

STRENGTHENING INTERNATIONAL SCIENCE
FOR THE BENEFIT OF SOCIETY

ANNUAL REPORT



INTERNATIONAL
COUNCIL
FOR SCIENCE

2015

The long-term vision of the International Council for Science (ICSU) is for a world where excellence in science is effectively translated into policymaking and socio-economic development. In such a world, universal and equitable access to scientific data and information is a reality and all countries have the scientific capacity to use these and to contribute to generating the new knowledge that is necessary to establish their own development pathways in a sustainable manner.

The International Council for Science is a non-governmental organization with a global membership of national scientific bodies (122 members, representing 142 countries) and international scientific unions (31 members). ICSU mobilizes the knowledge and resources of the international scientific community to strengthen international science for the benefit of society.

MESSAGE FROM THE PRESIDENT

2015 was a watershed year as the world's governments agreed three landmark frameworks on climate change, disaster risk reduction and sustainable development. It is with great pride that I reflect back on the role that the International Council for Science (ICSU) played throughout the year, notably in convening scientists to contribute and engage around these historic processes. This is just one example of how the Council mobilizes the international scientific community to address some of today's biggest global challenges. These challenges cannot be met without excellent, interdisciplinary research of the sort that emerges from our suite of international research programmes.

Starting with the Sendai Framework for Disaster Risk Reduction (2015-2030) that was agreed in March, the ICSU-led scientific community secured prominent recognition for science to support the understanding of disaster risk and promote risk-informed decisions and risk-sensitive planning from local to global levels. ICSU will continue to play a role in the implementation phase of this framework, starting with a conference in early 2016 co-organized with UNISDR on a new Science and Technology Partnership for disaster risk reduction.

The 2014 External Review of ICSU identified a number of challenges that ICSU has to face in the coming years. During 2015, the Executive Board, with the support of National Members and Unions, agreed on a series of actions that specify how ICSU will respond to these challenges. In an early step towards implementing this response, ICSU convened Science International, a new activity which, in December 2015, brought together the International Social Science Council (ISSC), The World Academy of Sciences (TWAS), the InterAcademy Partnership (IAP) and ICSU to agree on an international accord on Open Data in a Big Data World. The accord outlines guiding principles for the practice of open data, and the partner organizations will reach out in 2016 to solicit endorsements from their members and other influential science organizations.

At the first Science Forum South Africa, also in December 2015, ICSU was awarded the Science Diplomacy Award. The jury felt it appropriate to recognize ICSU's work on science for policy, especially within the context of ensuring that science is integrated into international policy development.



In advance of COP21, ICSU was a co-organizer of the “Our Common Future under Climate Change” conference held in Paris in July 2015. The conference developed an outcome statement which staked out the position of scientists ahead of the climate negotiations in December, identifying climate change as a defining challenge of the 21st century. During COP21, an ICSU co-organized press conference brought together more than 200 international journalists with leading climate scientists to explain the science behind the temperature target and the long-term goal. This gained extensive coverage in the international press.

In March 2015, we, the ICSU family, were delighted to bring Heide Hackmann in as our new Executive Director to bring strong leadership to the challenge of responding to the External Review. As President, I wish to thank all the ICSU Secretariat members, including those in our Regional Offices, for their outstanding contributions during 2015 and, with their support, I look ahead, very positively, to great accomplishments during 2016.

Gordon McBean, President

MESSAGE FROM THE EXECUTIVE DIRECTOR

When I joined ICSU in March 2015, I was excited to become part of this diverse international community committed to excellence in science and its contribution to solving global challenges. I realize now how very quickly my first ten months as the Council's Executive Director have passed. It has been a year of many rewards, but also one of significant challenges for all of us at ICSU. We needed to build a resilient team in the face of changing leadership and new staff members. We had to secure support for two of our Regional Offices and several co-sponsored programmes. The 2014 External Review called on us to revitalize ICSU's position in a changing international scientific landscape, and 2015 presented us with the need to mobilize science quickly and effectively in support of the decisions that world leaders and national governments pursued in committing action towards a more sustainable and equitable future for all. Confronting these challenges also meant understanding emerging trends and changes in the practice of science across the disciplinary spectrum, and exploiting the new technological capacities now available to help us activate a more responsive, collaborative and open global scientific enterprise.

We have started addressing these challenges by developing, together with our members, co-sponsored programmes and interdisciplinary bodies, actionable ideas with discernable impact. As reflected in the pages of this report, there is already a lot we can be proud of.

2015 was a landmark year, with new global agreements on climate change, disaster risk and sustainable development. ICSU worked hard to secure a strengthened voice for science in the development and implementation of these global policies, many of which now recognize the need for science to inform decision-making in the future. Closely related is the exciting work of the International Network of Government Science Advice, an initiative launched during the 31st ICSU General Assembly in Auckland in 2014.

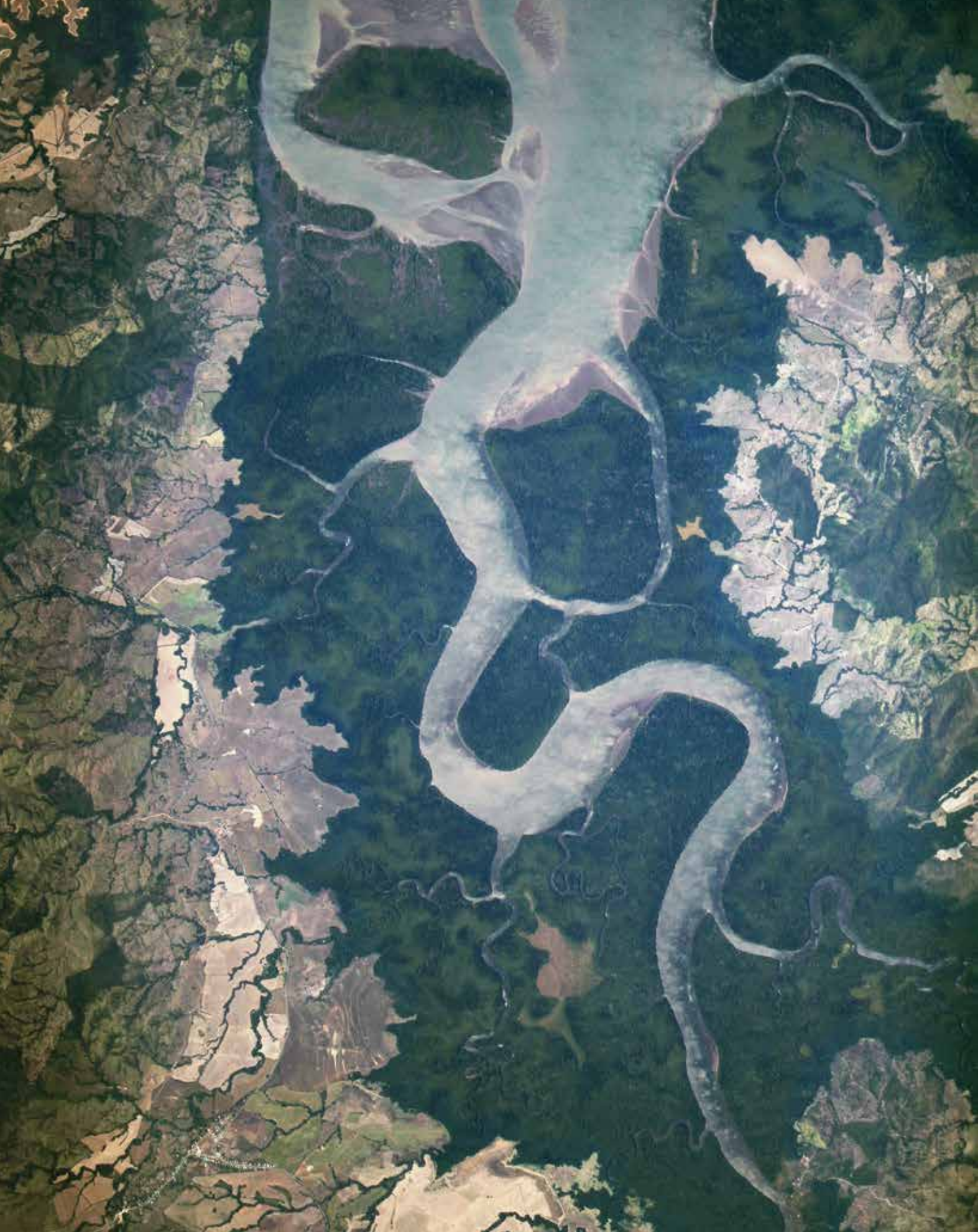
2015 also brought the launch of the Science International meetings, an ICSU-led initiative that saw us joining forces with the International Social Science Council (ISSC), the InterAcademy Partnership (IAP) and The World Academy of Sciences (TWAS), to develop an international accord on "Open Data in a Big Data World", and to launch a global, action-oriented



campaign for its endorsement. Equally significant was the exchange of letters and eventual agreement, in November 2015, between the ICSU and ISSC Executive Bodies to establish a joint working group tasked with the development of scenarios for closer institutional alignment and possible amalgamation between the two organizations.

As we look towards further building on these and other activities in the year ahead, ICSU will work proactively to strengthen its leadership role in supporting international research collaboration and policy development, convening scientific excellence through societal engagement and the safeguarding of the freedom and responsibility of science for the benefit of all societies. In doing so we will be guided by our Executive Board and our two policy advisory committees, and will rely on much closer relationships with our members – a top priority for us and one that I am personally committed to help making a reality.

Heide Hackmann, Executive Director



STRATEGIC PLANNING

RESPONSE TO THE EXTERNAL REVIEW

The first external review of ICSU since 1996 was presented to the 31st General Assembly in Auckland, in October 2014, by Peter Knight, chair of the ten-member review panel. In 2015, the Executive Board formulated a proactive response to the review recommendations, and the Secretariat initiated early steps in its implementation.

The response was informed by deliberations involving the ICSU Officers and Board members, as well as members of the Committee on Scientific Planning and Review (CSPR). It draws on ideas raised by the Council's membership during the 2014 General Assembly, the outcomes of a survey of Union Members conducted by the CSPR earlier that year, as well as consultations with Members and former ICSU leadership (Presidents, Vice-Presidents and Executive Directors).

Based on the review, the Board identified seven key challenges that ICSU must take on board in order to be the dynamic organization the review panel foresees. These cover issues of both substance and organizational development. They assume a longer-term perspective, serving as *leitmotifs* in the future development of the organization.

The challenges urge ICSU to:

- Become the global voice of science
- Promote transformative, solutions-oriented approaches to the production and use of scientific knowledge
- Gain wider recognition as an authoritative, trusted policy advisor
- Strengthen outreach, including public engagement with science
- Pursue a step-change in resource mobilization for excellent international science
- Maintain transparent governance structures and an engaged membership base
- Strengthen the effectiveness of the Secretariat and Regional Offices

The Executive Board has proposed a series of concrete actions designed to meet these challenges. They include a strengthened focus on international policy for science, research capacity development, and public outreach and engagement. In terms of ICSU's scientific scope and reach, the Board's response recommends a review of the current ICSU membership composition and structure. It also urges the forging of closer alliances among international scientific organizations, for example through an ICSU/ISSC Working Group and the joint activities with ISSC, IAP and TWAS within Science International.

As part of the review response actions, the Council is reviewing its current policies and practices and developing new ones where appropriate. These include its regional strategy, early career science strategy, a gender policy, the communications and outreach strategy, a private sector engagement strategy and a resource mobilization strategy.

ICSU also plans a strengthened coordination and membership engagement function at the Secretariat in Paris and has conducted in-house training for staff on an impact-oriented approach and Results-Based Management.

- The full response of the Executive Board to the External Review is available at <http://bit.ly/external-review-response>

SCIENCE INTERNATIONAL

In 2015, ICSU together with TWAS, IAP and the ISSC launched “Science International” as a series of regular meetings to defragment and thus strengthen the voice of global science in the international policy-for-science arena. To have distinctive value, Science International focuses on a specific niche: major issues of policy-for-science that require a global response in shaping and supporting science systems. These issues should also be of interest across different fields of science and types of science organizations. And finally, the Science International meetings are action-oriented, with well-defined outputs and outcomes that can be realized through co-ordinated, post-meeting activities by the Science International partners and their networks.

The first meeting of Science International was held in Pretoria, South Africa on 7-9 December 2015. The meeting was hosted by South Africa’s Department of Science and Technology and held in parallel with the first South African Science Forum. For this first edition of Science International, the four partner organizations selected the issues of big data and open data.

Big Data has emerged as a major opportunity for scientific discovery, while open data will enhance the efficiency, productivity and creativity of the public research enterprise and counteract tendencies towards the privatization of knowledge. In addition, concurrent open publication of the data underpinning scientific papers can provide the basis for scientific self-correction. The ability of organizations, individuals and society to maximize the benefits of big data, however, will depend on the extent to which there is open access to publicly-funded scientific data. Full exploitation of big data will also depend on the extent to which national science systems are able to develop the capacity to use it, on avoiding the creation of new ‘knowledge divides’, and on deciding which data can be made open for use and re-use.

This, together with the growing number of calls from various actors, both within and outside the scientific community, and from inter-governmental bodies such as the G8, the OECD and the United Nations, provided Science International with a framework for engagement.

In preparation for the first meeting of Science International, an expert working group was formed and invited to draft an accord on Open Data in a Big Data World. The working group was made up of experts nominated by each

individual Science International partner organization and was assisted by a wider network of expert ‘readers’ identified from among the members and networks of the partners. The ICSU Committee on Data (CODATA) led ICSU’s representation in the accord development, and its President Geoffrey Boulton chaired the working group.

The accord outlines 12 guiding principles for the practice and practitioners of open data, and specifically addresses the responsibilities of scientists, institutions, publishers and funding agencies in supporting access to data. It addresses boundaries of openness, whereby open data should be the default position for publicly-funded science, with limited exceptions.

With this accord, ICSU and partner organizations take a coordinated step forward with the bodies that advocate and support open access, and the academies that influence government, policymakers and funders.

A related output supported by Science International 2015 was a capacity-building initiative. The ICSU Committee on Data (CODATA) took the lead in developing a comprehensive plan for an African data science capacity mobilization initiative to be implemented in collaboration with key partners in Africa. It proposes the establishment of an African Open Data



Platform, which will coordinate a series of actions at different levels of national science system in the region.

The benefits of open data and the need to develop science systems to take best advantage of these developments is widely recognized in African countries. Open data initiatives and major science infrastructure programmes like the Square Kilometre Array are witness to this and indicate the direction of travel. An African Open Data Platform can help achieve the greatest impact from such initiatives through effective regional and international coordination.

ICSU is now looking towards its National Scientific Members and International Scientific Unions to take up the issue of big data and open data in the coming year – putting it front and centre as an issue that the scientific community must deal with head on, in order to maximize the benefit from the data revolution in both developed and developing countries.

Over the coming months, ICSU will also lead a campaign to gather more support for the principles of the Open Data Accord from science, education and policy bodies.

→ Download the accord “Open Data in a Big Data World” at:
<http://bit.ly/open-data-accord>



INTERNATIONAL RESEARCH COLLABORATION

FUTURE EARTH

In 2015, Future Earth, a major ten-year platform for global sustainability research and engagement, became fully operational with the appointment of its Executive Director, Paul Shrivastava, and five directors for the globally distributed Hubs. Shrivastava brings more than three decades of experience in sustainability within academia and business to the programme.

Future Earth is developing the intellectual framework for a new type of transdisciplinary research, Global Sustainability Science. In a recent editorial in the journal *Science*, Johan Rockström, Director of the Stockholm Resilience Centre, said: “Earth system resilience and stabilization are necessarily rising to the top of political and scientific research agendas. With humanity at a critical juncture, Future Earth has the potential to become the largest, most ambitious international research program ever undertaken.”

The programme is growing rapidly. In addition to the Global Hubs in Colorado, Montreal, Paris, Stockholm and Tokyo, Future Earth established regional offices and centres in the Americas, Asia, Europe and the Middle East and North Africa in the year. In August, the African Future Earth Committee held its first physical meeting in Pretoria, South Africa, and offices

in Rwanda and South Africa are scheduled to open in 2016. The Science and Engagement Committees met twice, in Vienna in June and Tokyo in November, to finalize implementation plans and international coordination strategies. They also developed the new Knowledge Action Networks around key societal challenges relating to issues such as transformations, urbanization, natural assets, finance and health.

During the year, several of the projects sponsored by the former Global Environmental Change Programmes – Diverstas, the International Geosphere-Biosphere Programme (IGBP) and the International Human Dimensions Programme (IHDP) – completed the transition to Future Earth. The projects continue to deliver high-quality, policy-relevant research.

The Global Carbon Project released its 10th Annual Global Carbon Budget during the Paris COP21 climate negotiations, showing that emissions from fossil fuels and industry in 2014 increased by only 0.6% despite economic growth and may even fall slightly in 2015 (published in *Nature Climate Change and Earth Systems Dynamics*). The Past Global Changes (PAGES) project published a study in *Science* indicating that current temperature targets (1.5-2°C) might lead to a six metres sea-level rise.



Market scene in Bangladesh



INTEGRATED RESEARCH ON DISASTER RISK (IRDR)

With ICSU and UNESCO, Future Earth co-sponsored the “Our Common Future under Climate Change” conference, the largest scientific conference ahead of COP21, which brought together 2,000 scientists around a solutions-focussed agenda. This was in addition to several major international academic conferences: “Transformations 2015”, “Governance in the Anthropocene” and the “People and Ecosystem Services” conference, all organized by Future Earth’s projects or sponsored by Future Earth.

2015 was a historic year for international policy with the adoption of the Paris Agreement on climate and the Sustainable Development Goals (SDGs). Future Earth’s Science and Engagement Committee members Mark Stafford Smith, Farooq Ullah, Belinda Reyers and many others were fully engaged in the SDG process and have been working closely with United Nations for several years to provide essential scientific insight into the development of the goals. During COP21, the Future Earth network had a full programme of events, meetings and talks targeting policy, civil society and business. Several high-profile press conferences led to headlines in the *Washington Post*, *New York Times*, *The Economist*, *Guardian*, the *BBC*, and *Reuters*.

The International Geosphere-Biosphere Programme came to an end after three decades of research, and handed over all its activities and programmes to Future Earth. The remarkable legacy of the programme constitutes a strong foundation for Future Earth’s work.

In 2016, Future Earth will launch a range of tools to facilitate international collaboration and continue to build the programme as an open, inclusive network. Within this open network it will establish the first Knowledge Action Networks and launch the Future Earth Media Lab, which will both catalyse a range of innovative products at the interface between science and society.

2015 saw a renewed commitment from world’s governments to reduce disasters risks with the adoption of the Sendai Framework for Disaster Risk Reduction. IRDR took an active part before, during and after the conference to mobilize the scientific community, working with ICSU and other partners. IRDR co-organized an international scientific conference that took place in Tokyo in January 2015 which shaped an action agenda for science around the key functions of science in support of disaster risk reduction (DRR), namely: assessment of science available on disaster risks, synthesis of scientific evidence, scientific advice to policy-makers, DRR-related monitoring and review, communication and engagement, and capacity building.

IRDR coordinated the contributions of the Science and Technology Major Group leading up to and during the UN conference in Sendai in March. Following the adoption of the Sendai Framework, a number of scientists from the



Meeting of the IRDR Science Committee in Qingdao, China



IRDR and ICSU community published a comment in *Nature* (Cutter *et al.* 2015) that defined priorities for science in the implementation of the Sendai Framework. The community also participated in the June meeting organized by the UK Royal Society that aimed to home in on the priorities for science to support the Sendai Framework. Among IRDR's 2015 publications were *Guidelines on Measuring Losses from Disaster: Human and Economic Impact Factors*, and *Forensic Investigations of Disasters: a conceptual framework and guide to research* - a 2.0 version of the Forensic Investigations of Disasters methodology.

Two new International Centres of Excellence were approved by the IRDR Scientific Committee: one on Disaster Resilient Homes, Buildings and Public Infrastructure, based at the Institute for Catastrophic Loss Reduction, Western University, Canada; and on Critical Infrastructures and Strategic Planning, established within the Department of Civil Engineering and Environmental Management at the University of Stuttgart, Germany.

→ The IRDR programme will undergo a mid-term review in 2016.

URBAN HEALTH AND WELLBEING

In the next few decades, a further 2-3 billion people need to be housed in urban areas – more than one million people every week. Seventy percent of the urban infrastructure that will exist in 2050 has not yet been built. This means that there is an opportunity to create new cities that take into account the interrelationships of the social, ecological and technological dimensions of urban systems – identifying healthy constellations of factors impacting the quality of life in cities.

ICSU's international programme on Urban Health and Wellbeing recognizes the importance of taking an interdisciplinary and systems perspective for advancing knowledge on urban health and informing urban decision makers. The programme comes at a time when not only cities are rapidly changing but also science itself. Today, scientists increasingly recognize the value of multiple knowledge domains for understanding the city as a complex adaptive system. In 2015, the programme has promoted a systems approach to

Participants of the seminar
“Big Data in an Urban Context”



urban health globally, by organizing workshops, symposia, dialogues; publishing scientific articles and material for education and awareness-raising; and endorsing activities, initiatives and organizations.

On 15-18 July 2015, the programme office co-organized the annual summer school at the Institute of Urban Environment (IUE) in Xiamen, China. The summer school is an event to which Chinese and international students are invited, and introduced to IUE’s work and the broader context of urbanization. With talks and presentations on everything from nano-functional materials to emerging pollutants, junior academics were able to engage with a host of international lecturers.

The programme also aims to promote a systems approach to human health and wellbeing in a changing urban environment among scientists and decision-makers. There is a pressing need to improve urban decision-making and thereby protect and promote health and, more generally, improve the lives of urban dwellers in sustainable ways.

October saw the programme engage with Future Earth by hosting an international symposium on co-design for urbanization in China. The aim of the symposium was to establish international collaboration with Asian-Pacific countries to address the scientific challenges of co-design for urbanization

and its related health challenges. The symposium participants produced an outcome statement with proposed follow-up action such as the establishment of an Urban Knowledge Action Network within Future Earth.

From 30 November to 4 December 2015, IUE and the Urban Health programme hosted “Big Data in an Urban Context”, a seminar bringing together an outstanding group of scientists who discussed the challenges and opportunities of big data for urban health. During the week-long workshop, a field trip to the Xiamen Information Centre in Haicang district gave insights into how traffic- and health- related big data can be used in urban control centres for monitoring and process management. The seminar was also the 6th World Social Science Fellow Seminar by the ISSC and convened by ICSU-CODATA.

2015 saw the programme move towards a more implementation-focused stage of development. As part of this, it unveiled a new logo, a new website, and published a science brief for the Global Sustainable Development Report, a commentary piece in *Nature*, and two newsletters to its community.



Science Committee of the Urban Health programme

EARLY CAREER SCIENTISTS' NETWORKING CONFERENCE AT VILLA VIGONI

Since 2013, ICSU, in company with ISSC, has held a series of Early Career Scientists' Networking Conferences at Villa Vigoni, supported by the German Research Foundation (DFG).

These unique conferences aim to integrate the sciences, bringing early career researchers from both the natural and social sciences together with noted senior scientists to work on a set topic in global sustainability. The goals of these intense one-week workshops are to create new networks and come up with new and innovative research questions on the grand challenges the world will face in the coming decades.

The 2015 gathering discussed the Sustainable Development Goals (SDGs) and the role for science in providing the necessary evidence for achieving this ambitious set of global goals. There is a role for the international research community in making key global sustainability targets measurable, quantifiable and evidence-based. "Future Sustainability", as the conference was informally titled, with convener James Wilsdon also provided participants with a chance to gain an overview of the concept of science advice, its limitations and strengths. The conference was co-organized by the International Network for Government Science Advice, bringing



together other noted science advisors and policy actors. In the tranquil surroundings of Villa Vigoni, participants had the opportunity of exchanging ideas in structured workshops during the day and – just as importantly – continuing discussions informally in the evenings. Villa Vigoni is an environment steeped in the history of collaboration on research, education and culture, and thus provides an ideal setting for the members of this diverse group to get to know one another, exchange ideas and possibly initiate new collaborative projects. The professional networks and friendships forged at Villa Vigoni have generated journal publications, research proposals and a lasting and active online community, fostering a new generation of globally networked early career researchers.

→ Watch the video from the 2015 conference at: <http://bit.ly/villa-vigoni-2015>

Participants during the Villa Vigoni conference on "Future Sustainability"



GRANTS PROGRAMME

The ICSU Grants Programme supports collaborative scientific initiatives of relevance to science and society through seed funds that are often used to lever funds from other sources. It is a competitive, peer-reviewed programme for ICSU Scientific Unions, Interdisciplinary Bodies and Joint Initiatives, in collaboration with other ICSU bodies including Regional Offices. Since 2008, the programme has offered up to ten awards of 30 000 euros per year. The programme looks for proposals that:

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- > focus on the themes of the ICSU Strategic Plan 2012-2017 and are international and multi-disciplinary in nature.
 - > involve scientists across disciplines and national borders.
 - > promote the involvement of young scientists, women, and scientists from developing countries.
 - > address the strategic priorities of the ICSU Regional Offices.
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Four projects were awarded under the 2015 Grants Programme for a total amount of 111,000 euros.

Lead Applicant	Supporting Applicant(s)	Regional Office(s)	Title of Proposal
IMU	IUBS, IUIS, ICIAM, ISSC, Future Earth ecohealth	ROA	Global change impact on diseases and alien species expansion
IUCr	ECA, UNESCO, SAASTA	ROA	Building Science Capacity in Africa via Crystallography
IUGS	IAU, IGU, INQUA, ISPRS, IUGG, IUSS, URSI	-	Resourcing Future Generations
IUPAC	US NAS, UNESCO, IUPAP	ROAP	Accelerating participation and leadership of women in chemistry

BUILDING ON DISCIPLINARY STRENGTHS

ICSU's Union Members play an essential role in providing the disciplinary base of its science programmes and other activities. In this section, key activities and contributions from some of the Union Members during the last year are highlighted.

INTERNATIONAL SOCIETY FOR PHOTOGRAMMETRY AND REMOTE SENSING (ISPRS)

2015 was a very successful year for ISPRS. A new scientific vision and research agenda for the Society was prepared and published, see <http://dx.doi.org/10.1016/j.isprsjprs.2015.09.008>. At the same time, both sets of ISPRS proceedings, the Archives and the Annals, are now part of the Web of Science. The Archives are also listed in SCOPUS, while an application has been submitted for the Annals.

A new structure comprising five Commissions was adopted by its Ordinary Members with an overwhelming majority.

In late September-early October a second Geospatial Week (GSW) was held in Montpellier, with over 500 participants. GSW is a series of workshops that provides more possibilities for discussions while increasing the visibility of ISPRS and the local organizer. A second Scientific Initiative, which supports research valuable for the Society, took place during 2015, and proved every bit as successful as the first event.

→ <http://www.isprs.org/>

INTERNATIONAL GEOGRAPHICAL UNION (IGU)

The highlight of the year was IGU's Regional Conference held in Russia at the Lomonosov Moscow State University during August. More than 1600 delegates attended from 60 nations. In addition to the regular programme of scientific papers, there were eight thematic lectures, eight keynote addresses, special days for schoolteachers, a youth programme, an Olympiad and a reception in honour of the 170th anniversary of the Russian Geographical Society.

At the end of the year, the IGU's major project, "The International Year of Global Understanding", was formally ratified by ICSU, the International Social Science Council (ISSC) and the International Council for Philosophical and Human Sciences (CIPSH). IGU was elected as a full member of CIPSH at the latter's General Assembly in Beijing in December.

→ <http://www.igu-online.org/>

INTERNATIONAL UNION ON BIOLOGICAL SCIENCES (IUBS)

IUBS objectives are to promote biological sciences, coordinate international and interdisciplinary cooperation, support scientific programmes and conferences. Its goal is to counteract the fragmentation within biology by developing a unified biology approach.

In December 2015, the IUBS General Assembly was held in Berlin. Lectures on "Frontiers in Unified Biology" from Paul Shrivastava (Future Earth), Anne Larigauderie (IPBES) and Thomas Brooks (IUCN) were followed by a panel discussion on "our common future". Scientific symposia were organized on: biological consequences of global change: current challenges, building an informatics agenda on unified biology, integrated biology education for Future Earth, integrative climate change biology – biodiversity, functional traits and lessons from the past, bionomenclature: making nomenclatural codes – concepts and tools for modern research, biology and the societal interfaces, from urban biology to sustainable BiodiverCities.

For the coming three years, IUBS has decided to implement programmes on climate change, education, bioinformatics, bionomenclature and agroecosystems, as well as developing its collaboration with Future Earth.

→ <http://www.iubs.org/>

INTERNATIONAL CARTOGRAPHIC ASSOCIATION (ICA)

The aim of the International Cartographic Association is to promote the discipline and profession of cartography internationally. It offers its expertise and knowledge of technical developments to other organizations via events, meetings, workshops and publications. With its Commissions and Working Groups it concentrates activities on a wide range of topics that nearly cover the whole discipline. Since its foundation in 1959, ICA has worked with national and international governmental and commercial bodies, and with other international societies, to achieve its aims.

2015 was the year of the ICA 16th General Assembly and 26th International Cartographic conference in Rio de Janeiro, Brazil. A new executive was elected, as well as new Commissions and their chairs installed.

2015 saw the start of the UN-GGIM endorsed International Map Year, a worldwide celebration of maps and their unique role in our world.

→ For more information see: <http://www.mapyear.org/>
<http://www.icaci.org/>

INTERNATIONAL UNION OF NUTRITIONAL SCIENCES (IUNS)

The main activities of IUNS in 2015 were as follows. The Union's Statutes and Rules were revised and these amendments approved by Adhering Bodies and the IUNS Council. Task Force reports for 2014/2015 have been published and are available on the IUNS website. The work of the Nutrition and Climate Change Task Force was disseminated at the COP21 meeting in Paris with presentations on 'Climate Change, Food Security and Nutrition' and 'Co-benefits of nutrition sensitive adaptation and mitigation'. IUNS was actively involved in regional congresses of SLAN (Latin America), FENS (Europe), ACN (Asia) and FANUS (Africa), and participated in the FAO-WHO ICN2 Conference in Rome. At the end of 2015 the IUNS Task Force on Capacity Development launched a 're-integration' grant, which assists students from low- and middle-income countries, completing their doctoral training in a developed country, to return to their home country to start their careers.

→ <http://www.iuns.org/>

INTERNATIONAL UNION OF TOXICOLOGY (IUTOX)

The International Union of Toxicology (IUTOX) completed the first of three courses, titled "Water Security: Integrating Lessons Learned for Water Quality, Quantity and Sustainability" in Brazil in November 2015. The water security courses support ICSU's Future Earth initiative by collaborating with our member societies in Latin America to study local and regional water issues and to work together to develop sustainable solutions. The courses use a risk assessment framework, an integral part of IUTOX's training workshops, and the foundation for IUTOX programs in numerous countries for over 15 years. A water security seminar in Germany and a CE course in Mexico in October 2016 will pull from lessons learned across the locations. The ICSU Grant that made this series possible was supported by the ICSU Regional Office for Latin America and the Caribbean (ICSU ROLAC). Michael Clegg, ICSU Vice-President for External Relations, addressed the water course participants as well as the IUTOX 9th Congress of Toxicology in Developing Countries.

→ <http://www.iutox.org/>



Nations Unies
Conférence sur les Changements Climatiques 2015
COP21
Paris, France



SCIENCE FOR POLICY

WORLD CONFERENCE ON DISASTER RISK REDUCTION

The 3rd World Conference on Disaster Risk Reduction was held in Sendai, Japan, on 14-18 March 2015. ICSU was invited by the UN Office for Disaster Risk Reduction (UNISDR) to be the organizing partner of the Scientific and Technological Community Major Group in the run-up to and during the conference. It coordinated a large delegation of nearly 400 scientists, including many representatives from ICSU members and unions.

The Sendai Framework for Disaster Risk Reduction 2015-2030 contains a strong recognition of the importance of science in the DRR field, and offers many avenues through which the scientific community can help implement the framework in the coming years. It calls for science to be more effectively used in decision-making, stronger international cooperation, and a shift from managing disasters to managing risks, with a need to better understand underlying root causes of disasters.

ICSU co-organized a session on applying science and technology to DRR decision making. During this session ICSU and its partners (UNISDR, the UK Collaborative on Development Sciences and the Science Council of Japan) reaffirmed their commitment to build an international partnership to support the implementation of the post-2015 framework and to better coordinate and enhance existing capacities and deliver concrete outputs – notably in the fields of assessment, synthesis, advice and monitoring – engagement and capacity building.

David Johnston, Chair of the IRDR Science Committee, delivered the official statement of the Science and Technology Major Group to the conference: this acknowledged the strong call in the new framework for science to support the



understanding of disaster risk and promote risk-informed decisions and risk sensitive planning from the local to global levels. The statement also emphasized the need to break down the isolation of scientific knowledge, and to actively assist governments and others in the uptake and use of this knowledge by fostering partnerships across existing institutions and networks to scale up the application of science to decision-making at all levels.

During the conference Allan Lavell, a key member of the community of the IRDR programme, was awarded the prestigious United Nations Sasakawa Award for Disaster Risk Reduction. A review and synthesis paper on natural hazards, vulnerabilities and disaster risks, which aimed to highlight potential contributions of science to disaster risk reduction, was also released during the conference.

ICSU will continue its support for the Sendai Framework during its implementation phase, in the first instance as a co-organizer of the UNISDR Science and Technology Conference on the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in January 2016.

→ Watch the video of David Johnston delivering the official statement of the science and technology major group at: <http://bit.ly/sendai-statement>



SUSTAINABLE DEVELOPMENT GOALS

Transforming our world: the 2030 Agenda for Sustainable Development, a universal agenda for action applicable to both developed and developing countries alike, was adopted in September 2015 by the United Nations General Assembly. As part of this Agenda, a set of 17 Sustainable Development Goals (SDGs) and 169 targets were adopted to “stimulate action over the next 15 years in areas of critical importance of humanity and the planet”. The Agenda recognizes the eradication of poverty as the greatest global challenge and climate change as “one of the greatest challenges of our time,” undermining the ability of all countries to achieve sustainable development. In addition to better integrating the economic, social and environmental dimensions of sustainable development – as compared with their predecessors, the Millennium Development Goals – the SDGs include a goal and a number of targets related to the means of implementation, which include science and technology, data, financing and capacity building.

The adoption of the SDGs concluded a two-year process following the Rio+20 Conference during which the UN Open Working Group developed a proposal through an extensive consultation process. ICSU, as one of the organizing partners of the Scientific and Technological Community Major Group, coordinated scientific inputs into the regular sessions from a wide range of scientific institutions and networks. It also initiated and led a scientific review of the proposed goals and targets (see below). Beyond the SDGs negotiation process, ICSU has been developing a closer relationship with the UN Department of Economic and Social Affairs (UN DESA), to provide contributions on a number of related processes, notably the elaboration of the Global Sustainable Development Report (GSDR), an annual publication by the UN which draws on international scientific assessments and scientific literature to provide information on key issues for the implementation and review of sustainable development commitments. The GSDR-2015 was presented at the High-level Political Forum on Sustainable Development (HLPF), an annual meeting of the world’s countries to discuss progress on sustainable development and modalities for implementation and review (New York, 26 June to 8 July 2015). ICSU was represented at the HLPF and provided inputs into discussions on strengthening the science-policy interface in the context of the SDGs.

Scientists have strongly mobilized around the SDGs and have taken the measure of the importance of the consensus achieved globally on a set of goals for achieving sustainable development. However, achieving this ambitious agenda will require strengthening the science-policy interface to promote stronger and more systematic collaboration between scientists, policy-makers and societal groups. In this regard, science should not only be recognized as an observer, but also as an advisor and a partner to promote evidence based decision-making, as highlighted also by the UN Scientific Advisory Board. To this end, ICSU will continue to contribute to the preparation of the Global Sustainable Development Reports (GSDRs) in the coming years, alongside other activities to strengthen science advice to governments.

REVIEW OF TARGETS FOR THE SUSTAINABLE DEVELOPMENT GOALS

In February 2015, ICSU initiated and led the first-ever scientific review of the Sustainable Development Goals (SDGs). The report, jointly published with ISSC, brought together expertise from over 40 scientists from across the natural and social sciences, and was timed to inform the final months of negotiations for the 2030 Agenda for Sustainable Development.

The report tackled the following questions: Are the goals achievable? Are the targets quantifiable and realistic? What are the essential targets and which ones can be dropped? How much more work is required to develop integrated, quantifiable targets? What are the key links, synergies and trade-offs across the goal framework that will need to be better understood and managed? What are the key indicators to monitor progress?

This ICSU-led assessment of the targets was the first of its kind to be carried out by the scientific community, looking at all 17 goals and 169 targets and providing recommenda-



tions to support the effective implementation of the SDGs. The report recognized the SDGs as a major step forward in setting a global agenda for all countries, developed and developing countries alike, and supporting a closer integration of the economic, social and environmental dimensions of sustainable development. However, the report also found that many of the targets suffer from a lack of integration,

some repetition and rely too much on vague, qualitative language rather than hard, measurable, time-bound, quantitative targets. It identified where targets could be made more robust and provided recommendations for how to do so, and pointed to the important interdependencies across goal areas.

Authors were also concerned that the goals are presented in ‘silos’; the goals address challenges such as climate, food security and health in isolation from one another. Without interlinking there is a danger of conflict between different goals, most notably trade-offs between overcoming poverty and moving towards sustainability. Action to meet one target could have unintended consequences on others if they are pursued separately.

Finally, the report highlights the need for an ‘end-goal’ to provide a big picture vision for the SDGs. “The ‘ultimate end’ of the SDGs in combination is not clear, nor is how the proposed goals and targets would contribute to achieve that ultimate end,” write the authors. They recommend that this meta-goal be “a prosperous, high quality of life that is equitably shared and sustained.”

The report was launched at UN Headquarters in New York in February at an event gathering over 100 policy-makers and stakeholders, and was cited by the Co-facilitators during the final months of intergovernmental negotiation in New York. Key findings were also incorporated into the 2015 UN Global Sustainable Development Report. The report was extensively covered in international media, both immediately following its release and again on the occasion of the adoption of the SDGs in September 2015. Articles appeared in the *Financial Times*, *Fox News*, *New Scientist*, *Science*, *SciDevNet*, *Reuters AlertNet* and the *World Economic Forum* blog.

→ Download the SDGs Report from:
<http://bit.ly/SDGsReport>

COP21 CLIMATE TALKS IN PARIS

The UNFCCC 21st Conference of the Parties (COP21) adopted the Paris Agreement in December 2015. This was a major step forward from the international community towards addressing climate change. The Agreement emphasizes the need to hold “the increase in the global average temperature to well below 2 °C above preindustrial levels and pursuing efforts to limit the temperature increase to 1.5°C above preindustrial levels”.

ICSU’s main focus at COP21 was to raise awareness of ICSU and its programmes, and also to be a focal point for scientists attending the talks. During the two weeks of the negotiations, ICSU supported the scientific community at COP21 in two ways:

- community management via coordination of an events calendar and contact sheet, and a daily newsletter highlighting all science events at COP21
- ensuring a high profile for science in media coverage of COP through proactive outreach work.



Journalists at the COP21 science press conference



ICSU had a presence – through a booth shared with partner organizations – which provided a lively focal point for the scientific community at the talks. At the booth, the latest ICSU publications on climate change featuring an overview of ICSU’s involvement in climate research, and top articles from ICSU’s Road to Paris blog, were available both in print and electronic formats. The ICSU team was on-site every day to answer questions about ICSU and its programmes. Many science-related events took place during the two weeks that involved ICSU’s programmes, members and partners. ICSU was formally represented at a number of these events, for example through participation in discussion panels. These included a number of events organized by the Our Common Future under Climate Change conference secretariat. This engagement took place both in the main negotiations area (the ‘blue zone’) and the public climate change solutions exhibition ‘Climate Generations’.

Each morning, the ICSU team sent a newsletter to all scientists at COP who had registered for the service. The e-mails summarized the progress on the negotiations with a special regard for what was most relevant for science. It also provided an overview of science-related side events during the day, acting as a user guide to COP for scientists. This newsletter

proved very popular and more than doubled its subscriber base during the two weeks of COP.

On the last official day of COP, ICSU co-organized a key scientific press briefing on the progress of the talks. More than 200 journalists streamed into a side event room at Le Bourget to hear the comments of leading scientists on the penultimate draft of the Paris Agreement. The briefing led to extensive coverage in the international press, including in the *Washington Post*, *Wall Street Journal*, *Climate Home*, *The Nation*, *Reuters*, *The Conversation* and Associated Press. Many of the key arguments presented by the scientists resonated through media until after the agreement was accepted. The panel of scientists consisted of Hans-Joachim Schellnhuber, Director of the Potsdam Institute for Climate Impact Research, Johan Rockström, Executive Director of the Stockholm Resilience Centre, Steffen Kallbekken, Research Director at CICERO, Kevin Anderson, Deputy Director of the Tyndall Centre, and Joeri Rogelj, IIASA.

OUR COMMON FUTURE UNDER CLIMATE CHANGE

The International Council for Science, along with Future Earth and UNESCO, was one of the international co-organizers of the most important climate science conference in 2015 ahead of COP21. Working with a coalition of French research organizations, ICSU played a leading role in supporting the work of the organizing committee, the scientific committee and the communications and outreach operations of the conference. Described by the *New York Times* as a “richly variegated four-day climate change conference”, it drew nearly 2,000 scientists from 100 countries, and featured 165 parallel sessions ranging across all scientific disciplines around a solutions-focussed agenda.

A total of 75 side events were held all over the world, extending engagement with other stakeholder communities. The conference delivered an outcome statement emphasizing climate change as a “defining challenge of the 21st century” and the need to more effectively link up problem definition

with the solution space. Scientists have historically played a critical role in understanding and raising awareness on climate change; they now have an opportunity and a responsibility to provide the evidence-base for ambitious action to limit climate change and address its consequences. The conference also contributed to defining the future research agenda for climate change science in the context of global change science. Media coverage of the outcome statement appeared in the *New York Times*, *the Guardian*, *Le Monde*, *Reuters* and *Agence France-Presse*, to name just a few. The social media impact of the conference was also significant: 84 articles on the conference blog, 14 videos on YouTube, 171 presentations on SlideShare, more than 20,000 tweets were sent by some 5,000 contributors.

Prior the opening of the conference, ICSU convened a special event to explore opportunities for transformation that would emerge after a global agreement on reducing emissions at COP21 in December 2015. The event brought together the leadership of ICSU’s co-sponsored programmes, international scientific committees and networks, as well as leading figures from the international scientific community, the international science policy community and the French government, including Sylvie Lemmet, Director of European and International Affairs of the French Environment Ministry, and Halldor Thorgeirsson, Director for Strategy at the UNFCCC Secretariat. Discussion focused on how science can play an active role in the transition to a low carbon future, taking into account contributions of the ICSU scientific community to the development of climate science over the last 60 years. An outcome of this event was the publication of “The International Council for Science and Climate Change: 60 years of facilitating climate change research and informing policy” which was presented and distributed at COP21. ICSU acknowledges the Group on Earth Observations (GEO) for its generous support of the event and for the publication.



→ Download the report “ICSU and Climate Change” at: <http://bit.ly/icsu-climate-change>

French Minister for Ecology Ségolène Royal (r., with Hervé Le Treut) at the conference



Save the date: 2nd International Conference on Science Advice to Government 29th-30th September Brussels, Belgium

INTERNATIONAL NETWORK ON GOVERNMENT SCIENCE ADVICE

ICSU initiated the International Network for Government Science Advice (INGSA) in 2014 and continued to support its development in 2015 in a context of increasing demand for strengthening the science-policy interface. It is also a member of the INGSA Network Development Group, which leads efforts to build the network's foundation through activities at major international events, capacity building workshops and the development of joint research and publications.

Building on the success of the first and inaugural international conference on Science Advice to Governments held in Auckland, New Zealand on the sidelines of the ICSU General Assembly in August 2014, INGSA and ICSU joined forces in two major science events co-organized by ICSU.

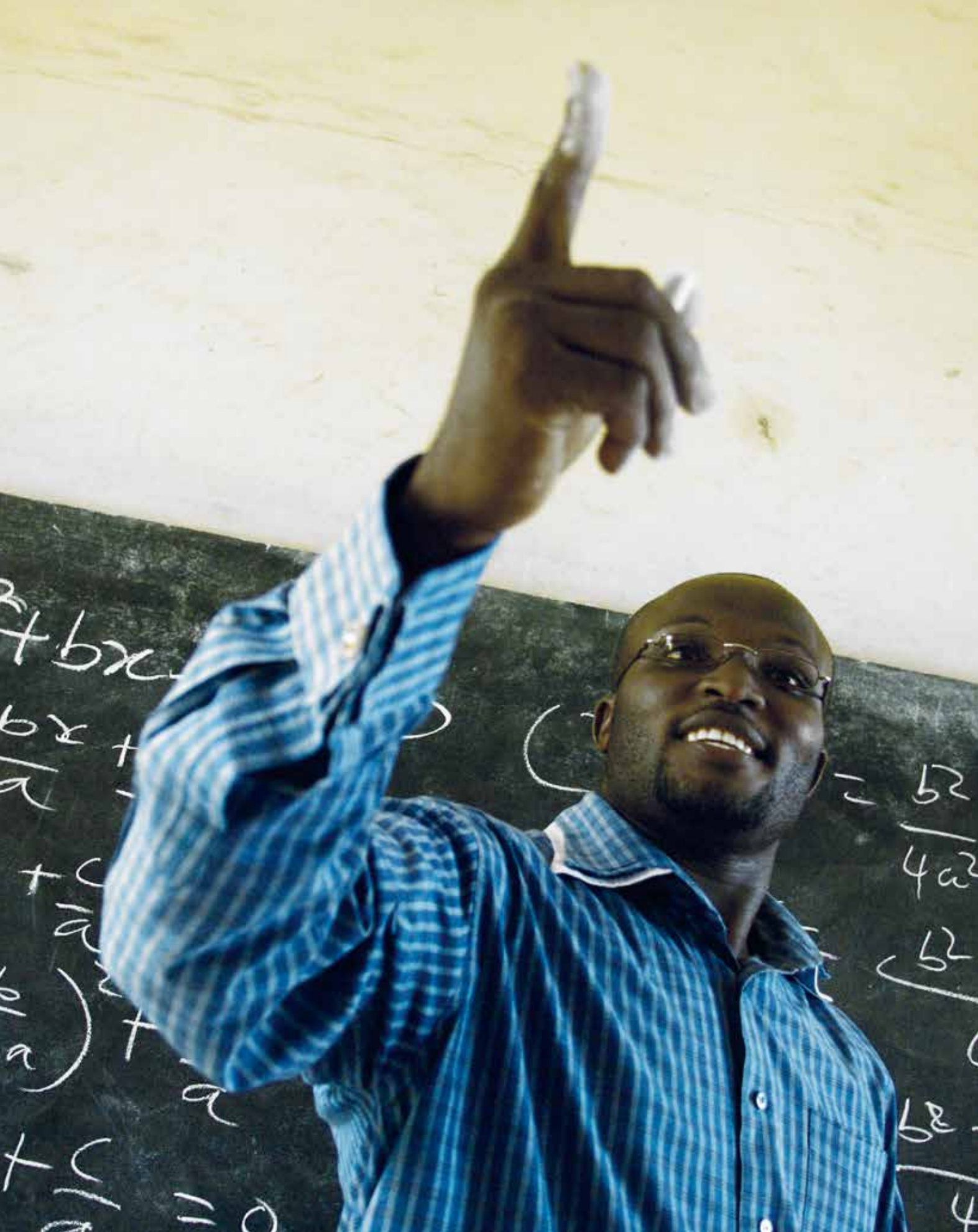
The science and art of scientific advice was a theme of the Early Career Scientists Networking Conference at Villa Vigoni in May. Organized by ICSU and ISSC and supported by DFG, the conference featured sessions on science advice led by Peter Gluckman and James Wilsdon from INGSA.

In November, during the 7th World Science Forum (WSF) held in Budapest, ICSU President Gordon McBean and Executive Director Heide Hackmann participated in a seminar convened by INGSA on science advice to governments, with a focus on the international level.

Gordon McBean advocated for a greater connection between 'science for policy' and 'policy for science'. While these domains are distinct, he argued that it is increasingly important to design and enable national science systems to better inform public policy, citing examples such as the Future Earth programme.

The importance of science advice was highlighted in the forum's final declaration, which stated that: "We are deeply convinced that sound, independent scientific advice largely improves the quality of policy-making. We welcome recent global trends for the more pronounced use of science in policy-making and the efforts to bridge the difficulties inherent in the roles of scientists and policy makers."

In 2016, ICSU will play an active role in the design and organization of the 2nd International Conference on Science Advice to Governments, hosted by the European Commission and INGSA in Brussels in September. This follow-up conference will focus on the demand/practitioner side of science advice and emerging questions, such as ethics and principles of science advice, solutions-oriented approaches and the role of the media and communications in science advice.



$$x^2 + bx$$

$$\frac{bx}{a} +$$

$$+ c$$

$$\frac{1}{a} x^2 +$$

$$+ c$$

$$= 0$$

$$= 52$$

$$\frac{4a^2}{4}$$

$$\sqrt{b^2}$$

$$b^2$$

$$4$$

UNIVERSALITY OF SCIENCE

COMMITTEE ON FREEDOM AND RESPONSIBILITY IN THE CONDUCT OF SCIENCE (CFRS)

The Committee on Freedom and Responsibility in the conduct of Science pursued its mission of safeguarding the Council's Universality of Science Principle. In 2015, the committee focused on strengthening research integrity in the light of increasingly influential science assessments and supporting scientists whose human rights are under threat. The work of the Committee benefited from a newly composed membership.

RESEARCH INTEGRITY AND SCIENCE ASSESSMENTS

Fostering research integrity is central to the Committee's mandate, considering accurate and reliable scholarly data as the basis for both societal trust in scientific evidence and scientific progress. This has been reflected in its involvement in the 2007, 2010 and 2013 World Conferences on Research Integrity (wCRI), an important platform of global relevance on that topic. Fitting the 2015 wCRI theme of systemic conditions that favour or impede research integrity, the Committee organized a symposium with four speakers from higher education, government and policy, a national context and a young scientists' organization which explored the impact of science assessments on research integrity from their perspectives. This meeting was an expression of the Committee's concern that the replacement of peer review by quantitative assessment, and the increasing use of metrics to calculate scientific merit or reward without concurrent quality assessment may favour quantity over quality of output and thereby undermine research integrity.

PROTECT HUMAN RIGHTS OF SCIENTISTS

The Committee considered ten cases of individual scientists around the globe and decided to take action in support of six scientists whose human rights were infringed as a direct result of their scholarly work. Particular attention was paid to Omid Kokabee: arrested in 2011 during a return trip to his home country, Iran, from the University of Texas at Austin, where he was enrolled as a doctoral student in physics; he is serving a 10-year prison sentence for "communicating with a hostile government" and "illegitimate earnings". The charges appear to relate to his PhD studies and the compensation he received for his teaching assistantship, which is part of the university's regular support package provided to all first-year US and international doctoral students. Extending the Committee's activities and joining other international organizations in an attempt to bring about Omid Kokabee's release, the Chair used the opportunity of a personal meeting with the Iranian Ambassador resident in Oslo to describe Omid Kokabee's worsening health condition, to explain why the Committee was asking for his early release and to hand over a letter of appeal to the Iranian authorities.

In contrast, two cases were resolved to the Committee's satisfaction: a scholar imprisoned in China since 2007 was granted an early release, and the six scientists charged with manslaughter following their participation in a commission that assessed the earthquake risk in the region of L'Aquila, Italy, in 2010, were acquitted.

NEW COMMITTEE

Two thirds of the 15 CFRS members were replaced in the second half of 2015. The new configuration maintains gender balance and represents a diverse set of geographical backgrounds and fields of expertise. During its meeting, the new Committee identified new topics for workshops it intends to hold in the future that will explore freedom and responsibility aspects on issues of concern to the science community.

Delegates of the Council's National Members in the Latin America & Caribbean region

REGIONAL OFFICES

ICSU REGIONAL OFFICE FOR AFRICA

2015 was a busy year for the ICSU Regional Office for Africa (ROA), characterized by a number of engagements and activities, representing new challenges and positive achievements. The year saw the office change locations and institutional hosts, together with new appointments to the Regional Committee. Achieving the perfect balance from the sub-regional, gender, language and scientific disciplinary perspectives for the Committee is always a challenge, and was no different this time around.

The past year also saw a long-overdue review of the African Science Plans. The main objective of the review was to update each Science Plan in alignment with the ICSU Strategic Plan 2012–2017, new developments in the global research agenda, and the new thinking around the promotion of trans-disciplinary collaborative research and new international programmes, especially the Future Earth initiative.

The African Future Earth Steering Committee (AFEC) was established, following the resolutions from the second African Future Earth consultative meeting, which took place in 2014. The engagement that has started between AFEC and the Future Earth Secretariat has been a much anticipated development, which will mature with time. South Africa and ICSU funded the Committee's first meeting in Pretoria in 2015. The meeting demonstrated that, with the right intentions, partnerships and innovative mobilization, Africa can play its part in the global landscape. Egypt has offered to fund and host the next meeting in early 2016.

Following the establishment of the AFEC Steering Committee, bids were invited for establishing the African Future Earth Node. The selection process is still underway, but a substantive number of bids were received. Having AFEC in place has instilled hope for a concerted African engagement with the Future Earth initiative.

During 2015, ICSU ROA continued its work with the United



Nations Economic Commission for Africa (UNECA) as a science and technology major group coordinator in the Civil Society consultative group and in the series of African climate talks that were held ahead of COP21.

ICSU ROA also organized a side event at the Our Common Future under Climate Change conference in July in Paris, and collaborated with the Network of African Science Academies (NASAC) and UNESCO/IOC to host two scientific side events at COP21, also in Paris, in December 2015.

ICSU ROA also increased its engagement with ICSU's Union Members, for example by assisting IUCR with its follow-up projects from the International Year of Crystallography (IYCR), 2014. Of note was also the Geo-Unions meeting in Trieste, Italy, to which the ICSU ROA Director was invited to make a contribution, partially funded by ICTP.

ICSU REGIONAL OFFICE FOR LATIN AMERICA AND THE CARIBBEAN

In 2015 ICSU ROLAC was subject to an External Review by the Committee on Scientific Planning and Review (CSPR). The review was carried out from February to May and the process involved the participation of ICSU ROLAC staff, the Mexican Academy of Sciences, the National Council for Science and Technology of Mexico (CONACYT), and members of the Regional and Steering Committees. The Review report was finalized in July 2015. As a result, key recommendations for the present and future work carried by ICSU ROLAC were pointed out. Among these are the need to define medium- and long-term goals within the already

At the ROLAC Regional Committee meeting



established framework, an improvement of human resources and operational management, and more cooperation with other members of the ICSU family.

Alongside the review process, ICSU ROLAC continued its work in its four priority areas: Mathematics Education, Disaster Risk Reduction, Sustainable Energy, Biodiversity, and a number of actions related to Future Earth were accomplished in the region.

The priority area of Mathematics Education saw the publication of a book about good practices on the teaching of mathematics in Spanish, and soon to be translated into English. ICSU ROLAC also began a project on the establishment of standards for the training of mathematics teachers within the region. The project launch event took place on 3–4 August in Tegucigalpa, Honduras.

In the Sustainable Energy area, the Steering Committee prepared a policy brief as a contribution towards ICSU's position on global climate change on the way to COP21.

The Steering Committee on Disaster Risk Reduction (SCDRR) was very active as three members of it participated in the Third UN World Conference on Disaster Risk Reduction on 14–18 March in Sendai, Japan. The SCDRR also continued with efforts to define its main activities and the role that it will play in the future.

In the Biodiversity priority area, a new event on Indigenous Knowledge is being prepared for 2016. The Regional Committee for the region (RCLAC) continued activities in guiding the office in strategic priorities.

The committee met twice in 2015: 11–12 March in Panama City, Panama; and 29–30 October in Montevideo, Uruguay. The end of the year saw ICSU ROLAC preparing to guarantee a smooth transfer of the Office to a new host country, expected in mid-2016.

REGIONAL OFFICE OF ASIA AND THE PACIFIC

The ICSU ROAP flagship project for Future Earth, the Sustainability Initiative in the Marginal Seas of South and East Asia (SIMSEA), held workshops in Japan and the Philippines to introduce the programme and seek support for the project's implementation in Asia. A SIMSEA development office was established in 2015 at the Marine Science Institute, University of the Philippines, Diliman. National programmes are being actively developed in Japan, Malaysia and the Philippines. SIMSEA Japan is developing well, with strategic linkages to the Japan Agency for Marine Earth Science and Technology (JAMSTEC), the Japan Society for Ocean Policy (JSOP) and the Atmosphere and Ocean Research Institute, University of Tokyo.

The highlight of ROAP's work on hazards and disasters in 2015 was the 4th International Workshop on Psychological Intervention After Disasters (PIAD) held in Taipei. It was jointly organized by the International Union of Psychological Science (IUPSYS), the Academy of Sciences located in Taipei,

1st Meeting of the Regional Advisory Committee, Future Earth in Asia, in Kyoto





Break-out group discussion during 4th International Workshop on Psychological Intervention After Disasters (PIAD) in Taipei

the International Centre of Excellence on Integrated Research on Disaster Risk (ICOE-IRDR) and ICSU ROAP. Other partners included the Centre for Applied Development Science, University of Jena, Germany, and the Chinese Psychological Society (CPS). The Workshop, which aimed to enhance individual and organizational capacity to present participants with the most recent scientific and applied scientific knowledge and evidence relevant for psychological intervention after disasters, was attended by 25 mostly early career scientists, from eight Asian countries.

The Steering Group on Natural Hazards and Risk (SGNHR) that promotes the scientific study of natural hazards and risk in the Asia and Pacific region participated in the 12th Asia Oceania Geosciences Society (AOGS) Annual Conference in Singapore and co-organized the 4th International Tsunami Field Symposium in Bangkok, Thailand. The Chair of the Group also represented ROAP and the Steering Group on the Science and Technology Major Groups meeting at the United Nations 3rd World Conference on Disaster Risk Reduction in Sendai, Japan. Funding was obtained for a two-year research project entitled “Determining Modern Risks of High-energy Coastal Hazards in the Gulf of Thailand from Coarse Clastic Carbonate Sediments”.

In a milestone achievement, scientists from the Research Center for Environmental Changes, Academy of Sciences located in Taipei, secured funding from the Ministry of Science and Technology to undertake the pilot project developed through the ROAP-sponsored work in its priority area on urban health and wellbeing. Entitled “Planning Green Transportation

ROAP Urban Health and Wellbeing team after meeting with United Nations University International Institute for Global Health (UNU-IIGH)



for Better Urban Health under Climate Change” the grant will enable several teams of researchers from the Center and elsewhere to use collaboratively the systems approach in research to better plan and manage urban health and wellbeing in Taipei.

The Review of ROAP was one of the major activities in 2015. The Review Panel was positive of ROAP’s work over the past five years and found it to be effective despite its limited financial and human resources. The strong network the office has fostered can only be a benefit to international science and the visibility of the regional science.

ROAP held two meetings of its Regional Committee in Kuala Lumpur, Malaysia and Chiang Rai, Thailand. During the meeting in Chiang Rai, as part of its goal to interact with local scientists, committee members made a visit to the Mae Fah Luang University. Two members gave lectures on recent advances in climate prediction, and on antibiotic resistance in antibiotic resistant microbes, to staff and students of the University.

Journalists beleaguering Kevin Anderson at the COP21 science press conference

COMMUNICATIONS

2015 was a historic year for international policy, and ICSU played a strong role in making sure the voice of the scientific community made an impact. The communications team was closely involved in this work throughout the year and ensured that ICSU was positioned as the go-to brand for scientific information and community engagement at these major events.

In the weeks leading up to February, the ICSU Communications team supported the development and launch of the Review of Targets for the Sustainable Development Goals. Proactive media outreach and a social media campaign led to the Review being covered in *Science* and in the international press, which reported on the findings again on the occasion of the official launch of the SDGs in September.

The Road to Paris site was a very useful tool in the popularization of ICSU's messages throughout the year. It was designed to connect the dots around the Sendai process, the Sustainable Development Goals and COP21. It helped build visibility for ICSU in the run-up to and at these key international events and facilitated media outreach through a content partnership with the World Economic Forum blog. Another achievement was the success in attracting a dedicated social media fol-



lowing across the key target audiences for the site, which were policymakers, journalists and NGOs involved in these processes. Many influential players follow Road to Paris on Twitter, including French Foreign Minister and COP President Laurent Fabius, and Christiana Figueres, Executive Secretary of the UNFCCC. During the launch of the SDGs report, the Road to Paris also enabled ICSU to take the messages of the report to these new audiences. A longer article on the site gave an overview of the key messages of the report, thereby making the report more accessible to journalists.



Participants at the Anthonaut Experience virtual reality hackathon



INTERNATIONAL COUNCIL FOR SCIENCE

Throughout 2015, ICSU Communications developed and marketed a newsletter service that was designed as a community engagement tool at major international conferences. This service took the form of daily updates sent to scientific delegates every morning before the start of the day's proceedings, informing them of progress in the negotiations the day before and key events to watch out for during the new day. Many delegates reported to ICSU that these daily emails were instrumental in helping them navigate and make sense of these complex processes and the large number of events on offer. First rolled out at the Sendai World Conference on Disaster Risk Reduction in March, the service was refined through another iteration at the Our Common Future conference in July and became a cornerstone of ICSU's community management at the COP21 climate talks in Paris in December.

At COP21, the ICSU Communications team co-organized a press conference with five leading international climate scientists commenting on the latest version of the outcome text. Perfectly timed at a moment when everyone was waiting impatiently for the final draft of the agreement to be released, the conference drew more than 200 journalists to a packed room, with many having to stand or sit on the floor due to the much larger than expected attendance. The atmosphere was electrifying, and media representatives continued individual interviews with the scientists from the panel for almost an hour after the end of the conference. Major news media such as the *Washington Post*, the *Wall Street Journal*, Reuters and AP reported on the press conference, and the messages sent by

the scientists continued to resonate through the international press for days.

During COP21, ICSU, together with the Future Earth Media Lab, organized the second in a new global series of virtual reality hackathons entitled "The Anthronaut Experience". This 36-hour event was held at the ICSU office in central Paris to explore the potential of virtual reality for scientific storytelling. It brought together scientists, journalists, virtual reality producers and filmmakers. Many scientists and journalists who attended were experiencing virtual reality for the first time, and all remarked that it was a memorable experience that could be game-changing for science communications.

In 2015, the communications team also started early work on a redesign of the ICSU website and an updated logo, which features for the first time on this Annual Report.



ADMINISTRATION AND GOVERNANCE

FINANCIAL SUMMARY

STATEMENT OF INCOME AND EXPENDITURE

International Council for Science (ICSU) for the period
1 January to 31 December 2015

Income	Euros
Membership dues	
Members	2.382.097
Scientific Unions	188.279
Scientific Associates	11.000
Provision Arrears	162.389
NSF support for WCRP	69.234
Grants from NSF	435.931
France	500.000
Other grant for IRDR RIO+20 Global Sustain.	1.093.087
Dedicated funds for 2016–2018	-958.124
Other income	29.461,47
Cancellation other provision	9.782,06
Investment income	39.980,62
Total income	3.963.117,15
Expenditure	Euros
Governance meetings	163.082
Policy committees	182.650
Scientific activities	695.582
Regional Offices	242.727
Outreach	170.189
Human resources	1.974.887
Administration / Overheads	192.931
Contingency/Provision	18.224,86
Other expenses	10.108,82
Investment charges & losses*	25.272,32
Total expenditure	3.675.654
Excess of income over expenditure	287.463,15

* Including provision for unrealized losses on Portfolio for a total amount of 20,5K €

BALANCE SHEET

International Council for Science (ICSU) for the period
1 January to 31 December 2015

Assets	Euros
Bank & cash balances	3.216.114
Marketable securities	1.495.649
NSF & UNESCO, funds for IRDR & RIO+20	277.701
Others assets	75.765
Fixed assets	21.752
Total assets	5.086.981
Liabilities	Euros
External funds allocated	958.124
Sundry creditors & accruals	581.104
Provision / Retirement	335.526
Total liabilities	1.874.754
Reserves	Euros
Mandatory reserve	1.500.000
General fund / Retained earnings	1.424.764
Total reserves	2.924.764
Net Result	287.462

EXECUTIVE BOARD 2014 – 2017



Gordon McBean
President



David Black
Secretary-General



Yuan-Tseh Lee
Past-President



Jinghai Li Vice-President for
Scientific Planning and Review



Michael Clegg Vice-President
for External Relations



Barbara Erazmus
Treasurer



Daya Reddy
President-Elect

FROM UNION MEMBERS:



Orhan Altan



John Buckeridge



Manuel de Léon



Cheryl de la Rey

FROM NATIONAL MEMBERS:



John Ball
(United Kingdom)



Raghavendra Gadagkar
(India)



Nicole Moreau
(France)



Kazuyuki Tatsumi
(Japan)

SECRETARIAT

MANAGEMENT

Heide Hackmann Executive Director (from 02/03/2015)
Peter Liss Interim Executive Director (to 27/02/2015)
Tish Bahmani Fard Assistant Executive Director
Lucilla Spini Head of Science Programmes (from 12/01/2015)
Clare Thirlway Head of Human Resources
Denise Young Head of Communications

ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

Nora Papp Administrative Officer
Katsia Paulavets Science Officer
Rohini Rao Administrative Officer
Anne-Sophie Stevance Science Officer

SCIENTIFIC PLANNING AND SPECIAL PROJECTS

Maureen Brennan Administrative Officer
Charles Ebikeme Science Officer (from 01/09/2015)

COMMUNICATION AND INFORMATION TECHNOLOGY

Yun-Kang Ahn IT Officer
Johannes Mengel Online Editor/Communications Officer

ADMINISTRATIVE STAFF

Alexandra Guennec Payroll and HR Administration Officer
Eric Leparmentier General Services
Natacha de Marchi Accountant
Catherine To Accounts Assistant (to 14/03/2015)
Arno de Marchi Accounts/Administrative Assistant
(from 23/03/2015)

COMMITTEE ON FREEDOM AND RESPONSIBILITY IN THE CONDUCT OF SCIENCE

Roger Pfister Executive Secretary CFRS
(50% time based at the Swiss Academy of Sciences)

FUTURE EARTH INTERIM SECRETARIAT

Frans Berkhout Interim Director on secondment (to 30/04/2015)
Diana Greenslade Science Officer (to 07/01/2015)
Lizzie Sayer Communications Coordinator (to 03/05/2015)
Miia Ylöstalo-Joubert Administrative Officer (to 25/08/2015)

REGIONAL OFFICE FOR AFRICA

Edith Madela-Mntla Director
Richard Glover Programme Specialist in Biological Sciences
Bongani Mahlaelela Communications Officer
Hazael Naidoo Administrative Assistant
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NATIONAL MEMBERS

ICSU has 122 National Members covering 142 countries. These Members provide input, from a national, multidisciplinary perspective, on priority areas for future ICSU activities. They also play an important role in facilitating links with national governments and science agencies. The majority of ICSU National Members are scientific academies, although some are national funding agencies or other nationally representative science bodies.

- Albania** Academy of Sciences
- Angola** Foundation of Science and Development
- Argentina** National Scientific and Technological Research Council (CONICET)
- Armenia** National Academy of Sciences of the Republic of Armenia
- Australia** Australian Academy of Science
- Austria** Die Österreichische Akademie der Wissenschaften
- Azerbaijan** Azerbaijan National Academy of Sciences
- Bangladesh** Bangladesh Academy of Sciences
- Belarus** National Academy of Sciences (NASB)**
- Belgium** Royal Academies for Science and the Arts of Belgium (RASAB)
- Bolivia** Academia Nacional de Ciencias de Bolivia (ANCB)**
- Bosnia & Herzegovina:** ANUBiH Academy of Sciences and Arts of Bosnia and Herzegovina
- Bosnia & Herzegovina:** ANURS Academy of Sciences and Arts of the Republic of Srpska
- Botswana** Ministry of Infrastructure Science and Technology**
- Brazil** Academia Brasileira de Ciências (ABC)
- Bulgaria** Bulgarian Academy of Sciences (BAS)
- Burkina Faso** Centre National de la Recherche Scientifique et Technologique**
- Cameroon** Cameroon Academy of Sciences
- Canada** National Research Council of Canada
- Caribbean** Caribbean Academy of Sciences (CAS)*
- Chile** Academia Chilena de Ciencias
- China: CAST** China Association for Science and Technology (CAST)
- China: Taipei** Academy of Sciences located in Taipei
- Colombia** Academia Colombiana de Ciencias Exactas, Físicas y Naturales
- Costa Rica** Academia Nacional de Ciencias
- Côte d'Ivoire** Académie des Sciences, des Arts, des Cultures d'Afrique et des Diasporas Africaines (ASCAD)**
- Cuba** Academia de Ciencias de Cuba
- Czech Republic** Academy of Sciences of the Czech Republic
- Denmark** Royal Danish Academy of Sciences and Letters
- Dominican Republic** Academy of Sciences of the Dominican Republic
- Egypt** Academy of Scientific Research and Technology (ASRT)
- El Salvador** Vice Ministry of Science and Technology
- Estonia** Estonian Academy of Sciences
- Ethiopia** Ethiopian Science and Technology Agency**
- Finland** Delegation of the Finnish Academies of Science and Letters
- France** Académie des Sciences
- Georgia** Georgian Academy of Sciences*
- Germany** Deutsche Forschungsgemeinschaft (DFG)
- Ghana** Ghana Academy of Arts & Sciences**
- Greece** Academy of Athens
- Guatemala** Academia de Ciencias Médicas Físicas y Naturales de Guatemala*
- Hungary** Hungarian Academy of Sciences
- India** Indian National Science Academy
- Indonesia** Indonesian Institute of Sciences (LIPI)
- Iran, Islamic Rep. of** University of Tehran
- Iraq** Ministry of Science and Technology
- Ireland** Royal Irish Academy
- Israel** Israel Academy of Sciences and Humanities
- Italy** Consiglio Nazionale delle Ricerche
- Jamaica** Scientific Research Council**
- Japan** Science Council of Japan
- Jordan** Royal Scientific Society*
- Kazakhstan** National Academy of Sciences of the Republic of Kazakhstan*
- Kenya** Kenya National Academy of Sciences
- Korea, Democratic People's Republic of** State Academy of Sciences**
- Korea, Republic of** National Academy of Sciences of the Republic of Korea
- Lao People's Democratic Republic** Lao National Science Council**
- Latvia** Latvian Academy of Sciences
- Lebanon** National Council for Scientific Research
- Lesotho** Department of Science and Technology**
- Lithuania** Lithuanian Academy of Sciences
- Luxembourg** Fonds National de la Recherche
- Macedonia, Former Yugoslav Rep. of** Macedonian Academy of Sciences and Arts

- Madagascar** Ministère de l'Enseignement Supérieur et de la Recherche Scientifique*
- Malawi** National Research Council of Malawi
- Malaysia** Academy of Sciences Malaysia
- Mauritius** Mauritius Research Council
- Mexico** Academia Mexicana de Ciencias
- Moldova** Academy of Sciences of Moldova
- Monaco, Principauté de** Centre Scientifique de Monaco
- Mongolia** Mongolian Academy of Sciences
- Montenegro** Montenegrin Academy of Sciences and Arts
- Morocco** Centre National de la Recherche Scientifique et Technique**
- Mozambique** Scientific Research Association of Mozambique (AICIMO)**
- Namibia** Ministry of Education: Directorate of Research, Science and Technology
- Nepal** Royal Nepal Academy of Science and Technology**
- Netherlands** Koninklijke Nederlandse Akademie van Wetenschappen
- New Zealand** Royal Society of New Zealand
- Nigeria** Nigerian Academy of Science
- Norway** Norwegian Academy of Sciences and Letters
- Oman, Sultanate of** Research Council of Oman
- Pakistan** Pakistan Association for the Advancement of Science
- Panama** Universidad de Panama
- Peru** Academia Nacional de Ciencias
- Philippines** National Research Council
- Poland** Polish Academy of Sciences
- Portugal** Academia das Ciencias de Lisboa
- Romania** Academia Româna
- Russian Federation** Russian Academy of Sciences
- Rwanda** Kigali Institute of Science and Technology (KIST), Rwanda**
- Saudi Arabia, Kingdom of** King Abdulaziz City for Science and Technology (KACST)
- Senegal** Association des Chercheurs Sénégalais**
- Serbia** Serbian Academy of Sciences and Arts
- Seychelles** Seychelles Centre for Marine Research and Technology**
- Singapore** Singapore National Academy of Science
- Slovak Republic** Slovak Academy of Sciences
- Slovenia** Slovenian Academy of Sciences and Arts*
- South Africa** National Research Foundation (NRF)
- South Pacific** University of the South Pacific
- Spain** Ministerio de Ciencia y Innovacion
- Sri Lanka** National Science Foundation
- Sudan, Republic of** National Centre for Research**
- Swaziland** National Research Council**
- Sweden** Royal Swedish Academy of Sciences
- Switzerland** Swiss Academy of Sciences
- Tajikistan** Academy of Sciences of the Republic of Tajikistan**
- Tanzania** Tanzania Commission for S&T
- Thailand** National Research Council of Thailand
- Togo** Chancellerie des Universités du Togo**
- Tunisia** Université Tunis El Manar*
- Turkey** Scientific and Technical Research Council of Turkey**
- Uganda** Uganda National Council for Science and Technology (UNCST) **
- Ukraine** National Academy of Sciences
- United Kingdom** Royal Society
- United States** National Academy of Sciences
- Uruguay** Comisión Consejo Nacional de Innovacion Ciencia y Tecnologia (CONICYT)
- Uzbekistan, Republic of** Uzbekistan Academy of Sciences**
- Vatican City State** Pontificia Academia Scientiarum**
- Venezuela** Fondo Nacional de Ciencia, Tecnología e Innovación**
- Vietnam** Vietnam Union of Science and Technology Associations**
- Zambia** Zambia Academy of Sciences**
- Zimbabwe** Research Council of Zimbabwe

* National Associate

** National Observer

SCIENTIFIC UNIONS

The 31 international Scientific Union Members provide the disciplinary backbone of ICSU. They play a central role in bringing together scientists from all parts of the world to consider the issues of particular interest to individual disciplines.

- IAU** International Astronomical Union
- IBRO** International Brain Research Organization
- ICA** International Cartographic Association
- IGU** International Geographical Union
- IMU** International Mathematical Union
- INQUA** International Union for Quaternary Research
- ISA** International Sociological Association
- ISPRS** International Society for Photogrammetry and Remote Sensing
- IUAES** International Union of Anthropological and Ethnological Sciences*
- IUBS** International Union of Biological Sciences
- IUCr** International Union of Crystallography
- IUFoST** International Union of Food Science and Technology
- IUFRO** International Union of Forest Research Organizations
- IUGG** International Union of Geodesy and Geophysics
- IUGS** International Union of Geological Sciences
- IUHPST** International Union of History and Philosophy of Science and Technology
- IUIS** International Union of Immunological Societies
- IUMRS** International Union of Materials Research Societies
- IUMS** International Union of Microbiological Societies
- IUNS** International Union of Nutritional Sciences
- IUPAB** International Union for Pure and Applied Biophysics
- IUPAC** International Union of Pure and Applied Chemistry
- IUPAP** International Union of Pure and Applied Physics
- IUPESM** International Union for Physical and Engineering Sciences in Medicine
- IUPHAR** International Union of Basic and Clinical Pharmacology
- IUPS** International Union of Physiological Sciences
- IUPsyS** International Union of Psychological Science
- IUSS** International Union of Soil Sciences
- IUTAM** International Union of Theoretical and Applied Mechanics
- IUTOX** International Union of Toxicology
- URSI** Union Radio Scientifique Internationale

* Observer as of 2012

INTERDISCIPLINARY BODIES

THEMATIC BODIES

- COSPAR** Committee on Space Research
- IRDR** Integrated Research on Disaster Risk
- PECS** Programme on Ecosystem Change and Society
- SCAR** Scientific Committee on Antarctic Research
- SCOR** Scientific Committee on Oceanic Research
- SCOSTEP** Scientific Committee on Solar-Terrestrial Physics
- URBAN HEALTH**

GLOBAL ENVIRONMENTAL CHANGE

PROGRAMMES

- FUTURE EARTH: Research for Global Sustainability**
- IGBP** International Geosphere-Biosphere Programme
- WCRP** World Climate Research Programme

MONITORING/OBSERVATION BODIES

- GCOS** Global Climate Observing System
- GOOS** Global Ocean Observing System
- GTOS** Global Terrestrial Observing System

DATA AND INFORMATION BODIES

- CODATA** Committee on Data for Science and Technology
- INASP** International Network for the Availability of Scientific Publications
- IUCAF** Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science
- WDS** World Data System

SCIENTIFIC ASSOCIATES

- AAS** African Academy of Sciences
- AASSA** Association of Academies and Societies of Sciences in Asia
- CIE** Commission Internationale de l'Eclairage
- IASC** International Arctic Science Committee
- IAHR** International Association of Hydraulic Engineering and Research
- ICA** International Commission for Acoustics
- ICO** International Commission for Optics
- ICIAM** International Council for Industrial and Applied Mathematics
- ICLAS** International Council for Laboratory Animal Science
- ICSTI** International Council for Scientific and Technical Information
- IFIP** International Federation for Information Processing
- IFLA** International Federation of Library Associations and Institutions
- IFSM** International Federation of Societies for Microscopy
- FIG** International Federation of Surveyors
- IFS** International Foundation for Science
- IIASA** International Institute for Applied Systems Analysis
- IUVSTA** International Union for Vacuum Science, Technique and Applications
- IWA** International Water Association
- PSA** Pacific Science Association
- 4S** Society for Social Studies of Science
- TWAS** The World Academy of Sciences
- UIS** Union Internationale de Spéléologie

Snow at Point Barrow,
the northern-most
location in the United States



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