

New IUGS Working Group Addresses Public Affairs

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Abstract: The geosciences have much to contribute to the development of sound public policy over a broad range of issues. Although international collaboration has become standard practice among geoscientists, public policy activities remain largely within national borders. The International Union of Geological Sciences has established a Working Group on Public Affairs to encourage broader participation in public policy activities among its member organizations. A survey of those organizations has shown the extent to which geoscientists in many different countries face the same critical policy issues. The Working Group seeks to share successful practices and position statements that have been developed by one country or geoscience organization so that they can be applied elsewhere.

Geologic processes do not recognize political boundaries. Faults cross national borders, groundwater flows in aquifers far below state lines, and the processes that take place in one nation — volcanism, desertification, or contaminant transport — are likely to have major consequences for other nations. Those consequences are not just limited to neighboring states. Dust clouds from desert regions in Africa and Asia travel thousands of miles and produce noticeable accumulations in North and South America (Prospero, 2001). Because of trade globalization, natural disasters that disrupt manufacturing in one country can result in supply (and stock price) disruption halfway around the world (Cohn et al., 2001). Volcanic ash clouds that reach the stratosphere can impact global climate, and even small ash clouds can interfere with long-range air transport of passengers and cargo. For example, highly active volcanoes in Alaska's Aleutian Islands produce ash clouds directly in the path of polar air routes from Europe to the Far East (Cohn et al., 2001).

As geoscientists, we are increasingly aware of these connections because electronic communication networks and the ease of global travel have greatly expanded international collaboration in the academic, private, and public sectors. International research projects have become the norm at universities, and efforts are being made to ensure that newly heightened security measures do not interrupt the flow of students. The large energy and mineral resource companies have all but lost their national identities, so extensive are their overseas operations. Entities like the Intergovernmental Panel on Climate Change create a governmental structure for collaboration by large numbers of scientists from many lands.

Our geoscientific societies reflect these trends. In the United States, many societies with the word American in their title now have memberships that are a third to half international. And this trend toward increasingly international memberships is by no means limited to the US. Organizations like the International Union of Geological Sciences (IUGS) and the other scientific unions play a central role in fostering greater

international collaboration. For that reason, IUGS is seeking to address a missing component in this trend: the formulation of public policies that are informed by geoscience knowledge and that in turn shape the conduct of our science.

The public policy issues relevant to the geosciences are also global in applicability if not always in scope. Shared issues include developing resources, protecting the environment, mitigating losses from natural hazards, land-use planning, and the need for adequate research funding and geoscience education. Yet when geoscience societies engage in public policy activities, the political boundaries necessarily reassert themselves. As a result, societies based in the US have focused their policy efforts on that country's government, and the same is true in other nations. Given the increasingly international composition of society memberships and the shared challenges we face, that focus needs to expand. IUGS is seeking to foster that goal through the establishment of a Working Group on Public Affairs. This effort complements existing IUGS programs that have enhanced the geoscience role in policymaking, such as its Geoindicators Initiative (<http://www.lgt.lt/geoin/>), which provides valuable tools for the assessment of environmental change for effective land and resource management policymaking.

Surveying the Geoscience Policy Landscape

One of the biggest hurdles to expanding international exchanges between geoscientists regarding public policy activities is simply a lack of shared knowledge about the ways that science and policy interact outside of one's own country or of which issues require the most attention. In 2000, the American Geological Institute's Government Affairs Program conducted a survey for IUGS to ascertain which policy issues were of greatest importance to the union's national members and affiliated organizations. The survey sought to take stock of what activities are currently underway to provide geoscience input into public policy decisions at national and regional scales. The survey requested information on whether organizations have issued position statements, contact information, names and titles of geoscientists in major policy positions in the government, key geoscience policy issues facing their country, and major international geoscience policy issues.

Nearly half of the twenty-three surveys that were returned came from European nations. Four responses came from Africa, two from Asia, three from former Soviet Union republics, and four from organizations that were not country-specific. Missing from the geographic distribution were any surveys from the Americas or Oceania. Box 1 shows a list of the responding organizations. The survey itself can be found in Box 2. IUGS national members or affiliated organizations that did not respond to the original survey are encouraged to submit their responses to the working group. The following summary, intended to reflect common themes, is culled from the survey report (Applegate et al., 2000), which can be found on the Working Group's web site (<http://www.agiweb.org/gap/iugs>).

Europe

Of the ten surveys returned from Europe, nearly all the organizations that responded are involved in some manner with public policy, either through outreach activities or as a sector of the government. Several European states have departments within the government to advise policy makers on the geoscience aspects of policy issues.

The European nations share many of the same major national geoscience policy issues. A common theme was the need to educate students and society as a whole about the many roles that the geosciences can play in issues facing society, such as natural hazards, climate change, and sustainable development. Several groups have prepared reports or opinions on the position of the geosciences in education within their respective nations. Land-use planning and the environmental impacts of land use, especially with respect to water resources, is a major topic that many European nations are facing. Other key national issues include geotourism and geological conservation, subsurface management, and hazardous waste material disposal. Key international issues include climate change, water resources, natural hazards, establishing the geosciences as central to the political process, the effects of large dams on the environment, waste disposal, pollution of marine environments, sustainable development, resource exploration and exploitation, and the development of international standards.

Few of the European organizations have released position statements, due primarily to the fact that many of the respondents are government agencies. An exception to this observation is the British Geological Survey, which released a statement on nuclear waste disposal in conjunction with the Geological Society of London. The latter's activities with the British Parliament are discussed in the section on best practices below.

Europe is in a unique position because the national governments share sovereignty with the European Union. Several respondents to the survey made reference to the European Federation of Geologists (EFG), an organization with representation from twenty countries that represents the interest of geologists before the European Union. The EFG lists its objectives as "to safeguard and promote the present and future interests of the geological profession in Europe" including such issues as portability of licensure and a code of ethics; and "to promote a European geological policy with regard to the responsible use of the Earth's natural hazards." (EFG, 2002)

Africa

Responses from African nations focused on resource and environmental issues related to extraction of natural resources. The national-scale issues include natural hazards, impacts of quarrying and mine wastes on the environment, the effects of exposure to dust during mining operations, the placement of industries in geologically unstable areas, and groundwater management. Key issues seen as facing the international geoscience community included development of advanced technologies, environmental issues related to exploitation and use of natural resources for poverty eradication in developing

nations, infrastructure development and natural resource management, natural hazards, and geoscience education and research in developing nations.

In Botswana, the Geological Survey is involved in developing legislation related to mines, mineral resources, environmental protection, and water resources. In Zambia, geoscientists serve as the Director of Mines and the Director of Mines Safety. In Tanzania, many of the geoscientists involved in the government, national institutions, and companies are members of the Tanzania Geological Society, which does submit prepared resolutions to the government. The Moroccan Geological Survey reported extensive geoscience policy activities related to infrastructure, geologic hazards, mining and petroleum exploration, industrial minerals and building materials development, environmental protection, and water research. Among the reported activities was the development of a ten-year National Plan for Geological Cartography by the Moroccan Ministry of Energy and Mines, of which the survey is a part. They are also seeking to implement a Mining and Geological Information System that requires substantial financial support and international cooperation.

Former Soviet Union

Responses from former Soviet republics reported that sustainable usage of natural resources and geoscience education are major national issues. In Georgia, issues include water resources law, geothermal energy, coastal zone impacts of oil pipelines, rational exploitation of natural resources, atmospheric contamination, and soil resources. In Azerbaijan, the greatest concern is for the preservation of the environment while exploring and using that nation's natural resources, in particular persuading the oil and gas industries to use advanced technologies to exploit these resources. Estonia reported active efforts to defeat the teaching of creationism in the schools. These nations see environmental problems, the need for a general theory of the Earth's history, natural hazards, and the need for a greater sense in the general public that the geosciences are connected with the quality of life as key international issues.

Asia

The two Asian responses, from Indonesia and Taiwan, provided limited information. The Taiwan response did report on the Geological Society's activities that initiated the legislature's consideration of a "Law of Geology."

International/Regional Associations

Four of the responding organizations have either a regional or global scope. The key international issues reported by these groups are geoscience education, resource management especially in developing nations, nuclear waste storage disposal and remediation, and coastal erosion and flooding. The International Association of Sedimentologists released a Position Paper at its 1997 meeting that was intended for an international audience on Environmental Sedimentology in the Coastal Zone.

Establishing a Working Group on Public Affairs

In addition to collecting information on public policy issues and activities, the survey solicited interest in establishing a working group within IUGS focused on public affairs. Fifteen of the responses proposed individuals to participate in such a group, which was officially established as the Working Group on Public Affairs by the IUGS Executive Committee during its meeting at Hyderabad, India in March 2001 with the stipulation that the members of the working group should represent a suitable geographic distribution (IUGS, 2001). A preliminary list of members is contained in Box 3, and organizations are encouraged to propose additional members in order to establish the working group as an effective network.

The goal of the working group is to share information on geoscience-related public policy activities around the globe, taking advantage of common challenges faced by geoscientists in many different countries to influence public policy outcomes. Two activities that readily present themselves are highlighting "success stories" -- practices that have worked in one country and can be adopted in other countries -- and sharing position statements that are applicable to other countries or for the union as a whole. The following sections present examples of science policy success stories, including several examples where science policy activities have been transplanted successfully in other countries.

Finding What Works

In Canada, geoscientists played a leading role when science and engineering societies formed the Partnership Group for Science and Engineering in 1995 to support Canadian science and technology programs and improve the use of science in governmental decision-making. The group holds monthly "Bacon and Eggheads" breakfasts in Ottawa for legislators and the press to hear from scientists about research related to important policy issues like climate change. The group also hosts presentations by senior science managers from other countries and corporations who talk to Canadian government leaders about "best practices" that could be adopted in Canada (Franklin, 1999).

The Geological Society of London administers an All-Party Earth Science Group within the British Parliament. Comprised of Members of Parliament, this entity provides legislators with direct access to earth science expertise. The group's chairman, Allan Rogers, has stated: "I hope that this is the first step in a long road toward mutual understanding between politicians and earth scientists." (GSL, 2000) In the group's first meeting, members were briefed on the impact of natural hazards. In addition, the Geological Society provides policy guidance to Parliament and other governmental bodies by responding to requests for consultation. The society's web site lists 33 such responses between 1997 and 2001 (<http://www.geolsoc.org.uk/template.cfm?name=Responses>).

Several US-based IUGS Affiliated Organizations are quite active in the public policy arena. Their success is directly linked to their ability to engage individual geoscientists to

communicate with the U.S. Congress. The principal mechanism for engaging individual members is through electronic mail alerts and updates. The American Geological Institute uses e-mail to engage the leadership of its 40 member societies on geoscience policy developments in the Congress and Executive Branch. Societies like the American Geophysical Union (AGU) and Geological Society of America (GSA) maintain listserves to contact members around the country or in a particular state or congressional district when an issue arises that affects them. The American Association of Petroleum Geologists (AAPG) maintains an Instant Response Committee to contact policymakers and visit legislators. As a result of these activities, congressional committees have asked several geoscience organizations -- including AAPG, AGU, and the Society of Economic Geologists -- to provide testimony at hearings.

Translating Successes

Some science policy success stories in the United States have already been applied in other countries. For over a quarter century, scientific and engineering societies in the United States have provided stipends for scientists and engineers to spend a year working for the U.S. Congress as technical advisors. Organized by the American Association for the Advancement of Science, this Congressional Science Fellowship program provides a mechanism to provide direct scientific input in the policymaking process. These fellows do not represent the direct interests of their sponsoring society: they are advisors, not advocates. Former fellows now hold high-ranking positions in federal and state government, and one has been elected to Congress. Of the 40 fellows each year, at least four are geoscientists, sponsored by AGI, AGU, GSA, and the Soil Science Society of America. In 2001, Switzerland launched a program modeled after the AAAS fellowships. Administered by the Council of Swiss Scientific Academies, the fellowships offer "two qualified researchers the chance of working in the Swiss Parliament for the period of one year. The program offers a unique learning experience for the scientists, gives expert advice to the parliament and connects the scientific world with the law making process." (Embassy of Switzerland, 2001) Other countries have expressed an interest in adopting this model as well.

For the past seven years, scientific and engineering societies in the United States have held an annual Science-Engineering-Technology Congressional Visits Day (CVD) event that brings several hundred scientists and engineers to Washington for briefings and visits with their representatives and senators. Two years ago, the Federation of Australian Scientific and Technological Societies adapted the CVD concept to create Science Meets Parliament Day. They even were able to make use of the CVD logo, replacing the distinctive dome of the U.S. Capitol with the Australian parliament building in Canberra. At their first event in August 2001, nearly 200 scientists met with Members of Parliament, including cabinet ministers (FASTS, 2001).

Sharing A United Front

While one role for the Working Group on Public Affairs is to disseminate effective models of geoscience involvement in public policy like the ones above, another role is to

facilitate sharing of position statements among IUGS member nations and affiliated organizations. This role may also include the development of position statements for the union itself.

A number of IUGS Affiliated Organizations have developed position statements as a means of articulating a collective viewpoint on important geoscience-related public policy issues. Because they show a united front, such statements can provide valuable guidance to policymakers. Perhaps most importantly, such statements provide the society's individual members with tools to interact with legislators and their staff.

Although position statements often are developed specifically for the country in which the society is based, the IUGS survey results suggest that many of the critical issues facing the geoscience community are the same. Issues such as natural hazard mitigation, earth science education, and government investment in geoscience research are not specific to one country or region. Several geoscience societies, AGI included, have position statements on the teaching of evolution, opposition to which is by no means limited to the United States. Active opposition movements can be found in Australia, Estonia, South Korea, Turkey, and many other countries.

The Working Group will gather appropriate position statements on a single web site and encourage IUGS entities to consider using the site as a resource in developing their own statements. It has also been suggested that the Working Group should gather together declarations and statements that have been issued from geoscience workshops and conferences in the past. Such a list could also include international declarations that, while not prepared by geoscientists, have a significant geoscience component.

One upcoming challenge for the working group is to spearhead IUGS's involvement in developing position statements for the International Council of Scientific Unions. IUGS has been given the lead in developing statements on climate change and evolution. In the latter case, the International Union of Biological Sciences has already agreed to play an active role as well.

The Challenge Ahead

At present, the IUGS Working Group on Public Affairs remains a nascent undertaking, but there are several activities planned for this coming year that will start to turn a good idea into a useful reality. The working group's web site will be used to share science policy success stories and position statements developed by one country or organization but applicable to others. An effort will be made to engage additional organizations and tap into the broader geoscience community's resources.

All geoscientists can gain from sharing information and experiences across political boundaries. There is no universal formula for convincing governments to invest in the earth sciences and to fully inform decisions with the best available geoscience information. The most common shared experience so far is frustration with the degree to which each nation falls short of achieving those goals.

By sharing the keys we have available to us, we can try as many as possible until we find one that fits. In doing so, we can do our part to erase some of the boundaries that separate us -- in favor of the planetary destiny we share.

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Biography

Applegate chairs the IUGS Working Group on Public Affairs. He is Director of Government Affairs at the American Geological Institute and the Editor of *Geotimes*

magazine. He also teaches in the Environmental Science and Policy program at Johns Hopkins University. Applegate was the American Geophysical Union's 1994-1995 Congressional Science Fellow during which he time he worked on the staff of the U.S. Senate Committee on Energy and Natural Resources. Before embarking on a science policy career, he received a Ph.D. in geology from the Massachusetts Institute of Technology in 1994.

Box 1. IUGS Survey of International Public Policy Activities

If your organization is not listed in Box 2, please consider submitting the following information so that the IUGS Working Group on Public Affairs will have a more comprehensive picture of the challenges we face.

Affiliated Organization/National Committee Name:

Contact Person for Public Policy:

Contact Information (please include e-mail address if possible):

Do geologic organizations in your country engage in public policy activities (e.g. position statements, advocacy with legislature, public outreach, letters from organization to political leaders)? Which organizations and which activities?

Have geologic organizations in your country issued position statements? If so, on what issues (please attach copies of the statements if possible)?

Please list the names and titles of geoscientists in your country holding major policy positions in the government.

What are the major geoscience policy issues facing your country?

What do you see are the major international geoscience policy issues?

Do you wish to nominate a representative to the IUGS Working Group on Public Affairs (please include contact information including e-mail address if possible)?

Thank you for taking the time to fill out this survey. Please send by mail, fax, or e-mail to:

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Box 2. Respondents to IUGS Survey on Public Policy Activities

Azerbaijan National Committee of Geologists
British Geological Survey
Geological Survey of Ireland
Institute of Geologists of Ireland
Earth and Climate Council, Royal Netherlands Academy of Arts and Sciences
National Geological Commission, Spain
Estonian National Committee for Geology
Geological Survey of Northern Ireland
Finnish National Committee for Geology
Geological Research Institute, Albania
Geological Society of Africa
Geological Society of Taiwan
Geological Society of Zambia
Geological Survey Department, Cyprus
Geological Survey of Botswana
Georgian Branches of IAH, IAEG and IGA2
Indonesian Association of Geologists
International Association of Engineering Geology Commission on Aggregates, Sweden
International Association of Sedimentologists
International Society of Soil Mechanics and Geotechnical Engineering
Moroccan Geological Survey
Swiss IUGS Committee
Tanzania Geological Society

Box 3. IUGS Working Group on Public Affairs

David Applegate, Chair
American Geological Institute

G. Buachidze
Georgian Branches of IAH, IAEG and IGA2

Maria Charalambous
Cyprus Geological Survey

Hilary Heason
British Geological Survey

Ralph Horne
Geological Survey of Ireland

Arif J. Ismail-Zadeh

Azerbaijan National Committee of Geologists (AzNCG)

Sospeter Muhongo
Geological Society of Africa

G.Mwakalukwa
Tanzania Geological Society

Imasiku A. Nyambe
Geological Society of Zambia

Lars Persson
IAEG Commission nr 17 on Aggregates, Sweden

Rein Raudsep
Estonian National Committee for Geology

Mohamed Saaidi
Moroccan Geological Survey

Afat Serjani
Albania Geological Research Institute

Untung Sudarsono
Indonesian Association of Geologists

Kalle Taipale
Finnish National Committee for Geology

R N Taylor, Secretary General
International Society for Soil Mechanics and Geotechnical Engineering

H. Weissert
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