federal S&T bodies. This proposal also draws on original documents, such as laws and regulations establishing federal S&T organizations, proposed legislation, relevant executive orders, and four OMB memos. Notable reports include "The Promise of Evidence-Based Policymaking" (#12, by the Commission on Evidence-Based Policymaking in 2017), "Intergovernmental Purpose No Longer Emphasized" (#18, by GAO in 1989), and "Recommendation 2011-7 The Federal Advisory Committee Act – Issues and Proposed Reforms" (#26, by ACUS in 2011).

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