

Response to the House of Lords Science and Technology Committee inquiry into science and international agreements

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This document is the Royal Society submission to the House of Lords Science and Technology Sub-Committee Inquiry into the Use of Science in International Agreementsⁱ.

The submission has been prepared by Professor Dame Julia Higgins DBE FREng FRS, Foreign Secretary and Vice-President of the Royal Society, in consultation with Professor Brian Eyre CBE FREng FRS, Professor Brian Hoskins CBE FRS and Dr Thomas Inch OBE and endorsed by the Council of the Royal Society.

Introduction

This response assesses existing arrangements for incorporating scientific advice into a number of international agreements. As each agreement has a different purpose and set of objectives, it is difficult to suggest one standard, or set of procedures across the board. However, it is important that where applicable and generic lessons are learnt, these are communicated to interested parties involved in other treaties and conventions.

What is certain is that international agreements are critically weakened if not all relevant countries are signatories.

It is clear that science advice is more easily recognised and applied within international agreements if it comes from an international scientific advisory panel/body that is used or established for the purpose. A good example is the Intergovernmental Panel on Climate Change (IPCC), which provides independent scientific advice to the United Nations Framework Convention on Climate Change through a consensus of a considerable number of the world's leading climate experts. In contrast, the absence of a formal scientific advisory panel on a UK and particularly at the international level is a major constraint to developing a more effective Biological and Toxin Weapons Convention.

Agreements also benefit from related organisations that have responsibilities for achieving the objectives and ensuring the implementation of a convention or treaty. Bodies such as the Organisation for the Prohibition of Chemical Weapons (OPCW), which informs the Chemical Weapons Convention (CWC), are able to identify and undertake or commission research as appropriate.

It can also be effective to use pre-existing sources of advice, particularly in situations where independent expertise is vital and when using advice from the body established to inform an international agreement could be awkward. At the international level, the Royal Society actively supports bodies like the International Council for Science (ICSU), the InterAcademy Council (IAC) and the InterAcademy Panel (IAP), which can fulfil such a role effectively. Moreover, as well as advising international policy bodies, these organisations can deliver a consensus on behalf of the global science community that can be fed into policy discussions at the national level. This can contribute influentially to the development of a national policy position on an international issue. The Royal Society values the contribution of these bodies to raising the scientific quality of international discussions. The recent IAP Statement on human reproductive cloning is a good exampleⁱⁱ.

At the UK level, the Office of Science and Technology and the position of the Chief Scientific Adviser within the Government act as a good bridge between the scientific community and policy makers. There is always

room to improve and strengthen this link. For example, Government should make greater use of the experience and expertise from learned and professional scientific and engineering institutions. In addition, the Chief Scientific Adviser's International Committee on Science and Technology (CSAIC) could be further developed into a clear advisory route for Ministries and Government Departments requiring appropriate science advice for international agreements. This would enable a more co-ordinated science input into Government and facilitate the development of a single view on an issue, whilst providing an information channel back from policy makers to the science community.

Chemical Weapons Convention (CWC)

Coming into force in 1997, the CWC prohibits the development, production, acquisition, stockpiling or retention of chemical weapons. The convention provides a framework for the elimination of all chemical weapons. The Organisation for the Prohibition of Chemical Weapons (OPCW) was established at the same time as the convention to monitor and implement the agreements, and ensure that it achieves its purpose.

Science advice was initially incorporated in the formation of the CWC through the Preparatory Commission. Incorporating science at this stage of the agreement helped clarify the relevant scientific details and potential impacts on the industrial sector. Within the implementation of the agreement, the use of science has enabled the work of hundreds of inspectors to accurately audit materials.

Fulfilling an important aspect of the first quinquennial review of the CWC, the OPCW asked the International Union of Pure and Applied Chemistry (IUPAC) to undertake a 2-year project, which included an international scientific meeting, to provide advice on scientific and technological advances that might influence future operation of the CWC.

We consider the use of IUPAC to inform the CWC Review to be a good example of the incorporation of science advice within the review of an international agreement. It has shown the benefit of using international scientific organisations within this process. We recommend that, where appropriate those involved in international agreements should consult established international scientific organisations at all stages of developing, implementation and evolution of international agreements. The advantage with these organisations is that they have supporting national institutions that can debate and develop ideas and help promote international agreements in their respective countries.

Nuclear Non-Proliferation Treaty (NPT)

The Non-Proliferation Treaty is informed by the International Atomic Energy Agency (IAEA), which has a scientific programme that underpins decisions taken within the NPT. The IEA identifies the science advice needs in relation to the NPT and commissions research in national countries as appropriate. Within this process we consider that the IAEA applies an appropriately cautious approach to scientific uncertainty. We recognise the IAEA as providing a good structure and outputs for its purpose.

To fulfil peer review requirements the IAEA also has mechanisms in place to review documents and research.

The Biological and Toxin Weapons Convention (BTWC)

The Biological and Toxin Weapons Convention (BTWC) came into force in 1975 and bans the development, production, stockpiling, acquisition and transfer of biological weapons. However, the BTWC does not contain any 'verification' procedures, to ensure that the Parties comply with the rules set out in it. A significant problem in devising verification procedures for biological and toxic weapons, unlike the relative ease in the identification of nuclear programmes, is that laboratories and installations connected to the BTWC are more diffuse and difficult to monitor. There is also the consideration that many agents may have 'dual use' application, i.e. that some research, unconnected with biological and toxic weapons, may also have a military value.

Currently there is no equivalent international scientific organisation body like the IAEA that underpins the BTWC. As a result, the need for science advice within the convention is not as easily recognised. Following the failure in December 2001 of the States Parties to agree on the text of the Protocol to the Convention, the UK Foreign and Commonwealth Office (FCO) taking the initiative, consulted widely and published a Green Paper to solicit views on making the BTWC more effective. In its response, the Royal Societyⁱⁱⁱ supported the creation of an international Scientific Advisory Panel and codes of conduct for academic and professional bodies. The response identified a number of key features that should be taken into account in the formation of a Scientific Advisory Panel. These included highly respected memberships directed by bodies set up as the result of international political agreement, whilst recommending the body must have objectives that are clearly defined and widely accepted as beneficial to human welfare.

To address the 'dual use' issue some governments have suggested they implement an additional level of peer review on all relevant scientific work. We do not believe this is a workable solution. A major constraint would be the additional time it would take for research to be published. This may deter scientists from publishing research through the current peer review process and seek alternative methods to make their work available in the public domain, such as through the Internet or at conferences and events.

A less constrictive solution would be for governments to be actively aware of new research that is being published and to monitor scientific advances. This information would enable the development of appropriate counter-measures to potential threats. Further use of science would also assist in advancing detection mechanisms that were less intrusive for industry.

This level of scientific monitoring needs appropriate structures such as a Scientific Advisory Panel to inform national and international decisions and institutions and to correct erroneous perceptions. The UK should urge the development of an international structure or advisory board to inform the treaty.

Stratospheric ozone depletion

Since 1981 there have been a sequence of nine major and authoritative international scientific assessments under the auspices of the World Meteorological Organisation (WMO) and/or the United Nations Environment Programme (UNEP), which have fed into the policy process to address stratospheric ozone depletion. These assessments have informed the Vienna Convention for the Protection of the Ozone Layer (1985) and the subsequent Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol), signed in 1987. The Scientific Assessment in 2002 is the fifth that has been prepared directly as an input to the Montreal Protocol process.

Sponsored by DoE/ DETR/DEFRA the UK has had its own Stratospheric Ozone Review Group, which has played a significant role in shaping the influential UK input into the international agreements.

United Nations Framework Convention on Climate Change (UNFCCC)

Also under the auspices of WMO and UNEP the Intergovernmental Panel on Climate Change (IPCC) has produced 3 major Assessments of the Science of Climate Change published in 1990, 1995 and 2001, covering its impacts, responses to the problem and mitigation. The first of these fed directly into the establishment of 1992 UNFCCC and the second into the 1997 Kyoto Protocol to the Convention. Other major assessments have been produced by IPCC on aspects of climate change, as appropriate.

In the case of climate change science there has been no official UK review group, but the Hadley Centre has taken a principal role. A relevant document, of which the Committee is probably aware is the House of Commons S&T Committee 3rd Report in the 2000-2001 session^{iv}, which assessed how the UK Government obtains scientific advice on climate change and whether it is authoritative and comprehensive.

In both the stratospheric ozone agreements and those relating to the UNFCCC we believe that the scientific assessment process has involved a cross-section of excellent scientists, both as authors and reviewers, and has been generally well led and handled.

In both assessments there is an underlying tension between wanting the latest results and the need for the science to go through the peer-review process. In the work of the IPCC, coping with this tension has necessitated the development of quite strict procedural rules. The large time demands associated with an international peer-reviewed assessment process has led to some difficulties, especially for the lead authors. However those involved have usually felt that this has been balanced by the scientific benefits.

In the ozone assessments there has been a clear separation between “provider scientists” and “receiver policymakers” with only the Chairs of the committees meeting with the policymakers. In contrast, in the IPCC process, Policy Makers have directly reviewed the author’s work and they have had some influence on the questions addressed in the summary report. This has been advantageous to the overall IPCC process in that the scientific assessment has had a more direct two-way interaction with those responsible for taking action. However this has placed some additional strain on the authors who have on occasion been targeted by special interest groups.

Millennium Ecosystem Assessment (MA)

Launched in 2001 the MA will assess the ability of ecosystems to meet the needs of people through the provision of goods and services.

With the backing of a number of UN agencies and scientific bodies including the Royal Society, the MA has been recognised by governments to meet part of the assessment needs for four international treaties - the UN Convention on Biological Diversity, the Ramsar Convention on Wetlands, the UN Convention to Combat Desertification, and the Convention on Migratory Species. Following a similar structure to the successful and authoritative IPCC, the MA will publish reports on the state of the world’s ecosystems based on international scientific consensus. The Royal Society has recently published a report on *Measuring biodiversity for conservation*^v, which has been submitted to the MA to inform their important work.

Please send any comments or enquires about this submission to:

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ⁱ http://www.parliament.uk/parliamentary_committees/lords_s_t_sub_committee_i.cfm

ⁱⁱ *Statement on Human Cloning*. Joint Statement by 63 of the world’s scientific academies (2003) available from the Royal Society at <http://www.royalsoc.ac.uk/templates/statements/StatementDetails.cfm?statementid=233>

ⁱⁱⁱ Royal Society (2002). *Royal Society submission to the Foreign and Commonwealth Office Green Paper on Strengthening the Biological and Toxic Weapons Convention*. Document 25/02
(<http://www.royalsoc.ac.uk/templates/statements/StatementDetails.cfm?statementid=206>)

^{iv} House of Commons S&T Committee 3rd Report (2000-2001) *Scientific Advisory System: Scientific Advice on Climate Change*

^v Royal Society (2003). *Measuring biodiversity for conservation*. Document 11/03
(<http://www.royalsoc.ac.uk/templates/statements/StatementDetails.cfm?statementid=232>)