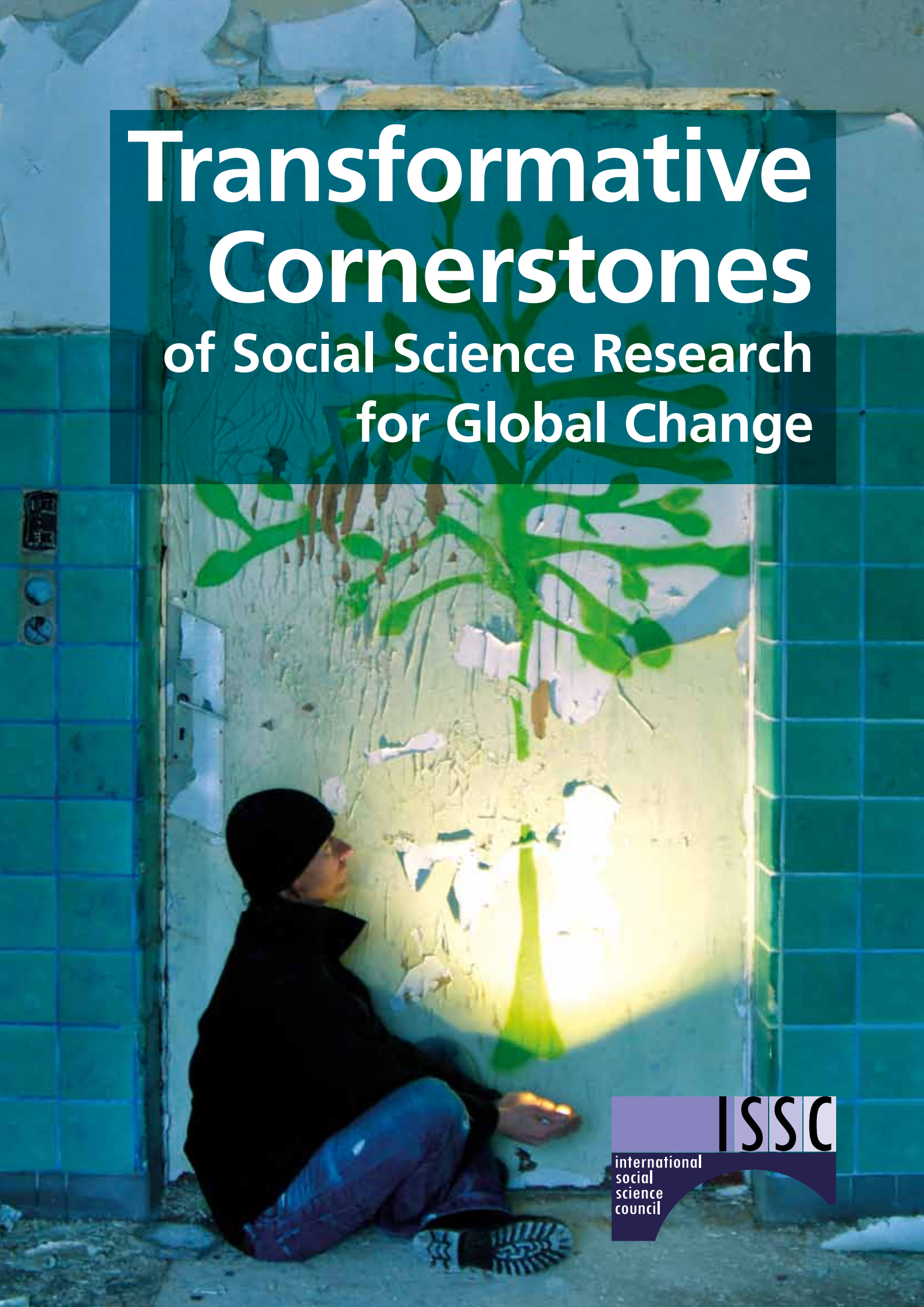
Transformative Cornerstones

of Social Science Research for Global Change



ISSC

international social science council

Acknowledgements

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On behalf of the ISSC, the authors extend great thanks to the Swedish International Development Cooperation Agency (Sida) for generously funding the Climate and Global Environmental Change Design Project.

For a list of all the participants that contributed to the agenda setting exercise in the context of the GEC Design Project, please see Annex 1 to this report. Please note that Annex 1 only lists those interviewed and those who submitted written answers to the questionnaire: although these are the participants formally involved in this activity, we have received valuable input from a range of others who were involved in the various visioning and agenda-setting exercises on which the GEC Design Project has drawn; not all can be listed here.

The views expressed in this report are those of the authors, and are intended as an interpretation of the responses received in the context of the GEC Design Project and wider agenda-setting activities. They reflect the authors' interpretation and are not necessarily endorsed by the participants listed in Annex 1.

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01 Introduction

Rapidly changing global realities drive the fast-growing demand for social science knowledge that works to inform effective and urgent responses to some of the most defining challenges of our times. In the face of ever-expanding environmental problems and disaster risks on the one hand, and converging crises of climate, inequality, food, water, finance and social discontent on the other, the focus of demand falls sharply on innovative, sustainable social solutions. For this purpose, social science knowledge is an indispensable part of the global scientific, policy and social mobilization effort required. And its importance grows as the effects of human actions on global conditions snowball and our understanding of these processes deepens.

The International Social Science Council (ISSC) works to increase the production and use – in all parts of the world – of social, behavioural and economic science knowledge that can help to address key global problems[1]. In line with this objective, the Council is committed to bringing pressing climate change concerns and other global environmental change challenges to the heart of the social sciences. More specifically, the Council seeks to mobilise the international social science community around a knowledge agenda that will contribute to societies developing more effective, equitable, sustainable responses to these challenges. Since January 2011, the ISSC has worked – with the support of the Swedish International Development Cooperation Agency (Sida) – to pinpoint such an agenda and design a 10-year programme of support for its implementation. This "Climate and Global Environmental Change Design Project" (hereinafter referred to as the GEC Design Project) responds proactively to the increased demand for social science research on global environmental change and the absence of adequate funding at the international level to meet that demand (see Box 1).

In addition to the development of a consolidated, global agenda for solutions-oriented social science research on climate and global environmental change, the GEC Design Project set out to tackle the all-important question of how to make knowledge work. Here project efforts have focused on understanding the implications – for the actual practice and funding of research – of responding to today's unrelenting pressure for science to be more effective at meeting user needs[2], more directly supportive of robust policy making, and more likely to result in equitable, sustainable policy implementation. Expert interviews and consultative workshops were designed to identify innovative and effective policy and wider societal interfaces for research, including the forms, protocols and conditions for involving users – from the world of policy and practice, as well as civil society – in the co-design and co-production of knowledge on climate and global environmental change.[3]

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1 Throughout this text, and in line with the ISSC's scientific membership base, the term 'social sciences' should be read as referring also to the behavioural and economic sciences.

2 For the purposes of this report the notion of "users" refers to all those that have an interest in or contact with – or are affected by – research, but who do not identify themselves as part of the academic research community: this would include policy makers, practitioners, civil society organisations, representatives of local communities, the private sector and industry, etc. It is recognised that members of the academic research community are themselves users of research and that various users themselves comprise groups of experts and/or knowledge communities.

3 The results of this part of the GEC Design Project have been summarized in a report entitled "Making Knowledge Work", which will be available for download from the ISSC website – www.worldsocialscience.org – in May 2012.

BOX 1

The ISSC's Global Environmental Change (GEC) Design Project

The Climate and GEC Design Project has been undertaken by the ISSC on the invitation of – and with support from – the Swedish International Development Cooperation Agency (Sida).

The overall project objective is: **To design a 10-year research funding and coordination initiative for the social sciences on climate change and global environmental change.** This work is being done in collaboration with ISSC members, co-sponsored programmes, partners and the wider international social science research, funding & policy communities. Within the context of the project, "social science" includes behavioural and economic sciences; the project has also extended its scope to the humanities by including the disciplines of history and philosophy.

The project will run until June 2012 and comprises four key areas of activity:

- **PILLAR 1 - DEFINING THE KNOWLEDGE AGENDA**
  Establishing a consolidated global change research agenda for the social sciences, drawing also on existing international agenda-setting activities;
- **PILLAR 2 - IDENTIFYING INTERNATIONAL FUNDING MODALITIES & MECHANISMS**
  Investigating appropriate funding arrangements and associated instruments for the proposed future initiative;
- **PILLAR 3 - MAKING KNOWLEDGE WORK**
  Understanding best practice in the science-policy- and society interfaces, securing effective and timely interaction with policy makers and finding ways of engaging civil society actors, industry and other stakeholders in the co-production of knowledge;
- **PILLAR 4 - OUTLINING GOVERNANCE AND SUPPORT SYSTEMS**
  Developing steering and oversight structures for the proposed initiative, as well as evaluation and accountability arrangements, and solid support systems.

The four pillars are supported by a horizontal mapping exercise that sets out to map key elements and trends of climate change and global environmental change research within the international social science landscape. The project also builds on existing and upcoming ISSC activities in the field of global change research, including the Council's 2013 World Social Science Report - for further information please see **www.worldsocialscience.org**

The project has been guided by an international Steering Group, which brings together experts and key partners. This Group was chaired by the ISSC's Vice-President for Scientific Affairs, Alberto Martinelli (University of Milan, Italy) and included as members:

- Tariq Banuri (former Director, Division for Sustainable Development, UN DESA, US)
- John Crowley (Social and Human Sciences Sector, UNESCO, France)
- Anders Granlund (Sida, Sweden)
- Heide Hackmann (ISSC, France)
- Renée van Kessel-Hagesteijn (Division of Social Sciences, Netherlands Research Organisation [NWO])
- Germán Palacio (IHDP Scientific Committee Member, Colombia)
- Martin Parry (PROVIA Scientific Steering Committee Chair, UK) – observer
- Katri Pohjolainen Yap (Sida, Sweden)
- Emir Sader (Latin American Council for Social Sciences [CLACSO], Brazil)
- Ebrima Sall (Council for the Development of Social Science Research in Africa [CODESRIA], Senegal)
- Asunción Lera St. Clair (Center for International Climate and Environmental Research – Norway [CICERO])
- Peter Utting (UNRISD, Switzerland) – observer
- Coleen Vogel (independent scholar, South Africa)
- Kevin Watkins (The Brookings Institution, US)

The two aspects of the GEC Design Project outlined above – defining a social science knowledge agenda and identifying ways of ensuring that such knowledge has appropriate impact – form the basis of an ISSC proposal to establish a 10-year international funding and coordination programme on climate and global environmental change for the social sciences[1]. Substantively, the main objective of such a programme would be to increase social science contributions to crafting more effective, equitable and sustainable responses to climate and global environmental change. Strategically, the programme should serve to strengthen and, indeed, foreground social science voices in the development of new, inter- and trans-disciplinary global environmental change research initiatives at the international level. Notable in this regard is the Future Earth initiative established by a new Global Alliance of partners including the ISSC, discussed in further detail in Section 2 below.

This report focuses specifically on the knowledge agenda-setting work of the GEC Design Project. It recognizes that there is an existing, and extensive, body of social science research on issues of climate and global environmental change, but does not attempt to provide a literature review of this body of work. Instead it takes this work as a point of departure in putting forward a framework of six transformative cornerstones of social science research for global change. This framework represents a synthetic, interpretative analysis of the results of an international process of enquiry and consultation. That process set out to identify the top priority questions that the social sciences, as well as scholars of history and philosophy, must address in order to deliver knowledge and visions for change that may lead to more effective solutions to some of the most urgent global change challenges of the day. What kinds of research activities and associated funding mechanisms would be needed in order to produce the knowledge required has been addressed by the ISSC in its work on designing the proposed funding and coordination programme mentioned above[2]. As the work of the Intergovernmental Panel on Climate Change (IPCC) emphasises, climate change undoubtedly poses the most serious and pressing of these challenges. Recent scholarship concurs, showing that the likelihood of crossing the 2°C threshold is high for large parts of North Africa, Eurasia and Canada in the next approximately 20 years, and for the entire planet by mid century[3]. Raising further the prospects of unstoppable dangerous climate change, others estimate that the need to adapt to temperature increases of 4°C or more may well be required in the course of this century.[4]

The GEC Design Project has not focused solely on climate change, but on a broader range of global environmental problems. Many of these are unrelated to climate change; they have significant consequences for society but do not necessarily involve changes in the earth system's climate. Yet climate change can aggravate such problems, and in some cases is already doing so. So, for example, increasing temperatures, extreme weather events, or the loss of Arctic sea ice exacerbate existing threats to biodiversity and ecosystems; sea level rise leads to increased land erosion, adding to existing erosion; and climate related flooding adds salinity to ground water, which may already be polluted through environmental mismanagement of water resources[5]. It is the complex interplay of problems of climate and environmental change, their global impacts and their embeddedness in social systems, that serve as the focal domain of the GEC Design Project – and this is referred to simply as "global change" in the rest of this report.

PURPOSE AND STRUCTURE OF THE REPORT

What is significant about the transformative cornerstones of social science research for global change? What key functions does this framework serve? First and foremost, it articulates the importance of the social sciences in efforts to deliver knowledge that contributes more effectively to addressing the problems of global change. In short: successful, sustainable policy solutions for global change problems require robust answers to the social science questions that the transformative cornerstones pose. These are not only questions of an applied or quantitative nature. Neither are they marginal to some of the fundamental concerns of mainstream social science disciplines.

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1 The proposal has been invited by Sida and will be submitted to them and other leading development aid and funding agencies around the world in the course of 2012 (for further information see Box 1).

2 A set of programme operating principles have been designed to emphasise the need for research and, by implication, research support mechanisms, that promote trans-national, inter- and trans-disciplinary research that (i) takes the call for the co-design, co-production and co-delivery of knowledge seriously, (ii) actively includes and promotes the work of early career social scientists, and (iii) secures equal opportunities and access to global platforms and initiatives for social scientists from all regions of the world.

3 Joshi, M., Hawkins, E., Sutton, R., Lowe, J. & Frame, D. 2011. Projections of when temperature change will exceed 2 [deg]C above pre-industrial levels. Nature Clim. Change, 1 (8), 407-412.

4 New, M., Liverman, D., Schroeder, H. & Anderson, K. 2011. Four degrees and beyond: The potential for a global temperature increase of four degrees and its implications. Philosophical Transactions of the Royal Society of London A, 369, 6 - 19. And, Stafford Smith, M., Horrocks, L., Harvey, A. & Hamilton, C. 2011. Rethinking adaptation for a 4o C world. Philosophical Transactions of the Royal Society of London A, 369, 196 - 216.

5 The rationale for the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES), currently in the process of being established, argues along similar lines.

On the contrary, what the cornerstones framework clearly illustrates, is that a continuum of social science concerns, approaches and methods are of direct relevance to the problems of global change. For social scientists then, the message is clear: issues of climate change and global environmental change lie at the heart of the social sciences; global change is organic to this field of science and its knowledge base must be brought to bear on the challenges at hand.

For researchers from other fields of science, as well as for funders and science policy makers, the transformative cornerstones framework goes beyond claiming space for social science voices in global change research. It makes the case for bringing those voices centre stage in integrated, international global change research. This is not to suggest that the social sciences alone hold the keys to finding solutions to global change challenges or that integrated research is easily designed and implemented. The point is that the social sciences are an essential piece of the research puzzle, to be fully integrated throughout the research process, starting with the identification of research agendas and the framing of research questions. What exactly the social sciences can and must bring to integrated research – be it on food or freshwater security, energy, land or forests, extreme events, urbanization, coastal zone vulnerability, or a range of other concrete priority topics – is what the cornerstones framework sets out to elucidate.

This report first presents an overview of the process of transition that is currently taking place within the international global environmental change research landscape, sketching the context of the integrated scientific and institutional architecture in which the GEC Design Project and the knowledge agenda presented in this report are located (Section 2). Section 3 summarizes the quickly growing wide call for integrated research across the sciences, and in particular for stronger, more visible and policy-relevant social science contributions, referring to efforts towards this aim to date. The engagement of mainstream social science disciplines in global change research is highlighted and the scene is set for closing the gap between social and natural science contributions to global change issues. Section 4 presents the methodologies used to gather data for the formulation of a unified social science knowledge agenda for global change research – showing how the GEC Design Project has pulled together the threads of a 2-year process of global consultation and enquiry that provides a basis for the analysis presented here. In the final section (5), the synthetic, interpretative analysis of the results of this international process of enquiry and consultation is presented. This analysis takes the form of the "transformative cornerstones of social science research for global change": a set of cross cutting issues (cornerstones) that are distinguishable from and yet common to a large set of priority thematic issues. The cornerstones are defined and unpacked with illustrative examples of relevant research questions. In conclusion (Section 6) it is argued that the cornerstones express a new charter for the social sciences: putting the social sciences at the very centre of a new vision for and practice of research for change; and calling for the social sciences to take the lead in developing a new integrated, transformative science for climate and global change.

02 International global change research in transition

International attention for the field of global change research has peaked since the milestone moment – now more than 30 years ago – when the first of today's international global change programmes was launched[1]. Since 2009, the International Council for Science (ICSU) and the International Social Science Council (ISSC), as well as UN bodies such as the United Nations Environmental Programme (UNEP), national and regional science advisory bodies, and funding agencies, have worked concurrently on processes of visioning the future of global change research. These activities have revolved around identifying priority research agendas, building new partnerships, and proposing or planning new institutional arrangements and mechanisms for fostering coordinated, focused global change knowledge production and effective utilisation, regionally and globally.

The policy context for these efforts reflects an increasing sense of urgency in the face of planetary boundaries and tipping points[2]; a sense of the world on a collision course as multiple crises converge, population, inequality, poverty and global social discontent increase, and the magnitude, rate and scale of environmental problems and disasters rise unabatedly. It is also a context of unrelenting pressure for science – all science – to be relevant: to be salient and credible, to inform effective policy responses, to make a real difference to people's lives. There are calls from all quarters for the accelerated delivery of relevant knowledge and for a more direct involvement of researchers in real-world problem solving. Such calls come at the same time as levels of public scrutiny of science – particularly climate science – are amplified and skepticism about the use of scientific results in public policy making deepen. Finally, there is recognition within the system of science itself of the essential need for defragmenting research efforts and crafting better connectivity within and between scientific and funding landscapes.

Responses to these challenges from the international science policy community have been bold and decisive. Most notably, ICSU, the ISSC and a group of the world's main national funders of global change research – known as the Belmont Forum[3] – agreed in October 2010 to join forces in setting up a single, overarching structure and research strategy for integrated, international global change research. This Alliance now includes UNEP, UNESCO, the United Nations University (UNU) and the World Meteorological Organisation (WMO) (participating as an observer), and work is underway to design a new 10-year initiative called 'Future Earth: Research for Global Sustainability'. Future Earth is intended to unify the existing global change programmes, and build on their strengths to deliver knowledge that combines understanding the Earth as a coupled social-ecological-geophysical system with developing pathways to meet society's global sustainability goals. The initiative will put in place a new architecture and framework for international global change research and will be launched by mid-2012, to coincide with the UN Conference on Sustainable Development (Rio+20)[4].

The Alliance that has established Future Earth brings together a unique strategic partnership between international scientific organisations, funders, operational service providers, and users of research. This provides the world of global change research with a powerful coordinating platform. More than that, it provides a channel for the co-design and co-production of global change knowledge across scientific fields, national borders and user groups; in short, a vehicle for driving integrated global change research.

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1 The World Climate Research Programme (WCRP) was launched in 1980, the International Geosphere-Biosphere Programme (IGBP) in 1986, DIVERSITAS, an international programme on biodiversity science in 1991, and the International Human Dimensions of Global Environmental Change Programme (IHDP) in 1996 (as a renewal of what was originally called the Human Dimensions Programme, which was established in 1991).

2 Rockström, J., W. Steffen, K. Noone, Å. Persson, F. S. Chapin, III, E. Lambin, T. M. Lenton, M. Scheffer, C. Folke, H. Schellnhuber, B. Nykvist, C. A. De Wit, T. Hughes, S. van der Leeuw, H. Rodhe, S. Sörlin, P. K. Snyder, R. Costanza, U. Svedin, M. Falkenmark, L. Karlberg, R. W. Corell, V. J. Fabry, J. Hansen, B. Walker, D. Liverman, K. Richardson, P. Crutzen, and J. Foley. 2009. Planetary boundaries: exploring the safe operating space for humanity. Ecology and Society 14(2): 32. [online] URL: http://www.ecologyandsociety.org/vol14/iss2/art32/

3 See http://www.igfagcr.org/index.php/belmont-forum for further information on the Belmont Forum

4 For further information about the initiative, its design and the processes that gave rise to it, see http://www.icsu.org/future-earth/home

03 Integrated global change research and the demand for stronger social science voices

Central to the work of Future Earth, as well as other recent global change agenda-setting and programming exercises, is an agreement that when it comes to the practice of research itself, business as usual is not an option[1]. If research outputs are to be both salient and credible for a wide range of audiences, more effective at meeting user requirements and informing both robust policy formulation and sustainable implementation, there is a need for new ways of producing knowledge and making sure it gets used. In short, there is widespread agreement on the need for integrated research.

In the work of the ISSC, the notion of integration is understood as referring to the co-design and co-production of knowledge across scientific borders, across national boundaries, and with the involvement of so-called research users[2]. In other words, it refers to research that is

- Inter-disciplinary: including and working across all disciplines and fields of science;
- Trans-disciplinary: collaborating with multiple societal actors, including decision makers, practitioners and civil-society organisations; and
- Truly global in nature: working with multiple socio-geographic perspectives and approaches, incorporating communities of practice and epistemic frameworks from all parts of the world.

Despite many years of policy rhetoric, the world of science does not have a particularly great track record on any one of these three aspects of research practice. Put simply, much work still needs to be done on walking the talk of integration: clarifying what it means in practice, finding effective ways of implementing it, and adjusting research and education systems to support it. On the whole, contemporary educational institutions are not yet geared towards giving truly integrated global change research the central place it deserves. Many educational and research institutions still set limits to critical social science by favouring instrumental visions, and relegate to secondary positions the crucial role of the humanities in building alternative ways of thinking, acting and imagining present and future scenarios. Notwithstanding this charge, significant progress has in fact been made during the last two or three years in terms of securing real commitment – particularly from science funders and policy makers – to promoting inter-disciplinarity. Progress, more specifically, in fostering global change research that brings the natural and social sciences together in timely, meaningful dialogue and collaboration. And progress also in terms of defining integrated global change research agendas for the coming decade: grand challenges that can only be addressed through effective inter-disciplinary research that gives equal worth to all scientific contributions. This is evident in the work of the Transition Team that has been tasked to lead the design and implementation of the new Future Earth initiative, as well as in the visioning and planning processes that led to its conceptualisation.

In this renewed push for inter-disciplinary global change research, the focus has fallen sharply on the social sciences, with natural scientists, sponsors and funders alike calling for more social science, better social science and, very importantly, for more attention to global changes challenges from mainstream social science disciplines. For the most part, these calls are driven by the simple recognition that if the fundamental causes and consequences of global change are social, then so must the solutions be. With the effects of human actions on global conditions seemingly snowballing, and the time we have for finding effective, sustainable solutions apparently running out, social science knowledge has become necessary knowledge; its full integration with the natural sciences no longer a choice but a burning necessity.

Have the social sciences been delivering on the demand for their more active, direct and comprehensive engagement? Can they? Here it has to be acknowledged that during the past 15 years, existing initiatives – notably, the ISSC-co-sponsored IHDP programme – have promoted important social science work and have been tremendously successful in bringing social science to the heart

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1 An example of another recent global change agenda-setting exercise is the 2010-2011 European Science Foundation's "Responses to Environmental and Societal Challenges for our Unstable Earth" (RESCUE) Forward Look activity. The RESCUE report is available for download from http://www.esf.org/publications/forward-looks.html

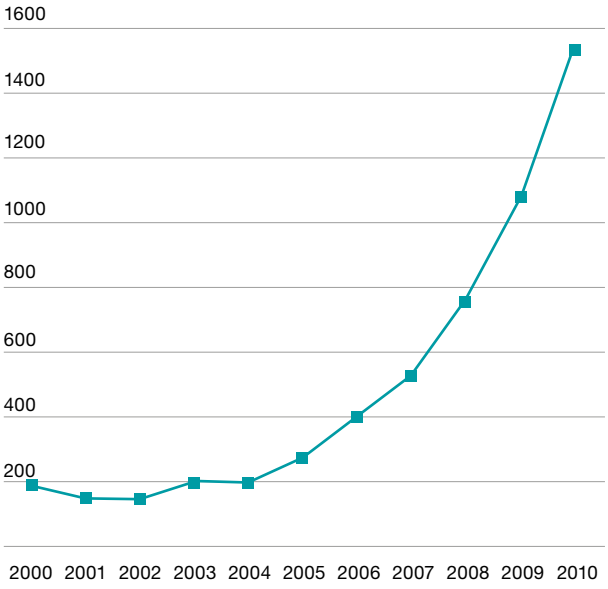
2 In March 2012 and with the support of the German Research Foundation (DFG), the ISSC collaborated with the German National Committee on Global Change Research (NKGCF), ICSU and the Earth System Science Partnership (ESSP) in convening an international workshop on integrated global change research. The event was aimed at debating the various dimensions of integration and to identify, also on the basis of concrete case studies, challenges and opportunities for scientists, science policy makers and funders, of co-producing knowledge for global change. Workshop outcomes will be made available on the ISSC website at www.worldsocialscience.org

of global environmental change. It seems, however, that there has not been equal success in bringing global environmental change to the heart of the social sciences[1].

This apparent failure to capture the mainstream social science imagination and attention is borne out by a recent ISSC-commissioned bibliometric report of social science publications on climate change and environmental change for the period 2000 to 2010. The report provides an initial analysis of the coverage of these topics in articles included in the online version of the Thomson ISI Social Science Citation Index (SSCI) (Web of Knowledge v 5.0). It only examines work produced in English; despite this bias it usefully serves to highlight some important trends in the existing literature[2].

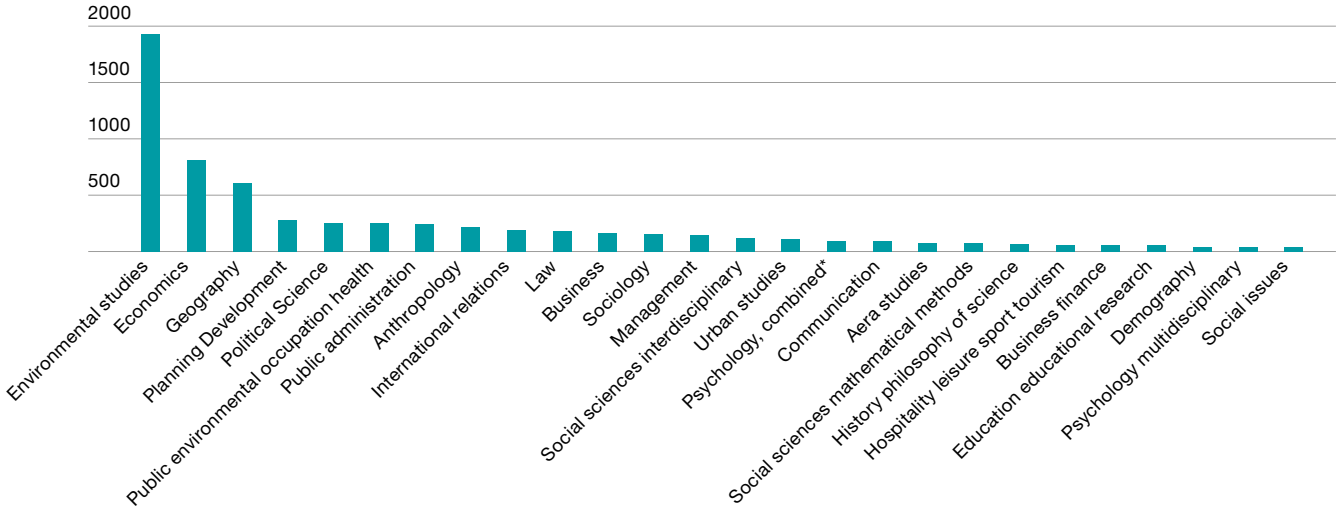
The analysis shows that the production of articles including the keywords "climate change" and "environmental change" has increased exponentially over the period under study and, particularly, since 2006/7; see Figure 1 below. At the same time, and as reflected in Figure 2 below, it shows that the social science fields in which most articles are published are environmental studies, economics and geography. Importantly, the more traditional, mainstream disciplines – political science, sociology, anthropology and psychology – lag significantly behind. And not unsurprisingly, most of the authors of the articles analysed are based in North America and Western Europe (see Figures 3 and 4 below).

FIGURE 1
Number of articles in SSCI with the keywords "climate change" or "environmental change"



The number of articles with these keywords has grown exponentially in the period 2000-2010 (R^2 =0.905)

FIGURE 2
Number of articles in the SSCI in the period 2000-2010 per disciplinary subfield



Only social science (WOS) subfield categories with min 30 publications are included. *PSYCHOLOGY, COMBINED is a custom made discipline consisting of a combination of: PSYCHOLOGY EXPERIMENTAL OR PSYCHOLOGY MULTIDISCIPLINARY OR PSYCHOLOGY SOCIAL OR PSYCHOLOGY APPLIED OR PSYCHOLOGY CLINICAL OR PSYCHOLOGY EDUCATIONAL OR PSYCHOLOGY BIOLOGICAL OR PSYCHIATRY OR PSYCHOLOGY

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1 Doing so was the aim of several national social science programmes, including the Global Environmental Change Programme of the Economic and Social Research Council in the UK, which ran from 1991 to 2000.

2 The report can be downloaded via http://www.worldsocialscience.org/?page_id=2281; it is an initial report, undertaken by K. Jonkers (CSIC IPP), in what is to be a more comprehensive bibliometric analysis, to be undertaken in preparation for the ISSC's 2013 World Social Science Report. This Report will focus on the topic of global environmental change.

FIGURE 3
Number of articles in SSCI database in the period 2000-2010 with keywords: “environmental change” or “climate change”

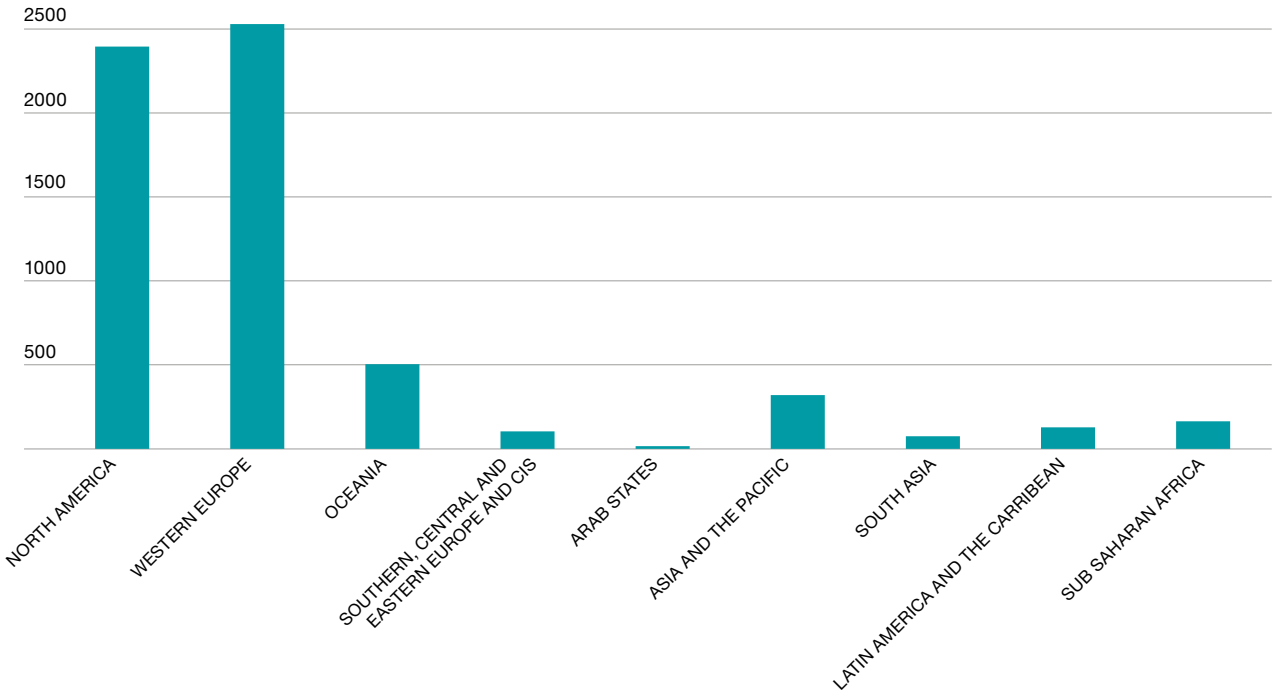
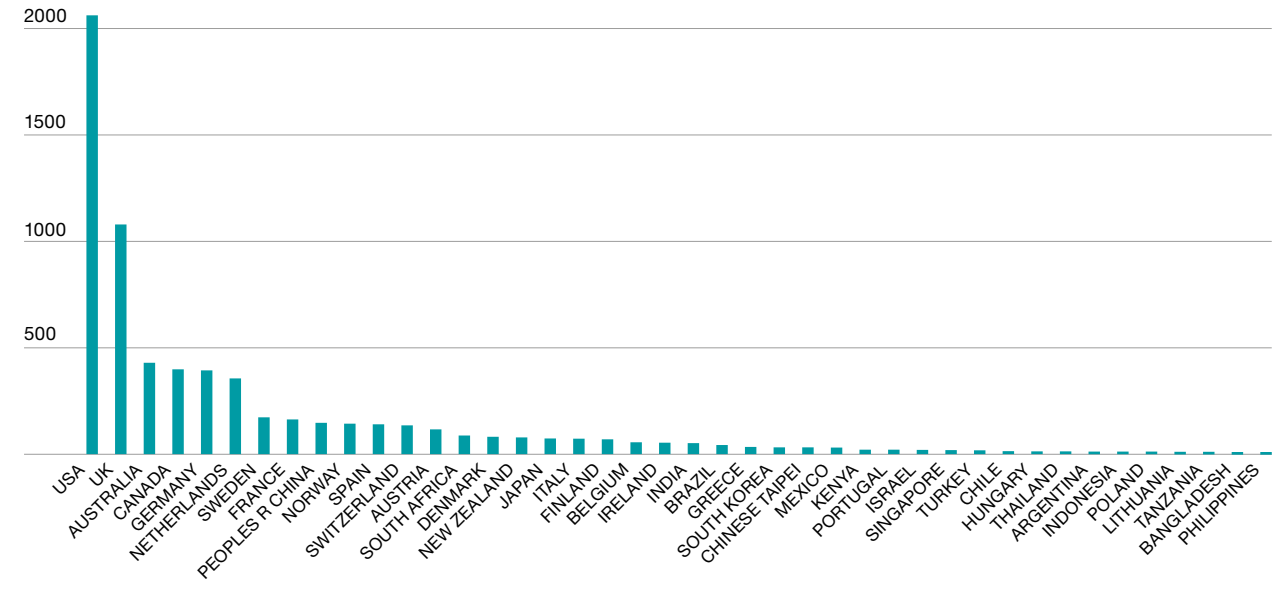


FIGURE 4
number of articles in SSCI database in the period 2000-2010 with keywords: “environmental change” or “climate change”



Research systems with over 10 publications. The individual countries cannot be added to each other to come to regional scores (figure 3) as international co-publications would be counted double.

How can these disparities in disciplinary engagement be explained? Climate change and global environmental change have always been and still are natural science dominated domains, and the affiliation of disciplines such as (human) geography and economics with the natural sciences, including the proximity of their methods and approaches, bring them seamlessly into these domains. That the world of policy tends to request quantitative data and predictive models further supports this 'cognitive fit'. Often this is at the expense of understanding society and the social[1].

There are other reasons for the disparity in disciplinary engagement in global change research and, more specifically, for the relative absence of mainstream social science disciplines in this field. Over and above institutional barriers, including insufficient advancement incentives for social scientists to work on climate or environmental issues, the key problem is one of framing. Existing global change research agendas and the Earth system framework and language in which they have traditionally been embedded, simply do not speak to the concerns and skills of mainstream social scientists. As will be shown in the rest of this paper, this certainly does not mean that mainstream social science concerns are not relevant to global change agendas; on the contrary. What it does mean is that mainstream social science concerns have not always been seen or understood – most often by natural scientists – as being useful or relevant to matters of global change, and have consequently remained invisible, falling outside of the intellectual and practical global change agenda. But times are definitely changing.

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1 John Urry, 2011. Climate change and society. London: Polity Press.

04 Responding to the demand: The ISSC's Global Environmental Change (GEC) Design Project

As already indicated in the introduction to this Report, the ISSC has been working since 2011 on a GEC Design Project to respond to the increased demand for social science research on global change, and the lack of adequate funding and incentives at the international level to meet that demand (see Box 1). The response takes the form of a proposal – invited by Sida – for a 10-year research funding and coordination programme on climate and global environmental change for the social sciences. Such a programme should serve to increase social science voices and visibility in international global change research; particularly, in the work of the new Global Change Alliance referred to in Section 2 above and the roll out of its Future Earth initiative. More specifically, the programme should serve to mobilise social scientists – especially those in the mainstream disciplines – to become more directly and proactively engaged in global change research. This means social scientists assuming leading roles in co-framing global change agendas and research questions, co-designing and co-producing integrated research and bringing social science knowledge to bear on processes aimed at generating more effective, sustainable responses to the challenges of global change.

What kind of knowledge would that be and why is it important? What are the specific questions that social scientists need to ask in order to deliver knowledge for more effective solutions to the myriad and urgent problems of global change? What are the unique contributions that the social sciences need to bring to integrated, inter- and trans-disciplinary global change research efforts if those efforts are to make a positive difference?

These are the questions that have focused the GEC Design Project's work on defining a unified, comprehensive knowledge framework for solutions-oriented social science research on global change. The outcome of this work – a framework of six transformative cornerstones of social science research for global change – is presented in Section 5 below. It represents a synthetic, interpretative analysis of data, insights and debates gathered in a broad process of global enquiry and consultation.

That process includes:

- An analysis of the outcomes of a series of recent and ongoing global change agenda-setting processes, informed also by the ISSC Executive Director's participation in each of the following activities:
  - ¬ The 2009-2011 Earth system visioning process led by ICSU in cooperation with the ISSC; this was an international, consultative agenda-setting exercise, which included researchers from all fields of science. The process produced a framework of five grand challenges – forecasting, observing, confining, responding and innovating – for the coming decade of integrated Earth system science for global sustainability[1];
  - ¬ The 2010-2011 European Science Foundation's "Responses to Environmental and Societal Challenges for our Unstable Earth" (RESCUE) Forward Look; an integrated foresight exercise, which included a dedicated Social Science and Humanities Task Force[2];
  - ¬ An international survey of social scientists and humanities scholars on "Engagement in Global Environmental Change Research", undertaken in 2011 by the IHDP in cooperation with the ISSC and UNESCO[3];
  - ¬ The Belmont Forum Challenge development process and ICSU Belmont Panel Report, both completed in 2010[4];
  - ¬ The ongoing work – including research strategy development – of the Transition Team that has been appointed by ICSU and the ISSC to design the new Future Earth initiative referred to in Sections 2 and 3 above.

- A two-day social science global change research agenda-setting workshop held in June 2011, convened by the ISSC and the Belmont Forum. This event brought together a truly international and inter-disciplinary group of over 60 social science researchers and stakeholders representing academia, non-governmental organisations, intergovernmental institutions, science policy makers and social science funding agencies from 25 countries. To ensure a balanced disciplinary coverage and geographic reach, participants were selected from amongst nominations submitted by key regional social science councils and representative bodies. Nominees

1 Reid, W.V., D. Chen, L. Goldfarb, H. Hackmann, Y.T. Lee, K. Mokhele, E. Ostrom, K. Raivio, J. Rockström, H. J. Schellnhuber, A. Whyte (2010). Earth System Science for Global Sustainability: Grand Challenges. Science, 12 November, pp. 916-917.

2 http://www.esf.org/publications/forward-looks.html

3 Survey Report can be downloaded from http://www.ihdp.unu.edu/file/get/9091

4 Belmont Forum White Paper can be downloaded from http://www.igfagcr.org/images/documents/belmont_challenge_white_paper.pdf and the ICSU Panel Report on meeting the Belmont Challenge from http://www.igfagcr.org/index.php/announcements/31-icsu-belmont-forum-document

included social science researchers working within and outside of the field of global change. Participants also included representatives of the IHDP community[1].

– Consultation (via mailed questionnaire) of a group of social science experts recommended for this purpose by each of 12 international disciplinary associations that hold ISSC membership, including those associations representing sociology, political science, anthropology, psychology, economics and geography. The consultation also included experts nominated by members of the GEC Design Project's Steering Group. To date 26 questionnaires have been received – reflecting a response rate of around 47% - from social scientists and humanities scholars in 13 countries across 7 regions. Annex 1 provides a list of respondents, and a copy of the questionnaire used is available in Annex 2. The opening set of questions posed in the latter concerned key social science contributions to climate and broader processes of global environmental change, and related social science priorities and knowledge gaps.

– Semi-structured, personal interviews with a group of leading social science thinkers, selected on the basis of recommendations made by ISSC members as well as the Project Steering Group. Interviews were conducted with 30 social scientists – listed in Annex 1 – from 17 countries across 7 regions. These interviews were guided by the same questions as those used in the consultative survey described above[2].

– Brief, "on-the-spot" interviews with natural scientists, social scientists and research users during COP 17, which was held in Durban, South Africa from 28 November to 9 December 2011. These interviews challenged respondents to identify one or two key social science research questions relevant to today's most urgent global change challenges. As detailed in Annex 1, a total of 25 interviews were undertaken, comprising 14 social scientists and humanities researchers from 8 countries across 5 regions, 9 natural scientists from 8 countries across 4 regions, and several stakeholder representatives.

– Participation by the Project Team and co-authors of this paper in key events, seminars and conferences, including
  ¬ A series of Rio+20 preparatory regional workshops co-organised by ICSU and UNESCO.
  ¬ A workshop on "Making Knowledge Work", held in September 2011 and organized by UNESCO for the ISSC GEC Design Project. The event brought together a small but diverse group of stakeholders, including academics, policy makers and NGO representatives with expertise in social science knowledge production and deployment. Participants included members of the Scientific Advisory Committee of UNESCO's intergovernmental programme on Management of Social Transformations (MOST)[3].
  ¬ The October 2011 UNRISD conference on "Green Economy and Sustainable Development", which focused on setting an agenda for future work on the social dimensions of the green economy[4].

In addition to the series of activities outlined above, the transformative cornerstones of social science research for global change framework is based on two rounds of in-depth discussion by the GEC Design Project Steering Group, the members of which are listed in Box 1. It has also been presented in various meetings and seminars and has been shaped by the feedback of the stakeholders – including funders – who participated in them. The work that has gone in to developing the framework has thus reached a diverse set of actors: social and natural scientists, scholars from the humanities, science policy makers, funders and so-called users of research.

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1 ISSC 2011. ISSC-Belmont Forum Agenda Setting Workshop: Synthesis Report and Resource Document. International Social Science Council, Paris. Available to download at: **http://www.worldsocialscience.org/pdf/ISSC-BelmontForum_Workshop_Report.pdf**

2 The questionnaire developed for the GEC Design Project was used to gather input on a range of programme design issues and, hence its focus was broader than the identification of a knowledge framework for a possible new social science funding programme on global change. Also included were questions about ways of engaging social scientists in the field of global change research, fostering inter- and trans-disciplinary collaboration, and the effective utilisation of social scientific knowledge. Responses to these questions have served as input to other project outputs, including a report on "Making Knowledge Work". They have also been used to draft a blueprint for the type of research activities that a new programme should support, as well as the funding instruments, selection and evaluation processes, and governance structures it should incorporate.

3 "Making Knowledge Work" report will be available for download from the ISSC website – **www.worldsocialscience.org** – in May 2012.

4 For further information see http://www.unrisd.org.

05 Transformative cornerstones of social science: A new charter for the social sciences in integrated global change research

Taken together, the outputs of the various agenda-setting processes that the ISSC has participated in during the past three years, as well as the specific data collection work undertaken for the ISSC's GEC Design Project, add up to a substantive, concrete global change agenda comprising numerous important themes and topics. The agenda-setting processes and discussions themselves reveal the difficulty of reaching consensus on a single set of top global change priorities. Agendas vary across scientific, policy and funding communities, and in line with the regional, as well as professional and personal contexts of those involved in setting them. Not surprisingly, specific priorities – and associated methodological orientations – also vary depending on the balance of social to natural science voices around the negotiating table (and more often than not, joint priority-setting really is a matter of negotiation).

An attempt to catalogue the multiple topics and themes that consistently make it on to concrete priority agendas – including those put forward by social scientists who participated in various activities of the GEC Design Project – produces an overview that could include:

- Central issues of climate change impacts, adaptation, mitigation, vulnerability, resilience and sustainability;
- Concerns related to ecosystems, environmental services and biodiversity;
- Problems of primary resource depletion and needs related to water, energy, land, food, and so on;
- Critical areas ranging from population growth, migration and displacement to urbanization, waste management, oceans and coastal vulnerability; from extreme events and disaster risks to social protection, peace, security and conflict; from poverty and inequality to governance; innovation and technology assessment;
- Sector-specific priorities, including development pathways and green growth, as well as climate and environment-related concerns in education, media, health, agriculture, the law, international relations, transport, and science policy;
- Policies and response measures, including, for example, clean development mechanisms, developments in geo-engineering, economic incentives, as well as developing country-focused programmes such as "Reducing Emissions from Deforestation and Forest Degradation" (REDD) or "Energy for All".

When it comes to defining concrete agendas for global change research, the work of the ISSC's GEC Design Project has led to a number of distinct conclusions. Firstly, priorities for research that is intended to contribute to the development of solutions to global change challenges should be co-designed in trans-disciplinary, trans-science contexts of application. In other words, priority-setting should include the voices of decision makers, practitioners, civil society representatives and other research stakeholders.

Secondly, the many concrete challenges demanding research attention – including those enumerated above – are shared challenges. There isn't a social science specific set of priorities on the one hand and a natural science set on the other hand. Rather, the priorities are shared priorities, demanding joint efforts from natural and social scientists alike, efforts calling also for cooperation with those working in the human, medical and engineering sciences.

And thirdly, regardless of the concrete challenges at hand, there are some fundamental social science questions that have to be asked if attempts to address those challenges are to lead to more effective, sustainable, equitable solutions. The questions that have emerged as being central in this regard include questions about:

- Historical and contextual complexities
- Consequences
- Conditions and visions for change
- Interpretation and subjective sense making
- Responsibilities
- Governance and decision making

These are the cross-cutting questions that demonstrate the central importance of social science knowledge for global change research, specifying what it is that the social sciences can and must bring to the framing of shared, concrete priority agendas in this field of work. These are the questions that comprise the knowledge framework that the GEC Design Project is calling the "Transformative Cornerstones of Social Science Research for Global Change".

Together, the six cornerstones – each of which is defined in further detail below – articulate a fundamental set of lenses for understanding processes of climate change and global environmental change as social processes embedded in specific social systems, past and present. They provide tools for critically questioning and rethinking the shape and course of these processes and systems in the future.

They are called transformative because the cornerstones work together to inform action for deliberate transformation that is both ethical and sustainable.

Transformation is understood as a process of altering the fundamental attributes of a system, including in this case structures and institutions, infrastructures, regulatory systems, financial regimes, as well as attitudes and practices, lifestyles, policies and power relations[1]. The stress on deliberate transformation expresses a normative position adopted by many of those consulted as part of the GEC Design Project. It posits change as an explicit and necessary aim of social science knowledge production on global change. The expectation is that research projects addressing the transformative cornerstones will indeed contribute to producing such change. And because of this, deliberate transformation refers to an additional response to global change and, specifically, to climate change; additional to and building on the enduring focus in this field on adaptation and mitigation; a purposeful "contestation of climate change", a critical questioning of the systems and paradigms that have created climate change and on which climate change rests[2].

Closely linked to this position is a call, expressed throughout the GEC Design Project, for social sciences to stimulate and support innovation and out-of-the-box thinking for solutions to global change. The point repeatedly made is that in order to achieve substantive, positive changes in the timeframe available and at the scales required, all knowledge must provide the basis for innovations of one kind or another, technological and social. The social sciences have to innovate in ways that lead to new social relations, new social understandings of and responses to the challenge of global change, and new revolutions in socio-economic, political, scientific, educational and legal systems and institutions. This responsibility to be innovative and to stimulate creative thinking cuts across each of the transformative cornerstones of social science presented below. Given this widespread emphasis on contestation, change and creativity, the transformative cornerstones framework expresses a new charter for the social sciences: a common understanding of what puts the social sciences at the very center of a new vision for and practice of research for change, a call for the social sciences to take the lead in developing a new integrated, transformative science of global change.
In the rest of this section the scope of each of the six cornerstones is defined and a set of illustrative questions is provided in text boxes to further elucidate the social science work that the framework entails.

CORNERSTONE 1
Historical and contextual complexities

The first transformative cornerstone of social science research sets out to elucidate the full complexity of global change processes in modern societies. Here the work for social science is to understand the political economy of climate and other processes of environmental change, and to understand how these processes relate to a multitude of other social crises. It is to distinguish between different yet interconnected stressors and drivers of global change, and to clarify the interdependencies of peoples' vulnerabilities to these and a range of other social processes, such as migration or conflict. Situating global change processes in this way also calls for in-depth historical analyses. Here the purpose is to explain the complex trajectories and processes that have led to today's unsustainable lifestyles and models of progress, and to draw lessons from earlier processes of transformative change. Understanding the complexity of global change processes also entails understanding the influence of context, and addressing how global change risks, impacts, perceptions, experiences and responses differ across different regions and cultures of the world, across social classes, gender, race or faith groupings, and across a range of personal or professional identities.

HISTORICAL AND CONTEXTUAL COMPLEXITIES: ILLUSTRATIVE QUESTIONS

Distinguishing multiple stressors, drivers and interdependencies

- What are the multiple stressors and drivers of climate and broader processes of global change and how are these interconnected?
- How do we – or should we – situate climate change in the so-called confluence of crises characterizing current global realities?
- How does the climate crisis relate to other actual or approaching social crises, including those of unsustainable development, finance, economic injustice, food, health, migration, poverty and security?
- What are the causal mechanisms that connect vulnerability to global change with vulnerability to other social processes such as population displacement and migration, power inequalities and conflict?

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1 This understanding follows the definition of transformation in the IPCC's recent Special Report on extreme weather events. IPCC, 2012: Summary for Policymakers. In: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK, and New York, NY, USA, pp. 1-19. The full report will be available to download by the end of March from http://ipcc-wg2.gov/SREX/

2 This position draws on the work of Karen O'Brien on processes of deliberate transformation in relation to climate change; O'Brien, K. 2011. Global environmental change II: From adaptation to deliberate transformation. Progress in Human Geography. First published online November 10, 2011:

Learning from history

- What are the historical drivers that have led to high carbon systems, lifestyles and current models of progress? How do we account for and track the influence on global change processes of dominant neoliberal thinking and the marketization of all social life?
- What histories – of behaviours, institutions and systems – have generated a world living beyond its natural limits? What predictors can we identify on the basis of such histories?
- What lessons can we learn from environmental history case studies and how can these be replicated today?

Dealing with differences across geographical, cultural, personal, professional contexts and identities

- What are the contextual drivers of behaviours that contribute to global change?
- How are climate and related global change risks, events, actions and reactions perceived and experienced in different geographical, cultural, personal and professional contexts?
- How are such experiences mediated by gender, race, ethnic and class identities?
- What role do social and cultural identities play in peoples' ability to cope with and recover from the impacts of global change?

CORNERSTONE 2
Consequences

Identifying and mapping the full range of actual and unfolding threats and impacts of global change processes on people and communities in diverse locations is the work of the second transformative cornerstone. It is about exposing the diverse realities of living with global change, and it calls for a special focus on poor and vulnerable sectors of different societies. Understanding the consequences of global change brings to light the lives of climate change victims and their coping mechanisms, responses, innovations and limitations. It also raises important questions about social boundaries and tipping points related to environmental pressures and disasters on existing human systems and economies, on the basic social fabric of life. Work on the consequences of global change also requires a focus on existing policy solutions, technologies, and other response measures in a range of sectors, including economic and education sectors. Here the task is to unpack their successes and failures in iterative processes of learning aimed at improving the outcomes of specific actions and instruments.

CONSEQUENCES: ILLUSTRATIVE QUESTIONS

Living with global change: Taking stock of threats and impacts across different groups and regions

- What are the real threats and actual, unfolding impacts of climate and broader global change on different groups and communities in different parts of the world?
- What are the consequences in the most vulnerable regions, such as Africa, Latin America and South Asia?
- What are the consequences for marginalized people and communities in advanced economies?
- What are the lives of the victims of global change really like, how do they perceive threats and how do they typically react, individually and socially?

Identifying social boundaries and tipping points

- How do people and institutions understand and anticipate the risks of social boundaries and social tipping points in relation to global change?
- What are the consequences of global change for the basic social fabric of life: for institutions such as the family, welfare systems, legal rules, rights and duties, or private-public interactions?
- Do the consequences of global change lead to more or less social cohesion and solidarity; to what extent do they exacerbate crisis and conflict and drive the privatization of security and militarization of society?

Measuring success: Improving the outcomes of specific actions and instruments

- What are the outcomes of specific climate change policy instruments and actions, including for example economic incentives and media strategies, for both mitigation and adaptation?
- Are these responses working well for people and societies? Do they lead to transformative change or do they perpetuate existing marginalisation and inequalities?
- What are the unintended or unexpected consequences of measures aimed at addressing the impacts of global change; what new vulnerabilities, if any, do our policies and economic measures give rise to?
- How can we best monitor, measure and evaluate policy actions and instruments; how do we know that we are moving towards resilience and sustainability?

CORNERSTONE 3
Conditions and visions for change

The third transformative cornerstone addresses the important issue of change itself. It asks how change happens, at what levels and scales, and in what directions. The purpose here is to understand what drives individual and collective processes of change, as well as change in social practices. It is to identify what leadership and other capacities are required for successful change to occur, whilst being absolutely clear about the limitations and democratic pitfalls of deliberate processes of change. This cornerstone aims to shed light on criteria for successful, transformative actions towards equitable sustainability at the local, community level, and on how to speed and scale those up into processes of transformative global thinking. Feasible, realistic visions for change matter, but so do the methods and procedures by which they are built. This raises fundamental questions about the ways and consequences of reframing global change – particularly climate change – as a deep systemic problem. It raises questions about different narratives of socially desirable change, associated lifestyles and alternative socio-economic, technological and political systems. At the same time it addresses concerns about processes of social engineering, and asks about the feasibility of participatory approaches to determining and achieving alternative visions of the future. In this regard building consensus on directions and mechanisms of change in ways that include marginalized as well as non-scientific views and voices is a key challenge.

CONDITIONS AND VISIONS FOR CHANGE: ILLUSTRATIVE QUESTIONS

Understanding how we can change behaviour and social practice

- What drives individual and collective behavioural change and change in social practices; what are the preconditions for and barriers to change in behaviours and practices?
- What influence does our (evolving) knowledge of global change drivers and impacts have on the decisions and practices of individuals and communities?
- What examples do we have of successful, local transformative action and how can we motivate it, what mechanisms and incentives can we use?
- To what extent are people and groups driven by altruism rather than interest? Is there a role for trust and reciprocity in processes of change? And for incentives and competition?
- What kind of leadership is needed for change and how is it exercised in different contexts?
- What makes for successful change agents; how do we nurture them?

Speeding and scaling up processes of change

- At what scale must change happen for it to make a positive difference?
- How can we speed and scale up change processes, especially successful, sustainable local or community-based transformative action?
- What would unlock the connection between such action and wider processes of transformative global thinking?
- How do we move from individual to institutional and eventual systemic processes of change?
- How can we use media and new modes of social communication to increase capacities to contest climate change, envision and build alternative socio-economic systems, development trajectories and new political realities?
- What actions are needed in crucial economic sectors – those of energy, housing, heating, cooling, transportation, and agriculture – in order to ensure a decarbonization and dematerialization of the economy?

Building consensus on the directions for change

- What does change mean to different people and different groups?
- Who decides on the direction of change required? What should the role of the state be in proactively determining priorities for change?
- What are the risks of social engineering and how do we prevent them?
- Can change processes be deliberative and participatory; can they be representative of the majority, that is, respectful of democratic principles? How can we integrate into dominant narratives of change those visions coming from non-dominant groupings, as well as non-scientific experts?
- What are the inherent pitfalls and dangers of processes of change – for democracy?
- What would realistic, feasible constructions of alternative social systems and lifestyles look like; what new leitmotifs would we need to guide change towards such systems?
- How do we achieve success in reframing climate change as a social and deep systemic problem, rather than a technical problem to be fixed?

CORNERSTONE 4
Interpretation and subjective sense making

The fourth transformative cornerstone – interpretation and subjective sense making – confronts the personal and collective values, beliefs, assumptions, interests, worldviews, hopes, needs and desires that underlie people's experiences of and responses – or lack of responses – to processes of global change. These are the component elements of the interpretative processes that shape personal narratives and social discourses about the nature of the world and the environment, as well as the nature and need for transformation towards global sustainability. This fourth transformative cornerstone challenges social scientists to make sense of the ingrained assumptions and associated blindspots that underlie choices and priorities, prevent awareness of that which needs to change, and keeps systems deadlocked in spirals of inaction. It raises questions about the nature and role of transformative learning in unlocking minds and motivations, and investigates the reasons for indifference, scepticism and denialism in the face of potentially cataclysmic processes of climate change.

INTERPRETATION AND SUBJECTIVE SENSE MAKING: ILLUSTRATIVE QUESTIONS

Understanding the nature and role of subjectivities

- What sets of values, beliefs, assumptions, interests, worldviews, hopes, needs and desires underlie different responses to global change and drive different visions of the kind of societies we should be striving to build?
- What discourses and narratives of global change – those expressed in different ways of communication and forms of expression – drive our sense making, life priorities, and social agendas; and what shared social meanings do they embrace?

Exposing blindspots

- How can processes of transformative learning expose and alter ingrained assumptions and beliefs, opening peoples' minds to new and multiple ways of understanding the world and processes of global change?
- What could such learning processes contribute to the development of effective responses to global change and how can we best promote them?

Explaining scepticism, indifference and denialism

- How do we explain the so-called 'Giddens paradox': the fact that people remain indifferent to risks that are potentially cataclysmic?
- How is it possible that, in the face of decades of scientific practice and the role of science in modern societies, people and politicians can so easily deny the science of climate change?
- What are the origins of and reasons for skepticism, denialism and inaction in the face of climate change, and what is the role of education in this regard?
- Why are climate skeptics and denialists given so much media coverage in advanced societies? What power bases and interests are advanced by appeals for inaction and how can such forces be counteracted?

CORNERSTONE 5
Responsibilities

The double injustice imposed by the effects of climate and related environmental changes on already vulnerable populations and those without a voice (future generations), calls for urgent work on understanding what it takes to foster global and inter-generational solidarity and justice. It simply cannot be assumed that all responses to climate change are or will be framed as "just" interventions. The fifth transformative cornerstone foregrounds obligations, duties and responsibilities to the poor, to the vulnerable and to future generations, bringing these concerns into the legitimate space of scientific expertise, policy and practice. It addresses methods, evaluative systems and policy mechanisms that can ensure the use and relevance of ethical approaches in the development of new visions and building of new economies for the future. The cornerstone on responsibilities upholds an ethical lens on all interpretations of and responses to global change, be they of a technical, political, economic or discursive nature.

RESPONSIBILITIES: ILLUSTRATIVE QUESTIONS

Foregrounding normative agendas

- How can we best bring a normative agenda – one that foregrounds obligations, duties and responsibilities to the poor, to the vulnerable and to future generations – into the legitimate space of scientific expertise, policy and practice?
- How do we ensure that this normative agenda is respectful of diverse cultural, faith and value systems?
- What is the role of cooperation and solidarity in tackling global change? How do we build global and local economies and societies based on these principles?

Fostering global and inter-generational solidarity and justice

- To what extent do existing economic, social and political systems, policies and practices promote unjust global relations and inequalities?
- What will it take for the world community to recognize and respond to this?
- How can we ensure that responses to climate and broader global change, including processes of deliberate social transformation, integrate and foster global and inter-generational justice?
- What legal structures are required at different geopolitical levels to address multiple aspects of justice in global dimensions?

Safeguarding ethical approaches

- What are the practical consequences – also for policy making – of understanding climate change and global change as ethical problems?
- What tools and methods do we need to develop to bring ethical challenges in to quantitative evaluative measures and economic planning?
- When do processes aimed at driving social transformation become politically and culturally unacceptable and perceived as attempts at social engineering?
- What are the ethical aspects of geo-engineering?

CORNERSTONE 6
Governance and decision making

The final transformative cornerstone addresses a large and important set of questions about governance, choice and decision making. Much of the policy processes related to climate change and global environmental change remain poorly understood. Social science knowledge is needed on how decisions are made in the face of uncertainty, what pathways are available for influencing decision making, what determines the success or failure of political agreements and what drives political will. Knowledge is also needed on the possible effects of different ways of framing global change problems on policy makers and practitioners; not all expert input has the same policy appeal or is given equal hearing by those in power. This cornerstone emphasizes the importance of understanding the role of science in the policy process, of knowing more clearly what makes knowledge work, whose knowledge counts under what circumstances, and where the limits of expert knowledge lie. This cornerstone leads, finally, to a focus on issues of institutional reform, new institutional design and the building – at different levels – of structures to enable dialogue across competing interests, values and worldviews and under conditions of continued uncertainty.

GOVERNANCE AND DECISION MAKING: ILLUSTRATIVE QUESTIONS

Coming to grips with policy processes and political will

- How do policy processes related to questions of climate change and global change actually work? How do we make decisions in the face of uncertainty?
- Who determines the choices available and what pathways exist for influencing policy agendas and decision making processes?
- What is the role of scientific knowledge and media in processes of political decision making and policy formulation? What role do emotions play in such processes?
- How do we use the future in making policies for today? What blind spots and assumptions about the future do we inject into our decision making?
- What determines why political agreements succeed or fail?
- What drives commitment to political action? What are the barriers to such commitment and how can these be overcome?
- Could a reframing of climate change – e.g. in terms of human wellbeing – make for more attractive, enticing and pragmatic policy goals? If so, how should we reframe the issue?
- Should climate change be mainstreamed and if so, how do we ensure policy coherence?

Making knowledge work

- How can we best increase the delivery and use of knowledge for global change; how do we get decision makers to pay attention to the results of research?
- Who has access to decision makers; whose knowledge counts and why? How do we ensure cognitive justice, equality of knowledge claims and access to the policy process?
- Would the integration of local and indigenous knowledge with academic knowledge and technology lead to more effective solutions to global change and, if so, how best do we accomplish this?

Building relevant institutions and structures

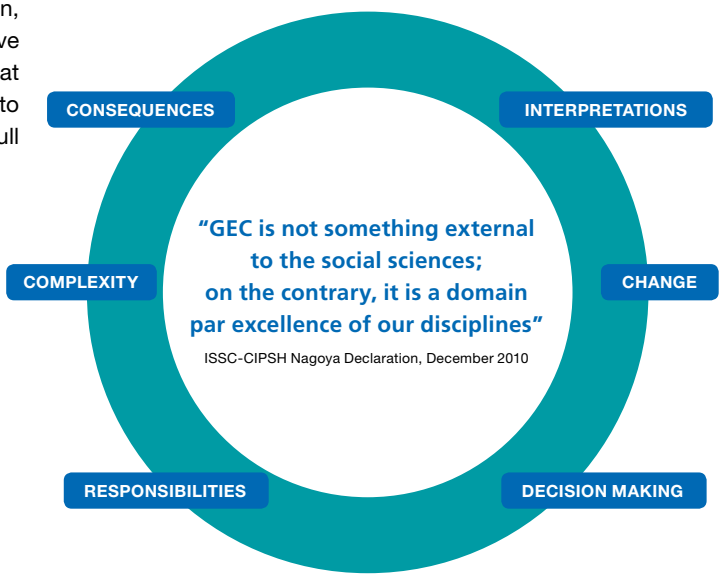
- What decision making institutions and structures do we ideally need at different levels to address issues of climate change? And how do we ensure dialogue and collaboration across these levels?
- Is the global scale of governance still relevant when it comes to forward looking action on climate change? Where are possible new global coalitions to come from?
- How do we ensure democracy in global governance? What would constitute real, authentic, meaningful participation by multiple actors and how can we ensure it?
- Do we need radically new political regimes and forms of democracy and, if so, of what kind and are they feasible?

06 Conclusion

By and large, efforts to bring hybrid sciences together in joint efforts have thus far seen the role of the social sciences as accompanying, supporting and complementing research into problems identified and tackled by the natural sciences. Very often, collaboration between these fields has taken the form of natural scientists calling on social scientists to help evaluate and promote natural science solutions, to bridge science-policy divides and facilitate the embedding of new technologies into social institutions and practices[1].

Today's global realities suggest that this mode of working together has not served society well and, indeed, there is now widespread recognition of the need to take joint efforts – particularly between natural and social scientists – to a deeper, more meaningful and constructive form of collaboration. The GEC Design Project work has confirmed that the key to doing this is to ensure timelier dialogue between the sciences: interaction and exchange at the point – before research proposals are conceived – when concrete priority problems are defined and the necessary research questions identified. Integrated research does not, in other words, mean inviting social scientists to join in attempts at solving problems which have largely, if not solely, been identified and framed by natural scientists (or vice versa for that matter). Rather, it means joint, reciprocal framing, mutual learning, and then the co-design, execution and application of research[2]. The transformative cornerstones of social science framework sets out what exactly and uniquely it is that the social sciences bring to these processes and, in doing so, elucidates why their full integration is essential.

The transformative cornerstones framework speaks to the full spectrum of social science disciplines, interests and approaches – theoretical and empirical, basic and applied, quantitative and qualitative. By not fashioning a global change research agenda around a substantive focus on concrete topics – water, food, energy, migration, development, and the like – the cornerstones are not only inclusive of many social science voices but, perhaps most importantly, show that climate change and broader processes of global environmental change are organic to the social sciences, integral to social science preoccupations, domains par excellence of social science disciplines[3].



1 ISSC 2011. ISSC-Belmont Forum Agenda Setting Workshop: Synthesis Report and Resource Document. International Social Science Council, Paris. Available to download at: http://www.worldsocialscience.org/pdf/ISSC-BelmontForum_Workshop_Report.pdf

2 Hackmann, Heide, Foreword to Climate Change, Ethics and Human Security, Eds Karen O'Brien, Asunción Lera St. Clair and Berit Kristoffersen (Cambridge University Press, 2010).

3 ISSC (2010). ISSC-CIPSH Joint Symposium 2010: Changing Nature, Changing Sciences? – Final Statement of Outcomes. Available to download from: http://www.worldsocialscience.org/pdf/ISSC-CIPSH%20Joint%20Symposium%20Statement%20of%20Outcomes.pdf

The funding and coordination programme that the ISSC's GEC Design Project was set up to develop, and that will be proposed to Sida and other leading development aid and funding agencies around the world, will serve a dual purpose. In the first place it will work to develop and enrich the social science knowledge base on each of the six transformative cornerstones outlined in this report. The programme should seek to do so through supporting research practice and training, innovative methodological developments and new data infrastructures, science-policy and practitioner interfaces and effective communication capacities.

But of course it is important to acknowledge that there already is an extensive body of excellent social science knowledge on the types of questions – about behaviour, institutions, value systems, etc. – that constitute the cornerstones. As such the programme should serve also to support efforts that bring such knowledge to bear on the many and urgent challenges of global change. The transformative cornerstones of social science for global change have to be integral to global research efforts if the responses to global change that we seek to inform are to be more effective, more robust, just and primarily about human and social wellbeing for all.

The transformative cornerstones of social science function not only as a framework for understanding what the social sciences can and must contribute to global change research. They function as a charter for the social sciences, a common understanding of what it is that the social sciences can and must do to take the lead in developing a new integrated, transformative science of global change.

Annexes

Annex 1

LIST OF GEC DESIGN PROJECT INTERVIEWEES AND RESPONDENTS

WRITTEN SUBMISSIONS

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INTERVIEWEES

Bina Agarwal	Institute of Economic Growth, Delhi University	INDIA
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Guillermo Castro	PNUMA Regional / Ciudad de Saber	PANAMA
Anthony Clayton	University of the West Indies	JAMAICA
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Anthony Giddens	London School of Economics and Political Science	UK
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Sander E van der Leeuw	School of Human Evolution and Social Change, Dean: School of Sustainability, Arizona State University	US
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SPOT INTERVIEWEES

Amal Aldababseh	Amman Institute for Urban Development	JORDAN
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Fenglian Du	School of Economics and Management, Inner Mongolia University	CHINA
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Gokce Gunel	Cornell University	US / ABU DHABI
Clarisse Kehler Siebert	Stockholm Environment Institute	SWEDEN
Euster Kibona	Environmental Protection and Management Services	TANZANIA
Chee Yoke Ling	Third World Network	CHINA
Ian McGregor	University of Technology, Sydney	AUSTRALIA
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Deborah Murphy	International Institute for Sustainable Development	CANADA
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Antonio Queface	Global Risk Identification Programme, National Disasters Management Institute	MOZAMBIQUE
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Carolyn Sachs	Rural Sociology and Women's Studies, Penn State University	US
Petra Tschakert	Penn State - Earth and Environmental Systems Institute (ESSI)	US
Tanay Sidki Uyar	Dept. of Mechanical Engineering, Marmara University - Eurosolar Turkey, World Wind Energy Association	TURKEY
Dorte Verner	The World Bank	US
Baowei Zheng	Renmin University of China	CHINA

Annex 2

QUESTIONNAIRE

Social Sciences Research on Climate Change: A Global Research Funding and Coordination Design Project

JULY 2011

QUESTIONNAIRE
DEFINING THE KNOWLEDGE AGENDA

Please do not feel obliged to answer each individual question if you prefer to address the cluster as a whole. If not all of the clusters are of interest to you, please feel free to answer only those that are. Enter your responses within this document, or on a separate sheet, according to your preference.

CLUSTER A
Key contributions, research priorities and gaps

– Why are the social sciences important for tackling the problems of climate and broader global environmental change (GEC)? What is the main climate/GEC issue or problem that the social sciences have to take the lead on tackling?

– What are the two or three most important and urgent research questions that social scientists should provide answers to in order to help tackle the problems of climate/GEC?

– What are the critical research gaps in this field, areas in which insufficient research is being conducted by social scientists?

– What are the key climate/GEC issues and related social science research questions that need to be addressed?

CLUSTER B
Dialogue across disciplines and scientific fields

– With reference to climate/GEC research, is there sufficient collaboration between disciplines within the social sciences? If not, how can we best stimulate this?

– What are the 2 or 3 main challenges for social scientists of undertaking inter- or cross-disciplinary GEC research across the social, physical and natural sciences? How do we best tackle these?

CLUSTER C
Opportunities and obstacles, incentives and disincentives

– Are there sufficient intellectual, organizational and financial incentives for social scientists – and particularly mainstream social scientists – to become involved in climate/GEC issues? If not, what additional incentives are most urgently needed?

– What are the most urgent capacity needs (individual, institutional or systemic) in relation to increasing the production of social science knowledge relevant to climate/GEC?

CLUSTER D
Making knowledge work

– What prevents social science research from being heard and used in relation to the problems of climate/GEC? How do we increase the relevance of social science knowledge?

– What type of relations and interfaces between science and policy do we need to develop? Do you have examples of good practice that you can share with us in this regard?

– What about relations and interfaces between science and other stakeholders or users, including industry? What relations should we prioritise and how can we best develop them?

CLUSTER E
Institutional issues and interest in participation

– Do you think there is a need for a global research funding programme that supports inter-disciplinary, comparative social science research on climate/GEC? If so, what would you say the key elements of such a programme should be – what types of activities (training, collaborative research, policy dialogues, etc.) should it fund, what types of review or evaluation mechanisms should be used, how should it be governed, what should it avoid doing, etc.?

About the ISSC

The International Social Science Council (ISSC) is the primary body representing the social, behavioural and economic sciences at an international level. Established by UNESCO in 1952, the ISSC today is an independent non-governmental organisation, which has a wide and growing membership. ISSC members include international professional associations and unions, regional and national social science academies and research councils, and other organisations with major interests in the social sciences.

The ISSC's main objective is to increase the production and use of social science knowledge in all parts of the world in order to help address global priority problems. This involves the Council in:

- Scoping and agenda-setting
- Advocacy and promotion
- Capacity development
- Networking
- Information brokerage and dissemination
- Science policy development and resource mobilization

These diverse roles are given substance through a broad portfolio of international scientific programmes, events, publications and partnerships, which include:

- A series of World Social Science Reports
- Regular World Social Science Fora
- A World Social Science Fellows Programme, including Cross-Science Networking Conferences for Young Scientists
- Co-sponsorship of international research programmes and networks
- Active membership of international science policy fora and initiatives
- Design and development of new international research activities and funding programmes
- International Prizes
- Special focus events and agenda-setting workshops

The Council is governed by a General Assembly and an elected Executive Committee, and coordinated by a Paris-based Secretariat.

ISSC
international social science council

FOR FURTHER INFORMATION
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