



Submission: Right to Science from the American Association for the Advancement of Science

United Nations Committee on Economic, Social and Cultural Rights (CESCR)

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The American Association for the Advancement of Science (AAAS) is the world's largest multidisciplinary scientific membership organization, with over 100,000 members worldwide in over 80 countries. AAAS publishes *Science*, the leading peer-reviewed scientific journal with a readership of about 1 million, as well as *Science Robotics*, *Science Signaling*, *Science Translational Medicine* and *Science Advances*, an open access journal funded through author processing charges. AAAS is a non-profit organization. Since 2008, AAAS has led efforts to bring the perspectives of the scientific community to the ongoing United Nations process of defining the right to enjoy the benefits of scientific progress and its applications. As expressed in a statement of the AAAS Board in 2010, this right lies at the heart of the organization's mission and the social responsibilities of scientists (AAAS 2010).

The context in which the CESCR is undertaking the challenging task of defining the right to science is one that is highly dynamic, with significant shifts occurring just in the past 25 years. Scientific research is more international than ever before, costs are increasing, the role of the private sector is expanding, and science is increasingly intertwined with major political, social, military, and economic interests. These dynamics both complicate the Committee's task but also make it particularly urgent. These dynamics also demand the inclusion of the many voices and perspectives involved in the scientific endeavor, important among them, those of the scientific community. For this reason, we particularly welcome the opportunity to provide input into the General Comment being prepared on the right.

Our submission draws on the work of AAAS in general and 10 years of research specifically focused on the right to science, including in particular a series of 17 focus groups and a global questionnaire, both of which examined the perspectives of scientists, engineers and health professionals about the meaning of the right to science, barriers to the implementation of the right in practice, and government action needed to support the realization of the right. This research was conducted under the auspices of the AAAS Science and Human Rights Coalition, a network of 26 scientific membership organizations that recognize a role for science and scientists in human rights and gave rise to two seminal reports (AAAS Science and Human Rights Coalition 2013; Wyndham et. al 2017). This work shines light on several of the specific issues raised in the 29 questions issued by the Committee and it is on those issues that we focus this submission.

General

The right to enjoy the benefits of scientific progress and its applications, as expressed in Article 15 (1)(c) of the International Covenant on Economic, Social and Cultural Rights, cannot be interpreted without reference to Articles 15(2)-(4) which establish the implementing framework by which the right

expressed in Article 15(1)(c) can be fully realized. Our work on the right to science and this submission proceed with that understanding.

Science (Questions 5, 6)

Science constitutes an iterative, logical, and empirically based process. It includes the specialized knowledge that is accumulated through that process (UNESCO 2009; Shaheed 2012, AAAS Science and Human Rights Coalition 2013). Validation is a component of science and scientific research, including the responsibility of scientists to share their research findings and the basis for them, and to submit their findings for peer review. All fields of science – life, physical, computational, social, behavioral and economic – as well as engineering should be recognized as being encompassed by the right to science. The General Comment should also explicitly recognize the value and importance of both fundamental and applied research.

Benefits (Question 8, 9, 13, 15)

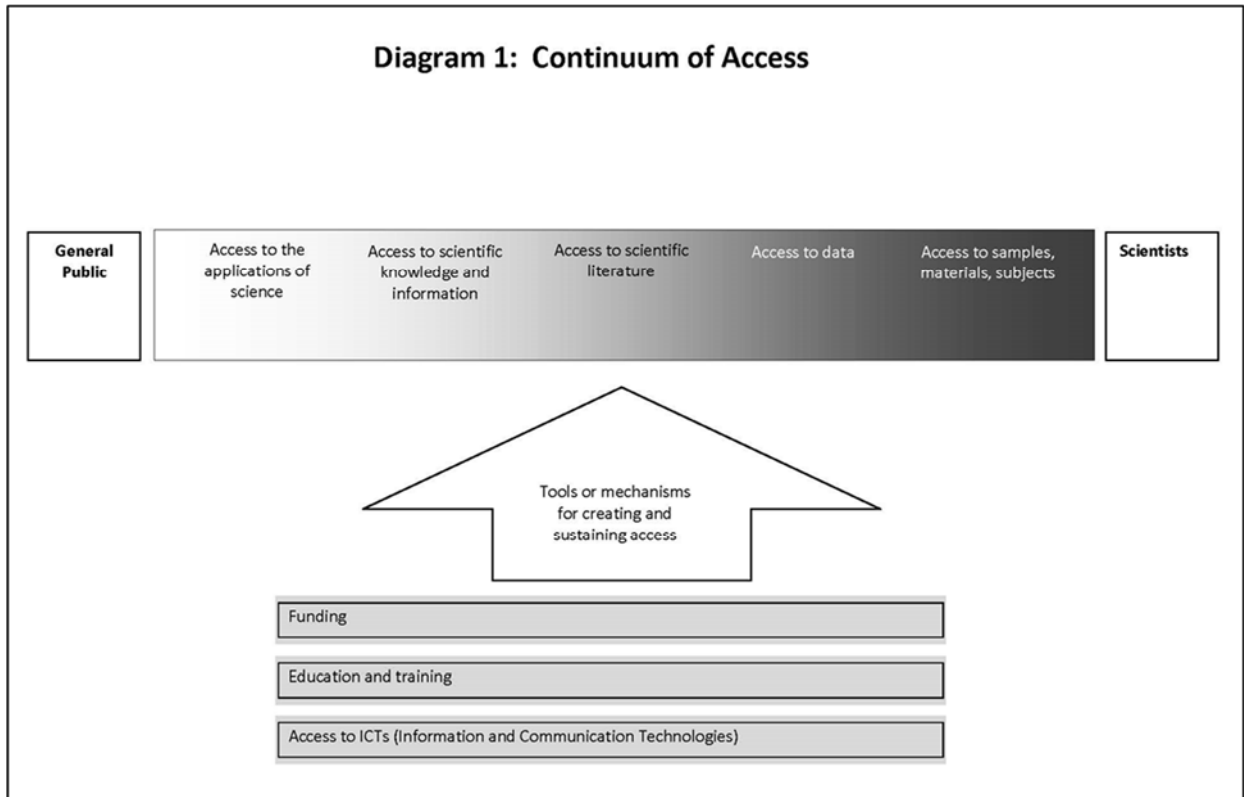
Article 15 (1)(c) addresses both the benefits of scientific progress *and* its applications. The applications of science include products and treatments, the provision of services, and development and deployment of technologies. The benefits of scientific progress, however, can be distinguished as deriving from advances in knowledge *per se*. It may be knowledge that is the product of basic research, one piece in a bigger puzzle, the practical significance of which may not be first evident. It may be knowledge that empowers informed personal decision-making, from decisions about actions to improve or treat health issues, to nutrition and child-rearing. Scientific knowledge also empowers informed civic and political engagement. It may also be knowledge that provides an empirical basis for creating laws, for developing policies, and for planning, evaluating and monitoring programs.

As AAAS has stated in other contexts, “the capacity to understand and effectively address important policy issues depends on access to relevant, accurately communicated scientific and technical information ... Scientific and technological knowledge is the foundation for future research, experimentation, debate, consensus-building and understanding. Scientifically accurate information builds the foundation for public policies that promote the well-being of people and communities” (AAAS et. al 2017). The right to science, therefore, must include the obligation on governments to utilize science-based decision making in their policy formulations, to communicate scientific information in an accurate manner and reflect such information in government documents, reports and web-sites.

Access (Questions 9, 13)

As described in the report ‘Defining the Right to Enjoy the Benefits of Scientific Progress and Its Applications: American Scientists’ Perspectives’, the focus groups engaging scientists, engineers and health professionals from a wide diversity of disciplines gave rise to a helpful conceptual framework for considering the meaning of access as it applies to the right to science (AAAS Science and Human Rights Coalition 2013). The Continuum of Access (see Diagram 1) is a fluid and bi-directional continuum, defined on one end as “access for general public” and on the other as “access for scientists.” A person’s

position on this continuum can change over time, depending on his/her social context, interests, ability, and training. The lower half of Diagram 1 shows three elements that emerged from the research as being central tools or mechanisms for creating and sustaining access along each point on the continuum: funding, education and training, and access to basic information communication technologies.



Access to Information and Publication

Access to scientific information, translated for a lay audience, and access to technical scientific publications are related but separate issues, as indicated on the Continuum of Access. As described above, scientific knowledge is a direct benefit of science that can serve to empower individuals in their personal decision-making. As such, the right to science should obligate states to institute effective science curricula at all levels of the education system and to disseminate publicly scientific information. In contrast, the primary audience for technical research papers is the research community that uses the papers to replicate a study's results, reproduce the findings, and expand on that knowledge base. The value to this audience of respected scientific journals is the rigorous peer-review, editing, image quality control, and production that occurs between when an article is submitted for review and its publication. There are significant costs associated with this process (AAAS Science and Human Rights Coalition 2013).

There are currently multiple models for the production and dissemination of the technical scientific literature, including among non-profit publishers such as AAAS and for-profit publishers. Dominant models for covering costs associated with publication are being addressed through, among other means, reader-pay, author-pay and hybrid models. At the same time, specific programs exist aimed at

addressing the financial barriers to accessing scientific journals among scientists in low-income countries. While the goal of open access to scientific publications is one that AAAS supports, further analysis needs to be done to determine how to achieve that goal while maintaining the value of scientific publishing for scientific advancement and contributing to equity of access (Leshner 2014).

Diversity and Discrimination (Question 4)

Value and excellence in science are derived from ensuring a multiplicity of groups, offering unique backgrounds and lifestyles, are engaged in the scientific enterprise. True diversity involves including and engaging underrepresented groups such as women and girls, minorities, LGBTQ, and persons with disabilities in education to employment in science fields. Complex social, economic, and political forces persist to discourage women and minorities from entering the sciences, and to deny those who do enter equal access to positions of respect and authority. A creative and dynamic scientific community demand the talents of a broad diversity of members of society. The right to science should be interpreted to include the right to participate in the scientific endeavor on an equal basis without discrimination.

Scientific freedom and scientific responsibility (Questions 5, 16)

In a statement adopted by the AAAS Board of Directors in October 2017, scientific freedom and scientific responsibility were described as “inextricably linked” (AAAS 2017). The Statement describes scientific freedom as the freedom “to engage in scientific inquiry, pursue and apply knowledge, and communicate openly.” Scientists require freedom of thought, to hold opinions without interference, to seek, receive, and impart information and ideas of all kinds, and to form and join professional societies and associations. In addition, scientists need the freedom to collaborate with others both within their own country and internationally, including the freedom to leave and re-enter their own country and to freely exchange information, research ideas and results.

Scientific responsibility is described as “the duty to conduct and apply science with integrity, in the interest of humanity, in a spirit of stewardship for the environment, and with respect for human rights.” Scientists are expected to conduct their research responsibly in accordance with ethical standards, standards which in practice are often developed and maintained by discipline-specific professional organizations and supported by legal and institutional mechanisms. These ethical standards and legal frameworks are rarely based explicitly on human rights standards. For the purposes of conceptualizing the right to science, it is vital to determine the meaning of scientific responsibility from a human rights perspective.

There are instances in which scientific freedom may need to be limited by law or regulation. National security, for example, is often a reason given to limit scientific freedom through export control regulations, travel restrictions, limitations on foreign contacts and information sharing, trade embargoes and sanctions, and similar barriers to international cooperation and research collaboration. The legitimate imposition and scope of such restrictions requires examination. Such laws and regulations should be narrowly defined, unified, consistent, processed expeditiously, and subject to on-going evaluation for effectiveness and continued need (AAAS Science and Human Rights Coalition 2013).

Scientific research flourishes best and is most likely to contribute to society's needs in conditions that foster scientific freedom but only when that freedom is exercised responsibly. Thus, although Article 15 of the ICESCR makes specific reference to the "freedom indispensable for scientific research" and does not explicitly address scientific responsibility, any interpretation of the Article must recognize that scientific freedom is not absolute.

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