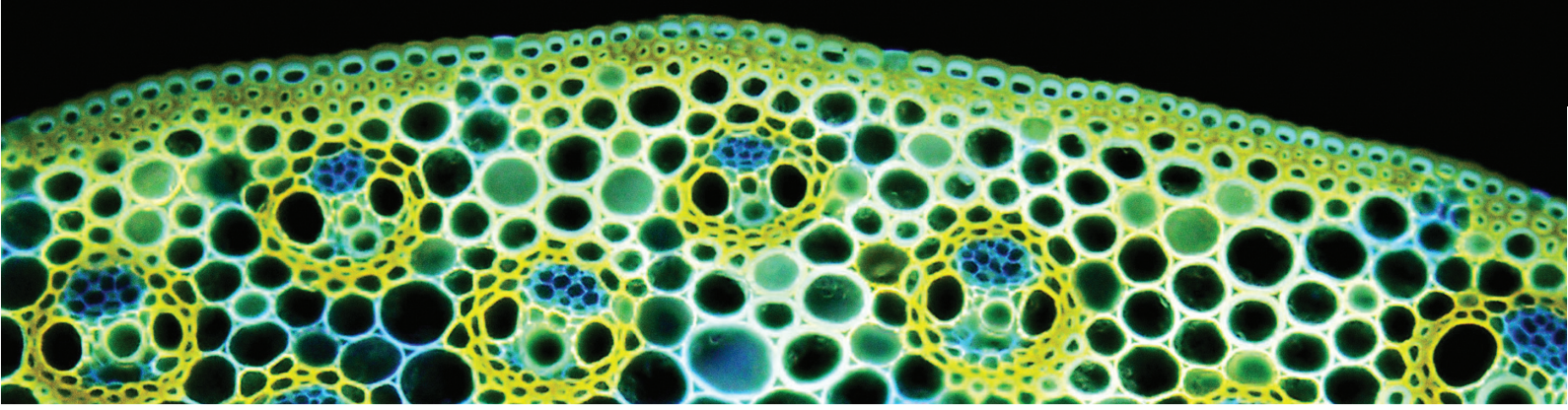
International Science Council

The global voice for science

World Science Forum 2019



The ISC continues to be honoured to partner with the Hungarian Academy of Sciences for the Wold Science Forum along with UNESCO, the American Association for the Advancement of Science (AAAS), the InterAcademy Partnership (IAP) and The World Academy of Sciences (TWAS), European Academies' Science Advisory Council (EASAC).

Since we last saw you, the International Council for Science (ICSU) and the International Social Science Council (ISSC) have merged to form the International Science Council. The ISC now has a unique global membership that brings together 40 international scientific Unions and Associations, and over 140 national and regional scientific organizations including Academies and Research Councils.

The ISC's vision is of science as a global public good. Its mission is to be the global voice for science; a trusted voice that speaks for the value of all science by:

- promoting international research and scholarship on key global challenges
- increasing evidence-informed understanding and decision making at all levels of public policy, discourse and action
- promoting the continued and equal advancement of scientific rigour, creativity and relevance in all parts of the world
- protecting scientific freedom and advocating principles for the responsible practice of science.

The ISC vision and mission are bold and vitally important in a world of growing complexity and pressing global challenges. The demand and the potential for science to provide actionable, solutions-orientated knowledge which can inform transformative political and wider societal responses to those challenges have never been greater.

Success in realizing this opportunity will depend on increased collaboration within and beyond the international scientific community, on the integration of relevant knowledge across national and disciplinary boundaries, and on open engagement between scientists, decision-makers, policy shapers, business leaders, local communities and the media.

In this special newsletter for the World Science Forum, we explore science in the contemporary global context and how the ISC is advocating for recognition of freedom and responsibility of science in today's world. We also invite you get to know our 2019-2021 Action Plan: *Advancing Science as a Global Public Good*, which looks into further detail the themes in this newsletter.

See the ISC at the World Science Forum:
www.council.science/WSF

See our Action Plan:
www.council.science/ActionPlan

The contemporary global context for science

How science can be a transformative power for peace and development during times of complexity and rapid change.

Photo by Alina Grubnyak on Unsplash

In this essay that explores the ISC's vision of science as a global public good – a vision that is vitally important in a world of global complexity and pressing global challenges – we ask ourselves: what are the major opportunities and challenges facing global society, and what are the emerging areas of science that can benefit from international cooperation?

By Geoffrey Boulton, ISC Governing Board Member.

Today, more people are involved in scientific research and its application than ever before, and we increasingly depend on scientific knowledge to understand a wide spectrum of contemporary affairs. On the planetary scale, this means understanding how humanity has become a defining geological force, shaping many of the natural processes that have created and sustained the Earth's biosphere, atmosphere and hydrosphere, and which form the bedrock of the human economy and life support system. At the level of individuals and societies, we urgently need scientific research on how to shift our unsustainable lifestyles, consumption and production patterns onto a more sustainable pathway. These challenges are most prominently reflected in the UN's 2030 Agenda and its set of 17 Sustainable Development Goals. Meeting the goals will require far more global cooperation and deep social change. Such imperatives for global society demand that scientists assist in the development and promotion of policies and public action that can create transformation.

These issues arise within a shifting geopolitical frame, where the rules-based international system developed over the past 70 years is under pressure, and international configurations of power and influence are changing. Several decades of globalization have integrated national economies within a global market and increased the mobility of capital and labour, a process that now appears to have stalled in a setting of resurgent nationalism. There has been a global shift of resource and influence from public to private sectors, with a related loss of public capacity to implement major policy shifts in both the national and the international arenas. This is reflected in the increasing proportion of research and development that now occurs in the private sector, raising the question of whether scientists in the private sector should be subject to the same norms of openness, scrutiny and responsibility as those in the public sector.

At the same time, a technological revolution of historic proportions is disrupting existing patterns of behaviour, organization and production, with profound economic and social implications. The vast new data streams created by the digital revolution have provided

new resources for discovery, and brought the approaches of artificial intelligence into their own. Modern digital devices have an unprecedented capacity to characterize complexity and find optimal solutions for complex problems that are relevant to all the sciences, and to all national science systems. Yet we must avoid such advances creating a digital divide, by ensuring that all countries and science systems are able to share in the benefits of digital transformation.

In a world of complexity, the methods of science have proven to be the most effective means of creating reliable knowledge. Science has the power to transform understanding. And science itself is undergoing a transformation.

Deep shifts of capacity and potential are being generated in the life and biomedical sciences, where the discoveries of 20th century genomics have created the foundation for a theoretical fusion of molecular and evolutionary biology. Coupled with new experimental tools, rich data resources and AI, they have created new understanding of genetic and neural systems that offer pathways for solutions to basic problems and applications at every level of organization, from the molecular to whole populations. The potential benefits of these technologies are profound, and include gene editing for the treatment of genetic disease or in sustaining food security. At the same time, they raise ethical, philosophical, societal, legal and even existential questions that require integrated responses from across the disciplines of science.

The many changes in the environment in which scientists work inevitably pose questions about the extent of their responsibilities and norms of behaviour, whether they work in publicly or privately funded organizations. There are pressures for more effective mobilization of international funding to address urgent global challenges; for strengthened cross-disciplinary collaboration; for the promotion and recognition of under-represented groups; for incentives that are better adapted to current priorities; and for adaptation to the opportunities and challenges of novel developments in science. A particular priority is for open data and open access to scientific results to retain the openness to scrutiny that scientific rigour demands, as part of the developing paradigm of a more open and engaged science, and in adapting incentive systems so that they encourage these new modes of working.

A sense of international responsibility in the face of truly global challenges has led to many examples of international science cooperation that transcend political difference and societal conflict. As the "global voice for science" the ISC must be responsive to public priorities and concerns. It must promote and apply ways of working that maximise the role of scientific understanding in policy and in public discourse. And it must work to ensure that the science system itself is efficient and creative in these purposes.

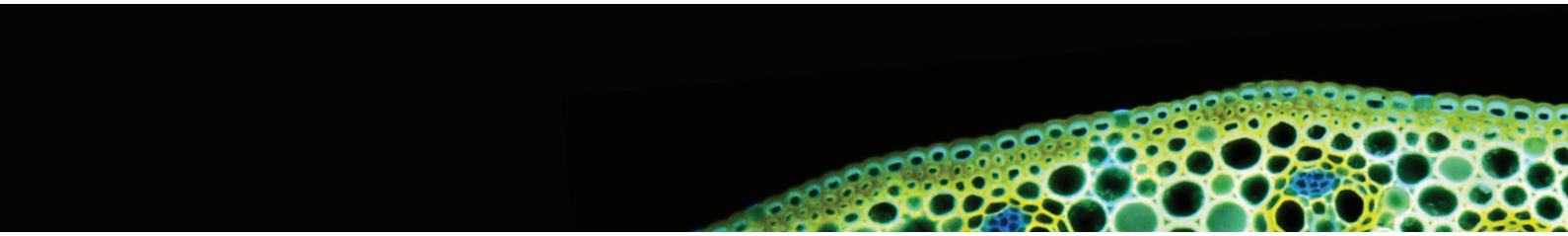
This piece is inspired by The Contemporary Global Context, a long-form think piece written by Geoffrey Boulton for our recently published Action Plan for 2019 – 2021: Advancing Science as a Global Public Good.

Visit www.council.science/ActionPlan.

The Principle of Freedom and Responsibility in Science – enshrined in the ISC's Statutes.

The Principle of Freedom and Responsibility in Science: the free and responsible practice of science is fundamental to scientific advancement and human and environmental well-being. Such practice, in all its aspects, requires freedom of movement, association, expression and communication for scientists, as well as equitable access to data, information, and other resources for research. It requires responsibility at all levels to carry out and communicate scientific work with integrity, respect, fairness, trustworthiness, and transparency, recognising its benefits and possible harms.

In advocating the free and responsible practice of science, the Council promotes equitable opportunities for access to science and its benefits, and opposes discrimination based on such factors as ethnic origin, religion, citizenship, language, political or other opinion, sex, gender identity, sexual orientation, disability, or age.



Advocating for Recognition of Freedom and Responsibility of Science in Today's World

The right to share in and to benefit from advances in science and technology is enshrined in the Universal Declaration of Human Rights, as is the right to engage in scientific enquiry, pursue and communicate knowledge, and to associate freely in such activities. But rights go hand in hand with responsibilities; in the responsible practice of science and the responsibility of scientists to contribute their knowledge in the public space. Both are essential to the ISC's vision of science as a global public good.

The digital age has changed irrevocably the circumstances under which news and information are communicated. The ease and speed by which manipulated, biased or fabricated information is shared highlights the lack of editorial norms and processes for ensuring the accuracy and credibility of information.

Furthermore, the politicization of some issues at the science-society interface has contributed to an emergent, populist 'post-truth' stance on knowledge, and to the adoption of ideological or anti-scientific positions on topics such as climate change, genetically modified organisms (GMOs) and vaccination, that are diametrically opposed to and in conflict with the scientific consensus on these issues. These developments pose a fundamental threat to the integrity of processes by which science informs policy-making.

Given this contemporary and ever-shifting context, the role of scientists in public discourse in advocating the use of scientific understanding that is relevant to public policy and societal debate has never been greater. When scientists engage in highly controversial and politicized scientific debates, it is vital that they respect feelings, values and cultural contexts, while at the same time, remaining alert to the role of special interests that may impair public discourse.

The growing importance of science in responding to today's challenges means that scientists and their organizations are increasingly drawn into muscular public debates where their authority and knowledge could be contested. It is crucial that the scientific response adheres to the principles of responsibility set out above while maintaining a robust advocacy for the scientific method.

The work of the ISC's Committee for Freedom and Responsibility in Science (CFRS) in the coming years must therefore be framed by the need for effective responses to the anti-science discourse and a re-examination of the meaning of scientific freedom and responsibility in the 21st century. It will provide guidance on responsible conduct in science in the contemporary context, the ethical dimensions of associated activities and actions, and the boundaries of advocacy.

This work will make use of the unique global reach of the ISC in identifying the issues that affect scientists in their interactions with policymakers and the general public. It will explore and promote the right to science as a global public good and the right to scientific freedom. These rights are based on an implicit social contract that mandates science and scientists to uphold a set of scientific values, become engaged with integrity and honesty, and act ethically.

The CFRS will develop globally informed guidance for ISC members, for research and educational institutions, and for individual scientists and their communities on what constitutes responsible conduct in contemporary science. Members of the CFRS are at the World Science Forum, and we look forward to engaging with you on this important theme.

For more information on the CFRS and the ISC's actions around freedom and responsibility in science, download the ISC's Action Plan.
www.council.science/ActionPlan

Join in the conversation with the @ISC at the World Science Forum by using the hashtags: #WSFBP2019 and #KnowledgeTogether
www.council.science/WSF