



Advancing science as a global public good

Draft

March 2017

In October 2016, members of the International Council for Science (ICSU) and the International Social Science Council (ISSC) met in Oslo, Norway, to consider a possible merger of these two organisations. The meeting participants agreed strongly that many of the key issues facing modern science require stronger collaboration between the natural and the social sciences. The consensus was that a merged organisation should be underpinned by a powerful and credible strategy for its work, as well as the organisational means to support it. It was agreed that the ambition should be to increase the value that the new body would bring to international science¹, and to the societies of which it is a part.

Following this in-principle agreement, and in line with the recommendations of the Oslo meeting, ISSC and ICSU Executives appointed a Transition Task Force (TTF) and a Strategy Working Group (SWG) to develop a joint vision and structure for the merged organisation². In October 2017, ICSU and ISSC members will meet to take a final decision for or against the merger.

The SWG was tasked with preparing a high-level strategy for the new body, referred to in this document as “the Council.” The strategy should provide a clear framework for the development of the organisation, while being flexible enough to allow the creativity of the Council’s members and leadership to identify particular projects that are imaginative, important, timely and deliverable.

The ideas for a proposed new strategy presented in this document reflect the outcomes of a consultative workshop on the purpose and priorities for the new Council, held in Paris on 30-31 January 2017, and the subsequent deliberations of the SWG.

¹ The word *science* is used here to mean the systematic organisation of knowledge that can be rationally explained and reliably applied. As in most languages except English, we use it to include all domains, including humanities and social sciences as well as the science, technology, engineering and medical disciplines.

² Information about the merger planning process, including the composition and work of the TTF and the SWG, is available at <https://www.gitbook.com/book/icsu-issc/documentation-on-the-icsu-issc-merger-process/details>

1. Enabling science for the future, shaping the future of science

Knowledge derived from scientific research is a staple of human understanding and creativity, and is fundamental to the evidence that should inform societal decision-making and public policy. The importance of deliberative scientific understanding to society has never been greater, as humanity grapples with the problems of living sustainably and equitably on planet Earth. The ways in which science responds to this perennial challenge must adapt to changing circumstances, which are increasingly shaped by two fundamental challenges:

- Scientists are increasingly expected not only to advance scientific understanding, but also to contribute solutions to pressing real-world problems, and to support transformative societal responses to them. As the range of global challenges embedded in the United Nations 2030 Agenda for Sustainable Development shows, these problems are often highly coupled and inherently complex.

The great achievements of science in recent centuries lie primarily in understanding uncoupled or weakly coupled systems. There is now a need for much deeper understanding of the nature and dynamics of complex systems through the integration of knowledge from disparate fields of the natural and social sciences. Exploiting the potential of “big data” and machine learning could contribute significantly to this end. But there is also a need for new ways of working, not only in the interdisciplinary mode, but also with approaches that integrate knowledge from academic and non-academic stakeholders in processes of mutual learning and problem-solving. Coupled with “open science”, this “transdisciplinary” mode could be an effective means of improving the infusion of scientific knowledge into policy and practice.

- A new digital world is providing unprecedented levels of global connectivity. This has powerful implications for the relationships between citizens, the media, elected representatives, interest groups and experts, and more broadly, between science and society. The ubiquitous use of software tools and social media means that the processes of generating and using knowledge and information are essentially democratised. For science, this digital world offers great opportunities to reach new audiences. But it also drives a “post-expert” dynamic in which people regard access to information as obviating the need for scientific interpretation. It enables the spread of misinformation and its growing use as an agent of political activism, strategy and policy-making.

Growing concerns about the irreproducibility of otherwise highly regarded scientific work, reduced trust in institutions, accusations of elitism, and broader trends towards populist politics all pose fundamental challenges to the value of deliberative scientific enquiry based on verifiable facts. Although scientists still enjoy high levels of public trust in many regions of the world, these developments change political dynamics in ways that make it harder for scientific input to be heard.

These are not temporary trends. Instead, they are enduring consequences of rapid, ongoing change, which is technological, social and cultural in nature. They create a setting in which there is a distinctive need to articulate the voice of science clearly, carefully and responsibly in relation to a wide range of contemporary issues. It is necessary to continue supporting the disciplinary engine rooms of scientific discovery and to maintain funding for fundamental science. But it is now also necessary to address the profound shifts in approach that are required for science to deliver knowledge with practical relevance to complex global problems that no one discipline and no one country can address on its own. These are shifts towards much stronger forms of interdisciplinary collaboration between and across different fields of science in both the framing and execution of

research; and towards the greater active engagement of scientists with a wide range of public and private stakeholders, including citizens, in the transdisciplinary co-production of knowledge for public policy and practical action.

The merger of ICSU and ISSC provides a powerful institutional basis for addressing these needs at the international level. It would amplify a voice for science that can represent and support the full range of the scientific enterprise, and build the enhanced capacities required for it to address major global challenges in ways that neither the natural nor the social sciences can realise on their own. A merger would build on ISSC and ICSU's longstanding commitments to work "for the benefit of society" (ICSU) and to "help solve global problems" (ISSC).

A unified, global voice for science

In recent decades, the landscape of international representative bodies for science has become increasingly fragmented and by implication, competitive. Within this landscape, and in the broader context described above, there is now an opportunity for a new Council to position itself as a unified global voice for science.

The new Council's founding members and primary stakeholders will be the current members of ISSC and ICSU, including 40 international scientific unions and associations, and over 140 national and regional organisations such as academies and research councils. These bodies represent approximately 70 per cent of the world's nations. They also encompass a substantial range of disciplines in the natural (including physical and life) and social (including behavioural and economic) sciences. In order to be a truly global voice for science, the Council would seek to expand its membership to include countries not currently represented by ICSU or ISSC, many of which are categorised as "least developed". It would also strengthen its standing as a unified voice for science by adding to its ranks unions and associations of key scientific or technological disciplines not represented by either organisation.

By convening the collective strength of its unique membership base, and developing effective, and complementary, partnerships with other major international scientific organisations, the Council will be well positioned to build a strong foundation for advancing science across the disciplines and in all parts of the world, and for protecting its vital role in shaping humanity's future on planet Earth.

2. A new vision and mission: Advancing science as a global public good

The essential purpose of a new Council, and the benefit it can bring to both science and society, are captured by the notion of a unified, global voice that speaks and stands for the value and authority of science – from fundamental to stakeholder-engaged science – and its continued advancement, throughout the world and for the benefit of all.

The Council would build on the experience and achievements of both ICSU and ISSC in order to:

- champion scientific research as the most effective means of acquiring robust and reliable knowledge;
- promote the need for evidence-informed understanding and decision-making and support international scientific research and scholarship that is relevant to major issues of global concern;
- support the continued and equal development of scientific creativity and relevance in all parts of the world;

- safeguard the freedom of scientific enquiry, movement, association, expression and communication, and protect scientific rigour, integrity and respect.

The Council would realise these goals by convening the international expertise and resources needed to provide leadership in catalysing, incubating and coordinating action aimed at ensuring that the global voice of science is heard on issues that affect both the scientific community³ and the society of which it is a part. The Council would therefore speak both inwards, to the scientific community itself, and outwards, to the world beyond that community.

The Council's work in external engagement would be mostly concerned with "science for policy" priorities. Inevitably, the scientific community's readiness to respond effectively to the needs for such engagement will require ongoing review of its own knowledge base, agendas, capacities, resources, and ways of working. External engagement thus creates "demand-led" imperatives for internal engagement in new "policy for science" priorities.

Instances that would motivate **external engagement** include:

- where scientific understanding is appropriate to the formulation of major policy frameworks (e.g. energy systems, antibiotic resistance, risk in complex systems);
- where existing policies have failed to take relevant scientific knowledge into account (e.g. health policies based on homeopathic solutions, implementation of the law of the sea that ignores scientific understanding of the oceans);
- ongoing issues that require perennial scientific input and advice (e.g. international strategies for disaster risk reduction, migration, climate change, environmental degradation, inequalities, infectious diseases, security, and sustainable development);
- where issues arising from new scientific understanding have major but unrecognised implications for society, which call for awareness-raising (e.g. artificial intelligence and the future of work, potential transformations of the human through implantation or genetic manipulation);
- issues related to the long-term conservation, availability and governance of the cumulative scientific record as a global asset and as the basis for the long-term management of planetary sustainability;
- where the freedom of scientists to express their scientific understanding and its implications is denied, where the free movement and association of scientists is restricted, or where scientists are being persecuted in the pursuit of their work.

Internal engagement would be motivated by the need to:

- mobilise support for new research, or the improvement of existing scientific understanding of contemporary challenges (e.g. causality in the climate system, the characterisation of complex systems, conflicts, cyber worlds);
- develop new models for coordinating and resourcing transnational science, and to represent the views of the scientific community about priorities for multilateral funding;
- address inequalities in science, critical capacity needs, and other barriers to effective international scientific collaboration (e.g. modern data science capabilities, strengthened support for the social sciences in developing countries, the promotion of opportunities for early career scientists, gender equality in science, indigenous knowledge);

³ The "scientific community" refers here to the diverse network of interacting individuals, groups and institutions that creates, scrutinises, tests and openly publishes scientific ideas, progressively weeds out error, and produces the cumulative knowledge base of science.

- develop more effective science policies and practices (e.g. expert systems for non-experts, scientific careers, peer review, the evaluation of excellence and societal impact of science);
- promote new ways of working, to adapt to changing social dynamics and ensure better interactions between science, the public and the policy community (e.g. the practice and evaluation of trans-disciplinarity, translational research, breaking the natural/social science barrier), or to exploit changing technologies (e.g. cross-disciplinary data integration, reproducibility, scientific publishing, scientific ethics and integrity).

3. Advancing science in the interests of Council members

The Council will respect the mandates and responsibilities of its members. The Council's union and association members are mainly disciplinary and international, while member organisations tend to be multi-disciplinary and national. A Council that brings them together is uniquely placed to advance science in the international, cross-disciplinary arena, thereby creating opportunities for the national and disciplinary priorities and interests of its members. These include opportunities for members to:

- contribute to scientific matters of global public concern;
- showcase the relevance of their scientific capacity at the international level;
- strengthen international awareness of and support for the disciplinary or national scientific communities they represent;
- enhance their own influence with the policy community, funders, national governments and international bodies.

The creation of mutual advantage for the Council and its members will require the Council to design effective processes and mechanisms whereby it can engage members' expertise in identifying and responding to priority issues for advancing the value and authority of science. Council members will be called upon to participate actively in such processes and mechanisms, and to exploit the opportunities that the Council would work to create.

4. Priorities for the new Council

The Council's effective promotion of the cause and value of science and its continued evolution will require a persuasive and focused agenda, clearly defined target audiences, and the means of engaging them with professionalism and impact.

The Council must identify efficient pathways to impact, and how these can best be exploited. It must have legitimacy in the scientific community that it claims to represent, and credibility with those it seeks to interact with and influence. It must have the competence and capacities to undertake these tasks.

4.1 Issues

The identification of central issues for the Council's future agenda will require access to high levels of scientific comprehension and farsighted strategic thinking, across a broad spectrum of scientific fields. The Council will have to establish transparent and accessible deliberative processes that allow it to benefit fully from the resources of its members and those of its wider networks within the international scientific community. It will also need well-defined selection criteria to determine which issues to include on the Council's agenda.

4.2 Targets

The Council's success will depend in large part on its access to decision-makers and those in a position to influence them, within a clearly defined set of target audiences.

Priority targets for external engagement would include:

- The United Nations and its specialised agencies, where important issues of international policy that depend on scientific input are debated. The Council could become a major conduit for strong, systemic interaction between the UN and the scientific community;
- Regional inter-governmental organisations and their respective scientific advisory structures (e.g. the European and African Unions, Association of Southeast Asian Nations, the G8/G20);
- National governments; while these tend to have science advice and foresight mechanisms that fit national priorities, the Council could have a vital role in promoting scientific freedom and responsibility;
- The international private sector, which plays an increasing (albeit informal) role in global governance, in managing global resources, and in the innovation and marketing of powerful new technologies;
- Civil society; a difficult target but arguably the most important. In the modern world the development of a scientific ethos, an understanding of the nature of scientific evidence, and access to knowledge and its potential uses, are all vital ingredients for a politically vigorous and aware population.

For internal engagement, priority targets would include:

- The international scientific community itself. This includes the Council's own constituent organisations, as well as the global networks of scientists and scientific organisations represented by other international scientific bodies. Examples include the InterAcademy Partnership (IAP), The World Academy of Sciences (TWAS), International Council for Philosophy and Human Sciences (CIPSH), World Federation of Engineering Organisations (WFEO), and the Global Young Academy (GYA);
- United Nations agencies and other inter-governmental organisations with a mandate for science (e.g. UNESCO, ECOSOC Commission on Science and Technology for Development, and the OECD), which convene ministers of science;
- Regional inter-governmental structures that promote international scientific collaboration (e.g. the European Commission, BRICS, and the Inter-American Institute for Global Change Research (IAI));
- International networks and forums of science policy makers and research funders (e.g. the Global Research Council (GRC), Belmont Forum and other networks of funding agencies and foundations).

4.3 Pathways to impact: Relationships, roles and activities

To be an effective global voice, the new Council will have to establish itself as a powerful international presence. It must become the principal node in a globally connected network of influential and trusted partners, which can help to deliver impact. The strength of the Council's relationships – first and foremost with its members – will be central to its success. ICSU and ISSC's existing partnerships will have to be reinforced, new partners will need to be identified, and appropriate terms of cooperation will have to be specified, for example with partners from the private sector.

The Council should focus on establishing its leadership reputation as a convenor, catalyst, incubator and coordinator of international science.

Translating these roles into action will involve a range of activities, and a focused set of flagship global projects, programmes or campaigns that are issue-driven, results-oriented and time-bound. Decisions on priority activities for the new Council should be based on a careful review of the existing activities of ICSU and ISSC. It will be essential to consider how far they support the new organisation's priorities, where resources and responsibilities need to be redirected, and whether there are areas where new types of action will be required.

Recommendations based on an initial assessment of the current portfolio of ICSU and ISSC activities are presented in Annex I.

4.4 Competencies and capacities

The success of the new Council will be critically dependent on it having three key attributes:

- **Legitimacy:** The Council must be the legitimate global voice of science, and must not elicit the response “not in my name” from its own community.
- **Credibility:** The Council must be recognised as an authoritative voice whose pronouncements are based on rigorously tested scientific work.
- **Convening power:** The Council must have the reputation and respect to attract the attention of members of the scientific community, the policy community, the private sector and civil society with whom it seeks to engage.

The essential first step towards achieving these crucial attributes will be to involve scientists of high achievement, experience and distinction as officers, board members, advisors, and contributors to the work of the Council. Their distinction must be recognised both by the scientific community and by the institutions and individuals that the Council seeks to influence. This will require the Council to agree on appropriate processes and criteria for the election and appointment of senior officers, board members and advisors.

For the new Council to have impact, it will need to be responsive and dynamic, able to rely on agile and empowered decision-making. It must also be able to cope with strong negative reactions from those with conflicting scientific views, from online campaigns, from politicians and from governments. The capacity for judicious boldness in such circumstances will rest on the good judgement of the Council's leadership, as well as the experience of its staff. For the secretariat, it would be important to include or have ready access to strong networking and organisational skills, journalistic skills, policy and legal expertise, and significantly enhanced media and communications capability.

5. Core values

The core values that the Council would commit to upholding in its work, its governance and its partnerships include:

- Excellence and professionalism: delivering outputs of the highest quality and professional standards.

- Universality: ensuring access to science and its benefits for all, rejecting discrimination in all its forms.
- Inclusivity and diversity: including perspectives and approaches from all parts of the world, and improving the participation of women and early career scientists in international science.
- Innovation: attracting and learning from new talent and new ideas, stimulating new approaches, putting forward new solutions.
- Sustainability: making ecologically responsible organisational decisions, pursuing environmentally friendly business practices

Annex I

Activities for a new Council: Synopsis of an initial assessment of current ISSC-ICSU instruments and initiatives

In line with the high-level statement of purpose for the Council outlined in this document, the SWG has carried out an initial review of the existing portfolio of ICSU and ISSC activities⁴. The purpose of this exercise was to assess the relevance of each type of activity currently undertaken by ISSC and/or ICSU (and listed in points 1 to 10 below) to the new Council's proposed role, and to identify in broad terms the adjustments that would be required to ensure effective support for that role. This review led to the following preliminary conclusions:

1. Establish international research programmes, scientific committees and networks

- Highly relevant; they are a valuable resource and should be mobilised as partners in delivering impact.
- Criteria for the establishment of new programmes, committees and networks need to be identified, and the Council's responsibility towards these initiatives needs careful review. In general terms:
 - New initiatives should not be established without secure resources for substantive activities, including collaborative research;
 - The Council's direct support, governance and management oversight of initiatives should be time-bound;
 - Once successfully established and operationally independent, initiatives would remain affiliated to the Council.
- The Council should facilitate synergistic collaboration between existing and new programmes, committees and networks. It should advise on the restructuring of initiatives that have overlapping missions, in order to reduce duplication and competition for resources.
- Any future involvement of the Council in reviewing these structures should be considered on the basis of discussions with those who fund them.
- The Council will need to identify more effective ways of promoting membership engagement in Council-affiliated programmes, committees and networks.

2. Convene and represent the international scientific community within the United Nations and other international policy frameworks, forums, and international assessments

- Of central importance to the new role.
- This work will need to be further strengthened, particularly through new partnerships with organisations in health, medicine, engineering and technology, and the humanities. It should be expanded over time to reach other international policy forums such as the G8/G20.
- The Council will need to find effective mechanisms for engaging members more centrally in this activity.

3. Participate in international funding consortia

- Relevant to the new role.
- Different funding communities (national agencies, international donor agencies, foundations) are important target audiences, as well as being partners for effective delivery (see also point 4 below).

⁴ A detailed activity overview is available at:

https://www.dropbox.com/s/vzxr55uc0svg6ny/ICSUISSC_activitydocument.pdf?dl=0

4. Establish and run research funding or grant programmes

- Direct programme management is not relevant to the new role.
- It would be relevant for the Council to identify specific funding priorities, and work with relevant funders on responding to them. However, the Council itself should not function as a funding agency.

5. Award international prizes and fellowships

- Potentially relevant if used in support of targeted activity on specific priority issues.
- The Council should only consider establishing (new) prizes and fellowships in response to available funding opportunities.
- It should consider ways of promoting the winners of prestigious prizes awarded by its members internationally.

6. Design and implement training schemes

- Potentially relevant to the new role.
- The Council's focus should be on convening and coordinating experts and partner organisations to identify priorities for training, design relevant programmes, and promote their roll-out.

7. Produce publications (e.g. advisory reports, policy briefs, statements)

- Relevant to the new role.
- Different types of targeted publication and a range of dissemination approaches would be needed as part of activities to support specific priority issues.
- The Council should give further consideration to the potential relevance and impact of a regular series of global science reports.

8. Organise, co-organise or co-sponsor international events

- Relevant to the new role.
- As for publications, targeting and impact should be key considerations in deciding on the Council's involvement as a co-organiser or co-sponsor.
- The Council should consider the potential relevance, impact and feasibility of an annual membership-based event (e.g. an International Science Summit).

9. Support public outreach and engagement with science

- Highly relevant to the new role.
- This important area for the Council involves numerous organisations and many activities, in many countries and regions of the world. The additional resources that the Council could commit in this area would be minor compared with those already expended internationally. Given this, the Council should not aim to develop new, stand-alone outreach and engagement activities. Rather, it should seek to add value through partnerships with relevant organisations and by actively supporting the work of its members.

10. Raise international awareness of scientists' rights, and take action to safeguard them

- Highly relevant to the new role.
- The Council would need to ensure that it has the relevant capacities and expertise to achieve impact in this work.