THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

U.S. NATIONAL COMMITTEES
AN INTRODUCTORY GUIDE

BOARD ON INTERNATIONAL SCIENTIFIC ORGANIZATIONS

NATIONAL RESEARCH COUNCIL

THE NATIONAL ACADEMIES

National Academy of Sciences
National Academy of Engineering
Institute of Medicine
National Research Council

The National Academy of Sciences is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. Upon the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Ralph J. Cicerone is president of the National Academy of Sciences.

The National Academy of Engineering was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. Charles M. Vest is president of the National Academy of Engineering.

The Institute of Medicine was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, upon its own initiative, to identify issues of medical care, research, and education. Dr. Harvey V. Finberg is president of the Institute of Medicine.

The National Research Council was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both Academies and the Institute of Medicine. Dr. Ralph J. Cicerone and Dr. Charles M. Vest are chair and vice-chair, respectively, of the National Research Council.

INTRODUCTION

U.S. National Committees (USNCs) occupy a critical intermediary space in the national scientific complex. Looking outward, USNCs work with their parent organizations to promote international scientific cooperation, support scientific research and training programs, and disseminate scientific information through publications and international conferences. Looking inward, USNCs maintain ties with professional societies and other organizations to raise the awareness of international science domestically and to ascertain the concerns and needs of these groups for possible action at the international level. Thus, USNCs perform the vital dual function of fostering U.S. participation in international science and fortifying communication linkages between the US and international scientific communities.

The aim of this guide is to provide a broad overview of the workings of USNCs and the larger organizational context in which they operate. More specifically, the aim of this guide is to highlight elements common to all USNCs. USNCs are diverse, each having its own particular history, its own unique array of organizational interactions, and its own internal mode of operation. To detail all of these differences would defeat the general purpose of this guide of offering an integrated vision of the USNC system. Thus, it is with this spirit that this guide has been prepared.

WHAT ARE USNCS?

U.S. National Committees (USNCs) are groups of scientists and engineers brought together to represent the United States in one of the various organizations that comprise the International Council for Science (ICSU). ICSU (the acronym retained from the organization's former name—the International Council of Scientific Unions) is a non-governmental organization created in 1931 to promote international scientific activity in the different branches of science and their practical applications. The ICSU family is comprised of five primary types of organizations:

- *National scientific members* are science academies or research councils that are both national and multidisciplinary. National scientific members play an important role in scientific development at the national level. As of this writing, ICSU has 113 national scientific members. Of these, 93 are full members, 10 are national scientific associates, and 10 are national scientific observers. Associates are potentially qualified, but not yet ready for full membership; observers are members that have failed to fulfill their financial obligations.

- *Scientific union members* are international organizations that promote cooperation in a particular area of science through such activities as the organization of congresses and scientific meetings, publications, standardization, and nomenclature. Currently, there are 29 scientific union members.

- *Scientific associates* are organizations associated with ICSU whose association is likely to be of mutual benefit and will facilitate the attainment of ICSU's objectives. There are currently 19 associates, falling into one of two categories: *International scientific associates* are international organizations whose scientific activities do not fall primarily within the scope of a single scientific union member. *Regional scientific associates* are regional organizations to which scientists or scientific bodies from more than one country adhere.

- *Interdisciplinary bodies and Joint initiatives* are mechanisms either initiated by ICSU members or formed jointly with other organizations to address interdisciplinary research or programs of a global nature. Current ICSU interdisciplinary bodies address such topics as scientific and technical data, space research, and polar research. ICSU's current joint initiatives include research programs related to such topics as global environmental change and monitoring systems. These involve the cooperation of such organizations as the World Meteorological Organization, the International Social Science Council, and the United Nations Educational, Scientific and Cultural Organization.

The table on the next page lists all ICSU organizations for which there is a USNC managed by the Board on International Scientific Organizations (BISO), the unit responsible for the majority of the USNCs housed at the National Academies. In all, BISO manages USNCs for 17 scientific unions, 2 affiliated commissions of scientific unions, 2 scientific associates and 2 interdisciplinary bodies.

BISO does not manage U.S. participation in all ICSU organizations. In some cases, U.S. participation is managed by other units at the National Academies. For example, the Institute of Medicine's Food and Nutrition Board administers U.S. involvement in the International Union of Nutritional Sciences. In other cases, U.S. participation is managed by bodies completely external to the National Academies. The American Society for Pharmacology and Experimental Therapeutics, for example, directs U.S. participation in the International Union of Pharmacology.

ICSU ORGANIZATIONS FOR WHICH THERE IS A U.S. NATIONAL COMMITTEE MANAGED BY BISO*

Type of Organization

Scientific Union

International Astronomical Union (IAU)
International Union of Biochemistry and Molecular Biology (IUBMB)
International Union of Biological Sciences (IUBS)
International Union of Pure and Applied Biophysics (IUPAB)
International Union of Pure and Applied Chemistry (IUPAC)
International Union of Crystallography (IUCr)
International Union of Geodesy and Geophysics (IUGG)
International Union of Geological Sciences (IUGS)
International Mathematical Union (IMU)
International Union of Theoretical and Applied Mechanics (IUTAM)
International Union of Microbiological Societies (IUMS)
International Union of Pure and Applied Physics (IUPAP)
International Union of Physiological Sciences (IUPS)
International Union of Psychological Science (IUPsyS)
International Union for Quaternary Research (INQUA)
International Union of Radio Science (URSI)
International Union of Soil Science (IUSS)

Affiliated Commission

International Commission on Mathematical Instruction (ICMI) (affiliate of IMU)
International Commission on Optics (ICO) (affiliate of IUPAP)

Scientific Associates

International Institute for Applied Systems Analysis (IIASA)
Pacific Science Association (PSA)

Interdisciplinary Bodies and Joint Initiatives

Committee on Data for Science and Technology (CODATA)
DIVERSITAS

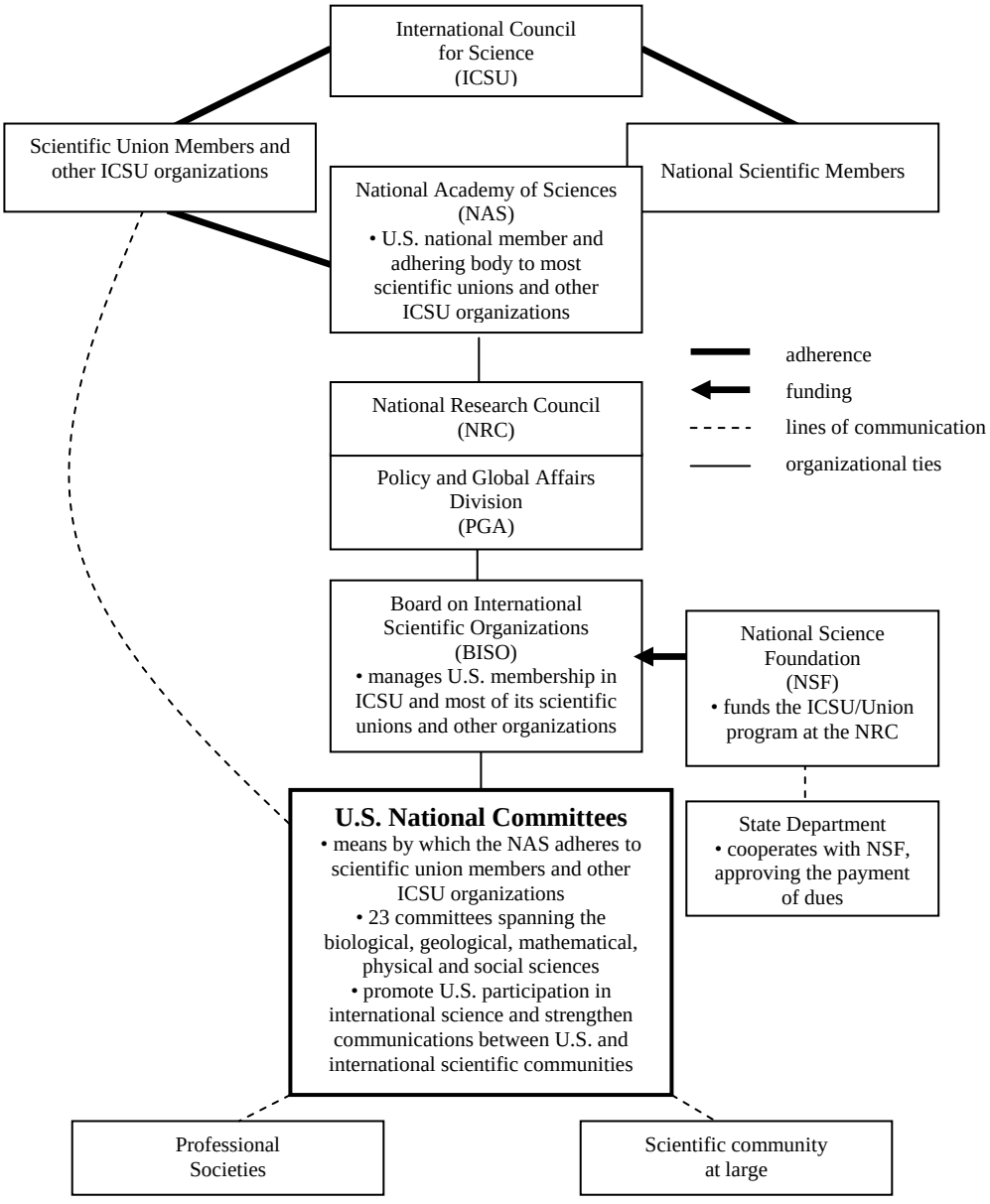
* As of April 2008

The previous table lists all of the USNCs managed by BISO. The figure on the next page provides an overview of the organizational environment in which these USNCs reside. Though BISO manages the day-to-day operations of USNCs, the National Academy of Sciences (NAS) is the "adhering body" to the ICSU organizations in which these committees participate. In other words, the NAS is the legal entity to which the rights and responsibilities of membership in these organizations are bestowed; USNCs are the vehicles through which the NAS exercises these memberships. Management of these USNCs, to reiterate, is the responsibility of BISO, which resides within the Policy and Global Affairs Division of the National Research Council (NRC)—the chief operating arm of the NAS.

At the foundation of the USNC organizational structure are professional societies and the scientific community at large. It is these groups of scientists that USNCs seek to involve in their activities and the activities of the ICSU organizations in which they participate. In the section below entitled "WHAT DO USNCS DO?" several examples are provided of the types of activities that USNCs carry out in conjunction with these groups of scientists as well as activities designed to enhance communications between these scientists and their international colleagues. Suffice it to say here that the work of USNCs would be impossible without the active and ongoing participation of professional scientific societies and the thousands of individual scientists who comprise the broader scientific community.

The National Science Foundation (NSF) and, to a lesser extent, the State Department, occupy another important space within the USNC organizational environment. Most significantly, the NSF provides the majority of the funding that enables BISO to fulfill its mission of managing the various USNCs for which it is responsible. This funding is provided by the NSF's Division of International Programs and the various disciplinary directorates at NSF, including Biological Sciences; Geosciences; Mathematical and Physical Sciences; Engineering; Education and Human Resources; and Social, Behavioral, and Economic Sciences. And, because some of the funding that NSF provides goes toward the payment of dues to international organizations, the State Department must approve these dues prior to their payment. Other federal agencies and some private entities also provide funding to some USNCs.

U.S. NATIONAL COMMITTEES AND THEIR ORGANIZATIONAL ENVIRONMENT



WHO SERVES ON USNCS?

USNCs are composed of scientists and engineers drawn from academia, government, and industry. While there is no typical profile of a USNC member, they are generally accomplished individuals in their respective fields of study with experience and interest in international scientific issues. And, while there is no typical path to USNC membership, individuals are commonly nominated for service by relevant professional societies with whom USNCs have formal (or informal) relationships, various disciplinary units within the NRC, NAS members who serve as section liaisons to the NRC, and current and past USNC members. Additionally, U.S. scientists and engineers who serve as officers of ICSU organizations typically serve as *ex officio* members. All nominations for service on a USNC, however, are subject to the review and final approval of the Chair of the NRC. While all USNC members serve voluntarily and without compensation, they are entitled to reimbursement for travel and other incidental expenses arising out of the performance of approved committee activities.

WHAT DO USNCS DO?

USNCs perform the dual function of fostering U.S. participation in international science and fortifying communication linkages between the United States and international scientific communities. With the guidance of BISO, USNCs accomplish these tasks in a number of ways:

- *By assuring that membership privileges and obligations to their parent organizations are fulfilled and that the U.S. scientific community is appropriately and fully represented at international scientific congresses*. This not only means sending official delegations to international scientific congresses, but also working to find ways of increasing U.S. attendance at these congresses. For example, several USNCs administer travel fellowship programs designed to help young scientists and scientists from underrepresented backgrounds defray the costs of attending these congresses. These programs are typically carried out in cooperation with professional societies that work with USNCs to identify and secure external funding and to advertise the existence of such programs. These programs not only help bolster U.S. attendance at international scientific congresses, but also introduce young scientists to international networks of scientists, thus laying the foundations for future international scientific cooperation.

- *By serving as neutral fora where representatives of U.S. professional societies, government agencies, and other important actors can meet to discuss trends in their disciplines*. As part of their charge to promote communication between scientists, both domestic and international, USNCs seek out opportunities to address recent developments in their fields and to weigh their implications. For example, several USNCs devote a portion of their annual or biannual meetings to discussions of recent developments in their fields and what role the USNC might play in shaping such developments. Alternatively, some USNCs seeking to reach broader audiences have organized workshops or sessions at professional society meetings as the arenas for these discussions, thereby increasing the visibility of USNCs to the broader scientific community.

- *By working with other USNCs to foster interdisciplinary projects.* Increasingly, the scientific enterprise is becoming interdisciplinary. To address this fact, USNCs are currently developing projects that seek to bridge disciplinary boundaries by involving scientists from multiple USNCs. For example, several USNCs have worked together to promote DIVERSITAS, an international program of biodiversity research co-sponsored by ICSU. International programs such as DIVERSITAS that necessitate input from a range of disciplinary perspectives if they are to be successful are obvious candidates for inter-USNC collaboration.

- *By serving as conduits of communication between the ICSU family and professional societies and between ICSU and individual scientists*. In addition to promoting communication among scientists with regard to recent developments in their fields, USNCs also work to disseminate information about ICSU activities to professional societies and individual scientists. USNCs typically disseminate information about ICSU activities at committee meetings and through committee Websites. However, USNCs also serve as vehicles for the communication of professional society concerns and those of individual scientists to their parent ICSU organizations. If the ICSU family is to remain vital, USNCs must work to ensure that communication flows travel in both directions.

- *By serving as incubators of ideas that are then brought to the attention of professional societies, NRC disciplinary units, and others*. Given the wealth of talent and expertise represented on individual USNCs, they are natural breeding grounds for ideas that merit the attention of other actors. For example, USNCs have provided the impetus for NRC consensus-style studies that have then been carried out by committees appointed separately by the NRC chair. This example highlights an important difference between USNCs and NRC study committees—USNCs can not carry out NRC

consensus-style studies because their members do not undergo the bias and conflict-of-interest process that members of study committees undergo. This does not mean, however, that USNCs are precluded from working with NRC disciplinary units on developing ideas that might eventually evolve into consensus-style studies.

This list of USNC activities is by no means exhaustive. It is merely representative of those activities that have been undertaken by USNCs. BISO and the network of USNCs that it manages are constantly seeking to identify other opportunities that promote international scientific cooperation and ensure that the United States remains an active participant in the international scientific community.

WHERE CAN I FIND MORE INFORMATION?

This introductory guide to USNCs provides only basic information about USNCs and the larger organizational setting in which they reside. Those wishing to find out more about current BISO activities and the activities of the USNCs managed by BISO should consult the BISO homepage at <http://nationalacademies.org/biso>. Those in search of more information on ICSU and its constituent organizations should consult the ICSU homepage at <http://www.icsu.org>.

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