



NATIONAL ACADEMY
OF SCIENCES

2024–2028
STRATEGIC PLAN

This document refreshes the inaugural strategic plan for the National Academy of Sciences that guided institutional priorities from 2020 to 2024. The vision, mission, and goals in this revised plan are largely unchanged from the previous version. Several objectives to achieve those goals have been restated to reflect progress since the first plan was written and to respond to changing circumstances nationally and globally. The proposed actions are largely new, reflecting progress over the last few years.

Vision

A nation and world in which people understand science to be foundational in their lives and recognize National Academy of Sciences leadership in promoting science for the public good.

Mission

The mission of the National Academy of Sciences is to provide leadership in science for the nation and the world by:

- Recognizing and elevating outstanding science
- Fostering the broad understanding of science
- Overseeing the National Research Council (NRC) in producing and promoting the adoption of independent, authoritative, trusted scientific advice for the benefit of society

Values

Excellence, independence, objectivity, rigor, integrity, inclusivity, adherence to facts, and understanding based on evidence.

Goal 1. Proactively address critical national and global issues

Under its federal charter, the National Academy of Sciences oversees the National Research Council (NRC), which provides advice to the nation through its consensus study reports and workshop proceedings, and by hosting many convening activities. The NRC is jointly operated by the NAS, the National Academy of Engineering, and the National Academy of Medicine, but the reputation and resources of the NAS cannot be distinctly separated from the success of the NRC. Therefore, it is a national imperative for the NAS to harness the intellectual, human, organizational, and financial resources necessary to ensure the success of the NRC and to help translate its ideas to actions. The following objectives are designed to achieve this goal.

Objective 1a. Increase the timeliness and impact of scientific advice.

ACTION 1A1.

Build a standing capacity within the NRC to respond to crises in a timely fashion or to rapidly inform urgent decisions.

During the COVID-19 pandemic, the NRC rose to the challenge of providing peer-reviewed, expert advice on time scales of a few weeks or less in response to targeted questions from health authorities. The NRC has experienced a slow decline in requests from the federal government for traditional consensus study reports, which typically take 18 months or more to complete. Conversations with federal leaders confirm that they cannot wait that long for NRC consensus studies. Based on preliminary conversations with sponsors, creating capacity within the NRC to produce briefer reports on a time scale of weeks to a few months is highly likely to be more attractive to policy makers and to be directly responsive to their needs.

ACTION 1A2.

Seek other organizations beyond the sponsor that would be interested in or could benefit from a consensus study report, so as to amplify its implementation and impact.

While few would question the quality of the advice from the NRC on issues that can be informed by science, its impact is determined by whether this advice influences future actions and decisions. The NRC has traditionally delivered the advice to the sponsor, leaving the sponsor to follow through. Often, however, the advice is of interest beyond the sponsor. By identifying other organizations with an interest in seeing evidence-based advice put into action, the NRC can increase the impact of its work.

ACTION 1A3.

Create simple mechanisms to identify potential impacts of report recommendations and monitor success in achieving those impacts.

Evidence of the impact of the NRC's work is largely anecdotal. While stories can be powerful, the NRC could make a stronger case to potential sponsors by more systematically and broadly tracking the impact of its work. Any mechanism must be relatively simple to implement and maintain; for example, by asking study committees to populate a template of potential impacts (e.g., revision of policy, creation of new programs, changing the direction of the conversation on a topic) before they complete their work. It would be relatively easy for staff to determine which impacts are actually achieved after the report is released.

ACTION 1A4.

Mitigate the possibility that unaddressed conflict-of-interest issues will negate the impact of a report.

As the body with responsibility for the corporate governance of the NRC, the NAS Council will implement the recommendations of a 2024 report from the law firm Morgan Lewis on addressing conflict-of-interest concerns involving staff, committee members, reviewers, funders, and others involved with the findings and recommendations of NRC products. The recommendations include consolidating oversight under the NAS Council, updating policies and procedures, and providing training.

Objective 1b. Build communities across disciplinary and cultural boundaries.

ACTION 1B1.

Create bridges between policy and science communities, such as through events targeted to the needs of policy makers.

The Office of Congressional and Government Affairs schedules briefings with policy makers when reports are released, but more direct links between policy makers and scientists can be created. One example is the new Congressional Fellows program implemented by the NRC's Climate Crossroads initiative. This 9-month program engages a bipartisan cohort of congressional staffers with that initiative to better understand the science behind climate change and to connect with the scientists who can help solve problems.

ACTION 1B2.

Create a more expansive database of members' interests, expertise, geographic ties, and other factors to help match them to NAS and NRC activities and opportunities.

Although the brief profiles of NAS members on its website provide information on each member's expertise and current institutional affiliation, the membership database will be expanded to include additional information that would be pertinent to populating committees or for outreach to policy makers (e.g., a passion for mentoring or improving science pedagogy). A congressional representative from Nebraska might be more interested in meeting with a scientist from The University of Texas at Austin if they know that the scientist was born and raised in Nebraska and still has family ties there. Even an interest in sports could be relevant to a study on traumatic brain injury.

ACTION 1B3.

Develop strategies to connect with local and state levels of government by taking advantage of state academies of science and our geographically distributed membership.

On many topics that benefit from scientific evidence, action is increasingly happening at the state and local level, rather than the federal level. The nation would benefit if the NAS could develop mechanisms to connect with state and local policy makers in an efficient and affordable manner. One possibility is to create partnerships with state academies of science, engineering, and/or medicine. It is common for NAS members to also be members of state academies, and they could become bridges between these organizations.

Objective 1c. Promote and enhance the NAS as an international scientific leader.

ACTION 1C1.

More actively engage international members in NAS activities with the help of the International Secretary.

The NAS has a large and distinguished cohort of international members who are currently underutilized in achieving our mission. With the growth of virtual convening, it is now possible to lower the barriers to engaging international members in our advising activities. Most issues addressed by the NRC have been confronted by, are currently affecting, or will affect other nations. Including international members broadens and informs NRC committees' perspectives. Additionally, international members can be instrumental in preserving and enhancing global scientific capacity.

ACTION 1C2.

Prioritize international activities at the NAS for maximum impact given available resources, including an assessment of the impact and evaluation of current and future activities.

This strategic plan for the NAS falls well short of providing sufficient guidance for the NAS's myriad international programs. A relatively small staff is spread exceptionally thin

in attempting to extend the advising, mentoring, capacity building, communications, and other activities from domestic to global programs. The staff might benefit from an assessment of where impact has been greatest and how to prioritize future activities.

Goal 2. Engage the public to increase understanding of and appreciation for science and the scientific method

The NAS cannot expect to convince leaders of the importance of science-based decisions if the public at large does not understand or appreciate the value of science or the process by which scientific conclusions are reached. In a time of increasing misinformation, it is particularly important for the NAS to be proactive about enhancing the public's understanding of science and their trust in scientists, scientific results, and scientific advice.

Objective 2a. Expand new, diverse, and effective channels of communication.

ACTION 2A1.

Sponsor Wikipedia edit-a-thons to update online science content when necessary to reflect the consensus in NRC reports.

Wikipedia's careful curation of experts to crowd-source its information has largely managed to avoid much of the misinformation that appears elsewhere on the web. Because so many members of the public rely on Wikipedia, the NAS could accelerate the dissemination of the scientific consensus by enlisting its members and interested members of the public to participate in edit-a-thons. By identifying which articles on Wikipedia could benefit from information contained in NRC reports and inserting that information, we can advance our mission of fostering the broad understanding of science.

ACTION 2A2.

Expand *Based on Science* as an outlet for disseminating accurate science from NRC products when it is of interest to the public.

Launched originally to provide authoritative answers to common questions for which existing online advice was deeply flawed and not *based on science*, this website grew in popularity during the COVID-19 pandemic. Science writers produce articles based on experts' input, ensuring that they are accessible. Given the growth of misinformation, supporting this outlet should be an important part of the NAS strategy to ensure that the public has access to authoritative science.

ACTION 2A3.

Leverage the LabX portfolio of programming to strengthen connections between our work and audiences who express low to moderate affinity with science, focusing on topics that are the subject of recent NRC work.

LabX has been highly successful in reaching young people who are not scientists but have a high interest in science by using gaming, comedy, and entertaining online programming. These strategies can be modestly adjusted to reach an even larger audience with low to moderate affinity for science.

Objective 2b. Actively confront misinformation on science issues.

ACTION 2B1.

Execute agreements with developers of Large Language Models (LLMs) to include NAS intellectual property and products in Artificial Intelligence (AI)/LLM training data.

The NAS has recently agreed to collaborate with an LLM provider to allow access to the substantial body of authoritative resources on the website of the National Academies Press to train its model. An important aspect of this agreement is that the partner will include the capacity to cite its sources when it provides responses to user questions. This nonexclusive agreement could be expanded to other entities developing LLMs.

ACTION 2B2.

Investigate the use of AI as a scalable mechanism to signal to the public what is trustworthy scientific information.

The growth of misinformation on the web and through social media outpaces any human-centered approach to countering misleading and dangerous information. The NAS is in an excellent position to investigate how AI can be used to alert readers to misinformation and provide links to authoritative results.

Goal 3. Improve the culture and practice of science

While the first two goals relate to how the NAS uses and disseminates science in service to society, the third goal is more inwardly directed to the research community. Scientific evidence as an important and unbiased basis for decision making will not be trusted if the scientific community is not vigilant in encouraging and maintaining the highest standards of quality and integrity. In addition, the NAS is well positioned to contribute to promoting a more broadly based scientific workforce and to catalyze much-needed changes in the professional reward system within the scientific enterprise.

Objective 3a. Support the research enterprise across all scientific disciplines.

ACTION 3A1.

Hold an annual State of the Science event and continuously monitor the health of the research enterprise.

The NAS hosted its inaugural State of the Science report on June 26, 2024. It is important to assess the success of the event, including what adjustments to format and content could make the event more effective. This event could be a key venue for understanding the health of the U.S. science enterprise as judged against historical and international benchmarks.

ACTION 3A2.

Hold high-profile events to celebrate science and scientists.

The NAS has recently hosted several high-profile events in partnership with The Nobel Foundation, TED, and the Office of Science and Technology Policy. These events have celebrated the benefits to the nation and world from science and the scientists who have delivered them. Such events can inspire more talented young people to explore careers in science.

Objective 3b. Promote a more broadly based scientific workforce.

ACTION 3B1.

Reward Sections that elect outstanding candidates with backgrounds or career paths that are non-traditional or uncommon among the NAS membership.

The NAS Council's current approach of rewarding Classes that bring forward the type of candidate described above has been enormously successful in electing a broadly based slate of new members. But rewarding Classes has permitted some Sections within a Class to "freeride" on the success of other Sections. Any Section should be able to find candidates from non-traditional backgrounds, and it would be helpful to develop a reward system that recognizes Sections' success in nominating these candidates.

ACTION 3B2.

Produce and elevate the stories of successful scientists from a broad range of backgrounds and those who have sponsored, mentored, and/or taught them.

The NAS has presented exhibits at the NAS Building that highlight scientists with non-traditional backgrounds who have made significant contributions in their field, but only a small fraction of the public experiences those exhibits. The NAS can investigate how to expand these efforts as well as other outlets for disseminating these stories to inspire others.

Objective 3c. Catalyze the transformation of the professional reward system.

ACTION 3C1.

Promote discussion and consensus on a more complete set of merit indicators for professional advancement that recognize excellence, impact, and public service.

There is growing awareness that current promotion and tenure decisions are far too focused on publications in high-profile journals. Other essential contributions to the research enterprise such as mentoring and promoting scientists from a wide range of backgrounds, communicating with the public, improving the research process, or striving to elevate public trust in science are either not recognized or insufficiently rewarded. This issue should be addressed by the Strategic Council for Research Excellence, Integrity, and Trust, which should produce and disseminate new guidelines.

ACTION 3C2.

Create an expectation of engagement of the membership in the NAS's mission and seek means of assessing the likelihood of such engagement by candidates for election.

Although several hundred NAS members participate as volunteers in editing PNAS, other member engagement in the work of the NAS and the NRC is low. Soon after new members are elected, the NAS president and other officers should communicate an expectation that they will be involved in the NAS's activities and provide background and contact information for the wide variety of programs and committees.

Objective 3d. Set, disseminate, and embody best practices for professional conduct throughout the scientific workforce.

ACTION 3D1.

Building on previous work and research on building trust in science in the face of misinformation, produce instructional materials and videos that provide practical advice on working as a scientist. Topics would include, but not be limited to, principles of ethics and integrity, leading a lab, handling conflicts of interest, communicating with other scientists and the public, building public trust in science, and effective peer reviewing.

Far too many of the aspects that make a scientist successful are not formally taught, but rather are learned by observing or on the fly by doing. Based on the success of the NAS's report *On Being a Scientist*, the NAS should develop a more extensive program to prepare and disseminate instructional materials that would benefit early-career researchers.

ACTION 3D2.

Use NAS journals to promote best standards for integrity, such as through exemplary conflict-of-interest policies, authorship standards, citation standards, and transparency requirements.

NAS publications such as PNAS, *PNAS Nexus*, and *Issues in Science and Technology* are important venues for promulgating improved standards that increase reproducibility, excellence, and trust in science.