Research Co-operation between Developed and Developing Countries in the Area of Climate Change Adaptation and Biodiversity

OECD

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The Global Science Forum (GSF) is a venue for consultations among senior science policy officials of the OECD member and partner countries on matters relating to scientific research. The Forum's activities produce findings and recommendations for actions by governments, international organisations, and the scientific community. The Forum serves its member delegations by exploring opportunities for new or enhanced international co-operation in selected scientific areas; by defining international frameworks for national or regional science policy decisions; and by addressing the scientific dimensions of issues of social concern.

The Forum's reports are available at www.oecd.org/sti/gsf. The GSF staff are based at OECD headquarters in Paris, and can be contacted at gsforum@oecd.org.

Cover photo © UNU: Ghanaian and Japanese researchers working together for a field survey to develop adaptation strategies against climate and ecosystem changes in the framework of the SATREPS programme, funded by JST and JICA.

FOREWORD

Global challenges, such as climate change and biodiversity loss, have increasingly become the subject of international policy deliberations. It is widely recognised that strong and effective international co-operation is required to address these issues. Co-operation in science and technology between developed and developing countries is considered to be of particular importance.

An initial OECD-GSF report entitled "Opportunities, Challenges and Good Practices in International Research Co-operation between Developed and Developing Countries" was published in April 2011. As a follow-up to this, two workshops were convened in 2013 in Singapore and South Africa to compare practices in establishing and conducting collaborative programmes and projects between developed and developing countries in the areas of climate change adaptation and biodiversity. This short report summarises the main outcomes of these workshops.

The objective was not to try and define a one-size-fits-all solution to the practical problems associated with research collaboration in the areas of climate change adaptation and biodiversity, but rather to provide useful information and advice to scientists and research administrators as they contemplate the creation of new projects and/or plans for enhancing international partnerships. We hope that this report will be informative and useful and we would be interested in receiving comments from readers. The GSF staff can be reached at gsforum.contact@oecd.org.

The OECD Committee for Scientific and Technological Policy approved this report in June 2014.

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1. Rationale and Background

Global-scale issues (such as climate change, energy security, natural disaster prevention and mitigation, biodiversity protection, and food security) have increasingly become the subjects of international policy-level deliberations. It has become widely recognised that strong and effective international co-operation in science and technology is required to address these issues. Co-operation between developed and developing countries is of particular importance given that they often possess different types of the expertise/knowledge, data, and other resources that are actually or potentially useful for finding solutions and for confronting multiple threats to individuals and to society as a whole.

Among the critical global issues, climate change adaptation and biodiversity were selected as the focus for a detailed study of international research co-operation, because of their close interconnection with a wide spectrum of other global concerns. The link between climate change and biodiversity was emphasized in the international strategic plan for 2011-2020 decided at the 10th Conference of the Parties to the Convention on Biological Diversity.[1] It is also expected that climate change adaptation must be realized in such a way that it does not adversely affect biodiversity and local ecosystems under changing conditions related to urban expansion that are observed in many parts of the world. Furthermore, climate change issues and biodiversity are topics of conflict between developed and developing countries, given the differences between the historic, spatially concentrated positive impacts of industrialisation and the more globally dispersed negative impacts of, for example, greenhouse gas emissions.

The designers of this OECD Global Science Forum study did not intend to validate or modify any existing policies and theories related to climate change adaptation and biodiversity. The limited but pragmatic goal of this study was to identify and analyse selected issues and options, and to derive conclusions that could be of practical utility for scientists and research administrators as they contemplate the creation of new projects and/or plans for enhancing international partnerships. In the analyses of instances of research collaboration, both the scientific and developmental components must be considered, involving diverse stakeholders simultaneously. It was hoped that this study would also prove useful and generally applicable in domains other than climate change adaptation and biodiversity.

Considering the broad subjects of climate change adaptation and biodiversity, the scope of this study was narrowed to topics that are of near-term practical concern and that are already recognised globally as urgent, and that may require various ecosystem-based approaches and other actions. Thus, the following topics were selected for consideration: (1) food production, (2) water management, (3) health and sanitation, and (4) urban-rural interactions (sustainable development in both regions).

Recognizing the importance of research co-operation between developed and developing countries in dealing with global issues, the OECD Global Science Forum finalized the report entitled "Opportunities, Challenges and Good Practices in International Research Co-operation between Developed and Developing Countries"[2, 3] in April 2011. This OECD report is a distillation of analyses and discussions that emerged during subsequent activities. As such, it constitutes a follow up to the report mentioned above.

At the 25th meeting of the Global Science Forum (GSF) in October 2011, the delegation of Japan proposed that the GSF undertake the follow-up activity to study actual cases of collaborative programmes and projects between developed and developing countries in the areas of climate change adaptation and biodiversity. Seven countries designated representatives to the Scoping Group for the study, and on the basis of the deliberations of the group, a revised proposal was submitted to the 26th meeting of the GSF in April 2012. The proposal was approved by the GSF and members of the Experts Group (Appendix A) were subsequently appointed by interested GSF delegations.

After a preliminary study, two workshops were organized to discuss ways of enhancing research co-operation in the area of climate change adaptation and biodiversity. A major theme of the workshops was the identification of general issues and options that should be anticipated and collaboratively acted on in the very early phases of any international research undertaking.

The first workshop, co-hosted by the GSF and the Integrated Research System for Sustainability Science (IR3S) of the University of Tokyo, was held at the Nanyang Technological University in Singapore on 18-19 March 2013 (Appendix B). The second workshop, co-hosted by the GSF, the IR3S and the Department of Science and Technology (DST) of South Africa, in partnership with the National Research Foundation (NRF) and the African Doctoral Academy (ADA), was held at Stellenbosch University in South Africa on 9-10 May 2013 (Appendix C).

Both workshops were attended by researchers and representatives of governments or funding agencies from both developed and developing countries, plus representatives of international organisations (Appendices D and E).

2. Examples of International Research Co-operation

As a preliminary step for the workshop discussion, this study focused on specific cases and real-life experiences of practitioners in the area of climate change adaptation and biodiversity. The Experts Group selected eight activities as subjects of the case studies, chosen from among ongoing or recently completed programmes and projects that had been explicitly designated by the GSF delegations. The GSF Secretariat, with assistance from the delegation of Japan, analysed the collected information to identify common features, trends and challenges.

The following activities were selected (although, in some cases, they do not necessarily relate only to the areas of climate change adaptation and biodiversity or the defined scope issues of this study):

- The Climate Adaptation Flagship (Australia)
- International Research Initiative on Adaptation to Climate Change (IRIACC) (Canada)
- Science and Technology Research Partnership for Sustainable Development (SATREPS) (Japan)
- South Africa - Norway Programme for Research Co-operation (Norway)
- Southern African Regional Science Initiative (SAFARI 2000) - Nitrogen and Sulfur Deposition in Southern Africa (South Africa)
- Partnerships for Enhanced Engagement in Research (PEER) Science (United States)
- New Approaches to Adaptive Water Management under Uncertainty (NeWater) (European Union)
- LiveDiverse (European Union).

One of the most important findings from these case studies is that there is a variety of deliberative processes available to establish optimal co-operation among programme designers and other stakeholders to assure that both scientific knowledge and desirable social outcomes can be obtained as a result of the collaborative research. The processes address initiating co-operation, balancing different mandates and restrictions, and co-ordinating management and responsibilities.

The analyses did not reveal any one-size-fits-all solution to the practical problems associated with the areas of climate change adaptation and biodiversity. However, the examples are worthy of careful

study and can provide useful results and contribute to a better understanding of common challenges in these fields. For example, most projects in the areas of climate change adaptation and biodiversity involve the use of climate modelling and simulations, based on observed data of climate factors such as temperature, precipitation and sea-level rise. As was pointed out at the Singapore workshop, local environmental and socio-economic conditions cannot at present be easily or reliably estimated or predicted only by macro-scale methodologies.

Transferring scientific methodologies and technologies to different areas of the world is not easy. Methodologies and technologies originating in developed countries which are located mainly in temperate regions may not be directly applicable in most developing countries in tropical regions. Thus, the methodologies and technologies need to be carefully designed and modified in accordance with the local conditions in partner countries.

It was found that researchers should carefully consider the following elements when conducting scientific research that involves transferring general methodologies and technologies to developing countries:

- local data, which are sometimes seriously lacking in developing countries
- traditional and undocumented knowledge, which is currently under-studied and/or under-utilised
- an interdisciplinary approach that includes social sciences, which can add broader perspectives and human factors to the research.

Additional examples of research programmes or projects including international construction/operation of scientific databases in the areas of climate change adaptation and biodiversity were introduced at the two workshops, which also raised informative issues and topics for further discussion. Box 1 highlights an example of existing research co-operation that relates to the essential elements mentioned above.

Box 1. Creating Resilient Communities that Cope with Abnormal Climates (Science and Technology Research Partnership for Sustainable Development: SATREPS, Japan)

"Resilience" means the capacity of a system to absorb external shocks and maintain its functions. Increasingly extreme weather events caused by climate change are currently a popular theme in science. The research projects supported by SATREPS aim to develop integrated strategies that could contribute to building a resilient community in developing countries against social and ecological damages (in agriculture, fisheries and other local industries, human life and health, etc.) that will result from unprecedented climate conditions. A cyclic pursuit strategy (monitoring and forecasting in the long term, systematic early warning, risk management in the short term, and adaptive management) is an ultimate goal to be developed, and a number of researchers in Japan and developing countries are collaboratively investing these issues: http://www.jst.go.jp/global/english/index.html

3. Designing Co-operation

Discussions at the Singapore and Stellenbosch workshops highlighted new issues for improved research co-operation in the areas of climate change adaptation and biodiversity. One of the issues was how to form partnerships among programme designers before actually setting up a collaborative programme or project. Diverse forms of design partnerships were identified, including the following:

- partnerships involving developed and developing countries, in terms of both funding and planning
- partnerships involving different national agencies within a single country (typically, research funding agencies and development aid agencies)
- partnerships involving national governments and various other entities, including private foundations, non-governmental organisations and international organisations.

In principle, the benefits of collaborative partnerships among different stakeholders include the achievement of multi-faceted objectives related to various aspects of a project that may otherwise not have been reached. The following issues should be considered on a case-by-case basis for each type of partnerships.

3.1 Identifying the needs and interests of all parties

In establishing co-operation, all parties should clearly identify their expectations for the collaborative research being undertaken. The use of deliberative co-operation between research funding agencies and development aid agencies, or between developed and developing countries, may remove barriers that can arise from conflicts between scientists and non-scientists or that are imposed by geographical constraints.

Developing and developed countries have their own perspectives and purposes for co-operating in international research. Most parties hope to access knowledge produced from outside their organisation or country and try to gain an advantage in industrial or economic competitiveness, which can often lead to conflicts. Successful partnerships are those in which the aims, objectives and roles of the stakeholders are clearly understood, key factors for all the stakeholders are taken into proper consideration, and ongoing discussions for building mutual trust are held.

In general, most scientific research projects originate via a “bottom-up” process, in which the proposed projects are reviewed continuously by experienced scientists. However, for some of collaborative research within the areas of climate change adaptation and biodiversity, a significant role may be played by “top-down” initiatives that may originate from the deliberations of senior government officials. A balance between “bottom-up” and “top-down” approaches is essential. For example, if either of the approaches is not considered to be practical or pragmatic enough for effective research, adequate co-ordination processes would be required.

3.2 Undertaking programme design collectively

It is important that all partners constructively discuss and agree on the basic elements of the programme design from the initial stages. If one or a few partners completely dominate the decision-making process, insufficient considerations may be given to other partners’ roles, thereby making their sustainable commitment to the project more difficult.

The general elements to be discussed and agreed may include:

- priorities, size and scope of the programme
- criteria for solicitation and selection of research projects
- decision-making structures and the distribution of responsibility
- reporting and financial management
- issues of intellectual properties, access to data, and authorship
- output, outcome, impacts and future perspective of activities once the programme is finished.

The issue of access to research data (including experimental data, processed data and simulations) is increasingly important in science policy-making, and it is highly relevant to the types of projects that were considered during the analyses and workshops. Arguments both for and against maxima openness and sharing of data have been made on many occasions. In some cases, restrictions on the universal sharing of data may be usefully adopted, for example, when a fixed period of time is needed by researchers to gather the fruits of their hard work. A related issue concerns the costs and labour required to store, curate and disseminate research data, especially over the long term. Authorship policies can also be a source of friction, if not properly addressed in the early stages of a collaborative project.

Maximizing research impacts is one of the goals in any collective design. As discussed in the completed GSF report, impacts can include scientific impacts, development impacts and capacity building in a pragmatic manner, although the focus of any individual project or programme may differ.

An example of possible impacts or benefits to be considered in the research design phase is shown in Box 2. Impact creation through international co-operation is discussed further in the next section.

Box 2. An example of possible impacts considered at the design stage of co-operative research programmes and project

Developing countries

- *Scientific benefits*
  - o develop, incorporate and adopt new knowledge and technologies.
- *Social and economic benefits*
  - o advance sustainable development
  - o deal with global and local challenges, for example, improve people's lives while also putting less stress on the environment:
    - by obtaining scientific knowledge of current conditions and possible options for policy-making and evidence-based decisions on resource management, environmental regulation and other factors
    - by developing methodologies and technologies to deal with global and local issues
  - o involve stakeholders in problem solving processes using scientific knowledge.
- *Capacity building*
  - o provide opportunities for research activities
  - o provide opportunities for researchers to develop scientific skills and to learn research processes, such as merit-review standards
  - o create international networks of researchers working on specific themes
  - o enhance human resource development
  - o build the capacity of research institutions for education, research and international co-operation
  - o develop an effective national research system.
- *International and regional contributions: in science and in dealing with global challenges*

Developed countries

- *Scientific benefits*
  - o develop and apply new knowledge in broader context:
    - comparative research
    - innovative application of scientific knowledge
  - o develop new knowledge and resources:
    - access to local knowledge and partners
    - access to local natural resources (e.g. unique ecosystems, minerals and fossil fuels) and infrastructure (e.g. facilities).
- *Social and economic benefits*
  - o deal with global and local challenges inclusively
  - o look for opportunities in new national and international markets.
- *International contributions.*

3.3 Creating critical mass in developing countries

Effective and successful research projects/programmes will require skilled experts in both partner countries. At the Stellenbosch workshop, emphasis was placed on the problem of the lack of a critical mass of researchers especially in developing countries, which had on occasion resulted in unsustainable research activities and unused research results. The quality of education and training should be improved to create a critical mass of academic researchers in developing countries, and to cope with the problem of brain drain, which can become a serious obstacle to ensuring the continuity of collaborations.

International research co-operation could contribute to improving education and training in developing countries by providing enough opportunities for researchers to work collaboratively and to play leading roles as research facilitators/supervisors. It is also possible to support education by creating

university curricula and training programmes based on the outcomes of collaborative international projects.

Concerns over brain drain should not be ignored in the process of collaborative endeavours between developed and developing countries. Given the critical nature of capacity concerns in developing countries, "brain gain" needs to be considered more intentionally at the outset of international research co-operative projects.

At the Stellenbosch workshop, it was noted that researchers in developing countries should be encouraged to work actively and to play major roles in their own countries by improving the research environment and by systematically highlighting/publicising excellent research results. Creating broader opportunities for young and female researchers deserves special consideration.

3.4 Sustaining research activities

Continuous sustained research activity is critically needed to push forward on vital research questions and to create long-term positive impacts in the areas of climate change adaptation and biodiversity. It is also rational in terms of effectiveness to make the best use of the assets that have been created as the result of a research activity, such as accumulated experiences, relationships among research team members, and connection with stakeholders.

Most funding agencies, however, cannot continue to fund projects indefinitely. Research institutions in developing countries will need to be equipped with more financial management capacity, and researchers in developing countries need to strengthen their ties with potential sources of funding, including both public agencies and the private sector where possible.

Many benefits may accrue if a given research project can be embedded into a longer-lived umbrella collaborative programme between developed and developing countries. Networking among various partners that work in the same themes or regions should be explored when considering efficiency and sustainability of co-operative international research. International co-ordination among funding agencies may make new resources available for research teams by connecting new funding schemes to existing ones.

Examples of existing networking in the area of climate change adaptation and biodiversity are shown in Box 3.

Box 3. Examples of international networking

- **The Global Conference on Agricultural Research for Development (GCARD)**

  Held in Montpellier, France, in 2010, the conference was attended by almost 1000 researchers, policy-makers, farmers, donors and members of civil society from all over the world. A roadmap outlining the priorities of agricultural research for a development agenda linked with the Millennium Development Goals was developed.

- **University Network for Climate and Ecosystem Adaptation Research (UN-CECAR)**

  UN-CECAR is a network of universities and organisations in the Asia-Pacific region and Africa who develop research and education programmes focusing on climate change adaptation, ecosystems change adaptation, and sustainability science.

- **The Platform for African European Partnership on Agricultural Research for Development (PAEPARD)**

  PAEPARD supports research collaboration between organisations in Africa and Europe. This initiative is supported by the EU through its Food Security Thematic Programme.

4. Creating Impacts

Climate change adaption and maintaining biodiversity are issues that will be linked to diverse and complicated effects in many countries across generations. Thus, impact creation should be considered comprehensively and in a multifaceted way. For example, from the viewpoint of achieving inclusive goals of development aid, the impact assessment of international collaborative research should make use of recognised poverty alleviation indicators. To enhance the effectiveness of co-operative international research, it is important for the main actors in both developed and developing countries to be aware of their own roles and responsibilities, and to clearly understand their objectives, interests, goals and constraints.

The different roles that various stakeholders play should be acknowledged. Review and assessment of so-called purely scientific projects can be accomplished only by experts in a given well-defined field, but this is not the case for complicated international research that combines scientific and development goals. The latter should be assessed properly by experts who really know and understand a given location, including its history and environment. Research impacts should be considered not only by experts but also by various other stakeholders, although this is often easier said than done.

4.1 Monitoring and managing impacts

It is evident that projects that combine research and development goals should be monitored and assessed adequately. "Success" should be evaluated on the basis of the initially-set goal, but prudence and flexibility are also needed when applying any particular theoretical framework to research activities that are themselves changing and evolving as new concepts are developed and results are obtained.

In principle, the meaning of the term "impact" has been evolving over the last few decades. Traditionally impact referred to the primary and secondary long-term effects produced by an intervention, directly or indirectly, whether intended or unintended. Impact has come to be more broadly defined as that which can be altered by an intervention, including changes in behaviours and other social or individual conditions.

At a minimum, regular communication between research teams and programme designers is necessary to discover problems and deal with them in a timely manner. The following practical tools or practices could prove useful in the efficient management of impacts:

- periodical site visits by research managers and/or programme designers
- annual reports from research teams
- workshops among research teams in the same programme to exchange experiences and obtain suggestions from peer researchers
- the establishment of local offices to maintain close contact with local research teams and local people.

The exact nature of project impacts is not usually clear from the outset of the programme or project. Multiple unpredictable factors can affect research results and their impacts, and adjustments to the project plan may be required. Researchers need to try to remain attentive to these issues.

The categories for evaluation should include items related to the desired impacts to give research teams appropriate incentives to contribute to a successful project. These criteria should be made clear in

the very early stages of a project or programme, so that the research teams are encouraged to plan appropriately.

At the same time, the evaluation items should be carefully designed so as not to discourage creative efforts by research teams. There is no one "blueprint" for measuring impact, and metrics will depend upon the objectives of the specific programme or project. Therefore, it is important that special contexts of the particular project or programme are taken into account in the evaluation. Many social interveners involved in social development emphasise the importance of flexibility and creativity, because imposing an overly rigorous and theory-bound ex-ante assessment framework does not often allow research goals to evolve as the work progresses.

4.2 Stakeholder participation

Those who should be involved as stakeholders are usually possible end-users of research results, that is, those who are expected to change their behaviour on the basis of the information derived during the course of the research. Communication with stakeholders is necessary to encourage them to correctly and fully understand the objectives and contents of the project or programme, as well as to make them feel empowered. When stakeholders have an incomplete understanding or misunderstand the elements of a project, problems can emerge in the later stages of the project. Communication is critically important so that researchers can learn more about other stakeholders.

Local universities are important resources because of their ability to identify local needs based on their close relationship with the local people. They are also useful in training local people to work on projects or programmes.

An imbalance may occur between different groups of stakeholders because of the difference in interests or in the degree of influence. Although this can be a sensitive and difficult issue to deal with, some good practices can be found in existing cases, such as providing opportunities for discussions among the stakeholders and categorizing stakeholders according to the degree of commitment.

Box 4 shows an example of various categories of stakeholders and methods of involvement that can be used to improve stakeholder involvement.

Box 4. Stakeholder participation in LiveDiverse (EU)

High priority: those that can significantly influence or are important to the success of the project:

- participation in stakeholder workshops or focus-group discussions (problem validation phase)
- participation in interviews or household surveys (research analysis phase)
- review of draft project outputs, e.g. scenarios and policy options (output prioritisation phase).

Medium priority: those that can influence or are important to the success of the project, but not critically so:

- voluntary participation in stakeholder workshops or focus-group discussions
- voluntary participation in interviews or household surveys
- voluntary review of draft project outputs, e.g. scenarios and policy options.

Low priority: those with little influence or importance:

- information provision.

4.3 The trans- and multi-disciplinary approaches

Collaboration between natural scientists and social scientists in the area of climate change and biodiversity will likely become more significant. Although communication among scientists in different disciplines is not always easy, many projects and programmes have been effectively designed to include the participation of social scientists in the research teams.

In addition, researchers in the evaluation profession with various academic skills are also exploring ways of working with researchers and programme administrators to develop better concepts and methods for measuring, understanding and creating impacts based on both quantitative and qualitative measures of success.

5. Promoting Partnerships between Developed and Developing Countries

Especially in North-South research collaboration, it is important to focus on aspects that might influence research performance, such as the quality and value added by the international partnership or network interactions, balancing different capacities and contributions, and mutual accountability.

There is a great deal of diversity in developing and developed countries and some of them, such as the BRICS countries (Brazil, Russia, India, China and South Africa), have recently seen remarkable economic growth and are recognised as emerging economies. These countries are beginning to play major and pro-active international roles in science and technology by investing significant resources in R&D.

International research co-operation in the areas of climate change adaptation and biodiversity would benefit from being part of globally harmonized initiatives. International collaborations should be enhanced in global priority areas such as population and demographic change, health/sanitation and water management or social infrastructure investment. Such collaborations could help address shared challenges, focusing on the use of scientific knowledge and technology for societal benefit. To achieve this, flexible and dynamic mechanisms are necessary. There is a need to promote constructive communication, to extend positive and successful models of collaborative research, and to build regional trust and co-operation between developed and developing countries.

APPENDIX A

INTERNATIONAL EXPERTS GROUP

Study on Research Co-operation between Developed and Developing Countries in the Area of Climate Change Adaptation and Biodiversity

Japan (lead country)	Kazuhiko Takeuchi (Chair)	Integrated Research System for Sustainability Science (IR3S), The University of Tokyo
	Yasushi Tadami	
Canada	David O'Brien	Science and Innovation, International Development Research Centre
France	Frédéric Lapeyrie	Ministry of Higher Education and Research
	Emmanuel Torquebiau	French Agricultural Research Centre for International Development (CIRAD)
	Jean-Louis Pham	Institute of Research for Development (IRD)
South Africa (Co-Chair)	Leluma Matooane	Department of Science and Technology
	Guy Midgley	The South African National Biodiversity Institute
	Bob Scholes	Division of Natural Resources and Environment, The Council for Scientific and Industrial Research
Korea	Sang-Sung Nam	Korea Institute of S&T Evaluation and Planning (KISTEP)
Sweden	Thomas Elmqvist	Department of Systems Ecology and Stockholm Resilience Centre, Stockholm University
Switzerland	Heinz Gutshcer	Swiss Academies of Humanities and Social Sciences
	Alexander Zehnder	ETH Zurich Nanyang Technological University
United States	Douglas Beard	National Climate Change and Wildlife Science Center, United States Geological Survey (USGS)
	Deandra Beck	National Science Foundation (NSF)
	Annica Wayman	U.S. Agency for International Development (USAID)
OECD	Stefan Michalowski	Global Science Forum Secretariat
	Mika Shozaki	
	Keiko Kimura	

APPENDIX B

OECD GLOBAL SCIENCE FORUM

Workshop on Research Co-operation between Developed and Developing Countries in the Area of Climate Change Adaptation and Biodiversity

Co-sponsored by the Integrated Research System for Sustainability Science (IR3S),
The University of Tokyo

18-19 March, 2013
Nanyang Technological University, Singapore

Agenda of the Singapore Workshop

Day 1, Monday, 18 March	
9:30	**Welcome and opening** • Dr Yue Chee Yoon, Associate Provost (Graduate Education), Nanyang Technological University , Singapore • Dr Kazuhiko Takeuchi, Director, Integrated Research System for Sustainability Science (IR3S), the University of Tokyo, Japan • Mr Hiroshi Nagano, Chair, the OECD Global Science Forum, and Professor, National Graduate Institute for Policy Studies, Japan
10:00	**Session 1: Examples of international research co-operation between developed and developing countries** *Chair*: Dr Kazuhiko Takeuchi, Director, Integrated Research System for Sustainability Science (IR3S), the University of Tokyo, and Senior Vice-Rector, United Nations University, Japan *Summary of case study analysis:* • Mr Yasushi Tadami, Integrated Research System for Sustainability Science, the University of Tokyo, Japan
10:30	Coffee break
11:00	*Short presentations* • Dr Jamaluddin Jompa, Director: Research & Development Centre for Marine, Coast & Small Island, Hasanuddin University (UNHAS), Indonesia • Dr Roland A Barkey, Eastern Indonesia's Responses to Climate Change Study Centre, Hasanuddin University (UNHAS), Indonesia • Dr Osamu Saito, Academic Programme Officer, United Nations University Institute for Sustainability and Peace • Dr Guy Midgley, Chief Director, Climate Change and Bio Adaptation Programme at South African National Biodiversity Institute (SANBI), South Africa • Dr Henry Roman, Director, Environmental Services and Technologies, Department of Science and Technology, South Africa
12:15	Lunch
14:00	**Session 2: Designing co-operation** *Chair:* Dr Guy Midgley, Chief Director, Climate Change and Bio Adaptation Programme at SANBI, South Africa *Keynote presentation:* • Dr Heinz Gutscher, President, Swiss Academies of Humanities and Social Sciences, Switzerland

14:30	**Discussion topic 2a: Opportunities and challenges for co-operation and partnership among programme designers** *Short introductory presentation and discussion:* • Dr David O'Brien, Senior Programme Specialist, Science and Innovation, International Development Research Centre (IDRC), Canada
15:45	Coffee break
16:15	**Discussion topic 2b: Mechanisms for building co-operation among stakeholders** *Short introductory presentation and discussion:* • Mr Osamu Kobayashi, Director, Singapore Office, Japan Science and Technology Agency (JST), Japan
17:30	Conclude the first day

Day 2, Tuesday, 19 March	
9:00	NTU campus tour
11:00	**Session 3: Creating impacts** *Chair:* Dr Heinz Gutscher, President, Swiss Academies of Humanities and Social Sciences, Switzerland *Keynote presentation:* • Dr Gerhard Schmitt, Senior Vice-President, ETH Global, Switzerland
11:30	**Session 3a: Programme management in creating impacts** *Short introductory presentation and discussion:* • Dr Ali Douraghy, Science and Technology Advisor, USAID/Indonesia
12:45	Lunch
14:15	**Session 3b: Co-ordination of research programmes and other efforts for broad long-term impacts** *Short introductory presentation and discussion:* • Dr Dewi Kirono, Senior Research Scientist, Climate Variability and Change Research Programme, Centre for Australian Weather and Climate Research, A partnership between CSIRO and the Bureau of Meteorology, CSIRO Marine and Atmospheric Research, Climate Adaptation Flagship, Australia
15:30	Coffee break
16:00	**Session 4:Conclusion** *Chair:* Dr Kazuhiko Takeuchi, Director, Integrated Research System for Sustainability Science (IR3S), the University of Tokyo, Japan
17:30	Conclude workshop

APPENDIX C

OECD GLOBAL SCIENCE FORUM

Workshop on Research Co-operation between Developed and Developing Countries in the Area of Climate Change Adaptation and Biodiversity

Co-sponsored by the Integrated Research System for Sustainability Science (IR3S), the University of Tokyo and the Department of Science and Technology (DST) of South Africa

9-10 May 2013
Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa

Agenda of the Stellenbosch workshop

Day 1, Thursday, 9 May	
9:00	**Opening** *Chair*: Dr Frans Swanepoel, African Doctoral Academy (ADA), Stellenbosch University (SU), South Africa *Welcome* • Dr Johan Hattingh, Dean of Arts and Social Sciences, SU, South Africa *Opening remarks* • Dr Kazuhiko Takeuchi, Director, IR3S, the University of Tokyo, and Senior Vice-Rector, United Nations University, Japan • Mr Mmboneni Muofhe, Deputy Director-General International Co-operation and Resources, DST, South Africa • Mr Hiroshi Nagano, Chair, the OECD Global Science Forum, and Professor, National Graduate Institute for Policy Studies, Japan
10:00	**Session 1: Examples of international research co-operation between developed and developing countries** *Chair*: Dr Frans Swanepoel, ADA, SU *Feedback from the Singapore workshop* • Mr Yasushi Tadami, IR3S, the University of Tokyo, Japan • Dr Henry Roman, Director, Environmental Services and Technologies, DST, South Africa
10:30	Coffee break
11:00	**Presentations on case studies** *Climate Change and Adaptation* • Dr Neville Sweijd, DST Centre of Excellence, Applied Centre for Climate & Earth Systems Science (ACCESS), South Africa *Biodiversity* • Dr Guy Midgley, South African National Botanical Institute (SANBI), South Africa • Dr Michelle van der Bank, Head of the African Centre for DNA Barcoding, University of Johannesburg, South Africa *Facilitated discussion*
13:00	Lunch

Day 1, Thursday, 9 May	
14:00	**Session 2: Designing co-operation** *Chair*: Dr Monty Jones, Executive Director, Forum for Agricultural Research in Africa (FARA), Ghana *Keynote presentation* • Mr Stéphane Hogan, Research and Innovation Counsellor at the EU Delegation to the African Union in Addis Ababa, Ethiopia • Dr DeAndra Beck, Programme Director, Office for International Science and Engineering, National Science Foundation, USA
14:45	**Discussion topic 2a: Opportunities and challenges for co-operation and partnership among programme designers** *Chair*: Dr Monty Jones, Executive Director, FARA, Ghana *Presentations on case studies* • Dr Nico Elema, Southern Africa Water Centre of Excellence, Stellenbosch University • Mr Jonathan Diederiks (National Coordinator South Africa) and Mr Peter Erb (National Coordinator Namibia), Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL), a Regional Science Service Centre (RSSC) in *Southern Africa* *Facilitated discussion*
16:00	Coffee break
16:30	**Discussion topic 2b: Mechanisms for building co-operation among stakeholders** *Chair*: Dr Cameron Bess, United States Agency for International Development (USAID), USA *Presentations informed by case studies* • Dr Alice Pell, Vice-Provost International Relations, Cornell University, USA • Dr Hamid El-Zoheiry, Senior Advisor for International Co-operation, Ministry of Scientific Research, and President, Heliopolis University for Sustainable Development, Egypt *Facilitated discussion*
17:45	Conclude the first day

Day 2, Friday, 10 May	
8:30	**Session 3: Creating impacts** *Chair*: Dr Aldo Stroebel, Executive Director International Relations and Co-operation, National Research Foundation (NRF), South Africa *Keynote presentation*: • Dr Zenda Ofir, Former Visiting Professor, University of Hiroshima, Japan and STIAS Fellow (Switzerland and South Africa)
9:30	**Session 3a: Programme management to create impacts** *Presentations informed by case studies* • Dr Heinz Gutscher, President, Swiss Academies of Humanities and Social Sciences, Switzerland • Ms Cecilia Kinuthia-Njenga, Head, UNEP South Africa Liaison Office, South Africa *Facilitated discussion*
11:00	Coffee break
11:30	**Session 3b: Co-ordination of research programmes and other efforts for broad long-term impacts** *Presentations informed by case studies* • Dr Johann Mouton, Director, Centre for Research on Evaluation, Science and Technology (CREST), SU, South Africa • Dr Vuyo Mahlati, National Planning Commission, South Africa *Facilitated discussion*
12:45	Lunch
14:00	**Session 4:Conclusion and summary** • Dr Stefan Michalowski, Executive Secretary, the OECD Global Science Forum, France • Dr Kazuhiko Takeuchi, Director, IR3S, the University of Tokyo, Japan • Ms Mmampei Chaba, Chief Director, Multilateral and Africa, DST, South Africa
15:00	Conclude workshop

APPENDIX D

LIST OF PARTICIPANTS OF THE SINGAPORE WORKSHOP

Australia

Dewi G.C. Kirono	CSIRO Marine and Atmospheric Research, Climate Adaptation Flagship

Canada

David O'brien	Innovation, Policy and Science / Challenge Fund, International Development Research Centre (IDRC)

Indonesia

Roland A Barkey	Eastern Indonesia's Responses to Climate Change Study Centre, Hasanuddin University (UNHAS)
Jamaluddin Jompa	Research & Development Centre for Marine, Coast & Small Island, Hasanuddin University (UNHAS)

Japan

Eriko Kishida	Singapore Office, Japan Science and Technology Agency (JST)
Osamu Kobayashi	Singapore Office, Japan Science and Technology Agency (JST)
Hiroshi Nagano	Chair of OECD Global Science Forum / National Graduate Institute for Policy Studies
Osamu Saito	United Nations University Institute for Sustainability and Peace
Yasushi Tadami	Integrated Research System for Sustainability Science (IR3S), the University of Tokyo
Kazuhiko Takeuchi	Integrated Research System for Sustainability Science (IR3S), the University of Tokyo / United Nations University
Masahito Yano	Singapore Office, Japan Science and Technology Agency (JST)

Malaysia

Zainal Abidin Sanusi	Centre for Leadership Training (CELTRA), Higher Education Leadership Academy, Ministry of Higher Education Malaysia

Singapore

Bai Hongwei	Energy Research Institute, Nanyang Technological University
Yennie Kadarusman	Research Support Office, Nanyang Technological University
Shaikah Nurulain Bte Shaik Rahim	Research Support Office, Nanyang Technological University
Adam D. Switzer	Earth Observatory of Singapore (EOS), Nanyang Technological University

Chee Yoon Yue	Nanyang Technological University

Spain

Juan M. Portillo	Spanish Embassy, Singapore

South Africa

Guy Midgely	Climate Change and Bio Adaptation Programme, South African National Biodiversity Institute (SANBI)
Henry Roman	Environmental Services and Technologies, Department of Science and Technology

Switzerland

Heinz Gutscher	Swiss Academies of Humanities and Social Sciences
Gerhard Schmitt	ETH Global

United States

Ali Douraghy	USAID/Indonesia

International Council for Science (ICSU)

Mohd Nordin Hasan	ICSU Regional Office for Asia and the Pacific (Malaysia)

OECD Secretariat

Stefan Michalowski	Global Science Forum
Mika Shozaki	Global Science Forum

APPENDIX E

LIST OF PARTICIPANTS OF THE STELLENBOSCH WORKSHOP

Benin

Yabi Ibouraima	University of Abomey-Calavi

Botswana

Piet Kebuang Kenabatho	University of Botswana
Bhagabat Parida	University of Botswana

Burkina Faso

Harouna Karambiri	International Institute for Water and Environmental Engineering

Egypt

A Hamid El-Zoheiry	Egyptian Ministry of Scientific Research

Japan

Hiroshi Nagano	Chair of OECD Global Science Forum / Japan Science and Technology Agency
Yasushi Tadami	Integrated Research System for Sustainability Science (IR3S), the University of Tokyo
Kazuhiko Takeuchi	Integrated Research System for Sustainability Science (IR3S), the University of Tokyo / United Nations University

Malawi

James J.B Chimphamba	University of Malawi
Cosmo Ngongondo	University of Malawi

Morocco

Abdelkader Allali	Moroccan Association Hassanian for Environment and Health

Namibia

Peter Erb	Southern African Science Service Centre for Climate Change and Adaptive Land Management

South Africa

Nicky Allsopp	South African Environmental Observation Network
Karen Bruns	Research Africa
Mmampei Chaba	Department of Science and Technology
Jonathan Diederiks	Southern African Science Service Centre for Climate Change and Adaptive Land Management
Nico Elema	Stellenbosch University
Johan Hattingh	Stellenbosch University
Muleso Kharika	Department of Environmental Affairs
Siyabonga Kohli	National Research Foundation
Vuyo Mahlati	National Planning Commission
Prudence Makura	National Research Foundation
Cecil Masoka	Department of Science and Technology
Leluma Matooane	Department of Science and Technology
Guy Midgley	South African National Biodiversity Institute
Ntando Mkhize	Department of Environmental Affairs
Anneline Morgan	Department of Science and Technology
Johann Mouton	Stellenbosch University
Dumisani Mthembu	Department of Science and Technology
Mmboneni Muofhe	Department of Science and Technology
Tinyiko Mushwana	Department of Science and Technology
Dowelani Ndtiitwani	Department of Science and Technology
Ben Ngubane	Former South African Ambassador to Japan/ former Minister of Science and Technology
Teuns Phahlamohlaka	National Research Foundation
Masela Pillay	National Research Foundation
Gerard Ralphs	Research Africa
Shumikazi Rodolo	Department of Science and Technology
Henry Roman	Department of Science and Technology
Bob Scholes	Council for Scientific and Industrial Research
Boitshoko Sebogodi	Department of Science and Technology
Yona Seleti	Department of Science and Technology
Hema Somai	Human Sciences Research Council
Aldo Stroebel	National Research Foundation

Frans Swanepoel	Stellenbosch University/African Doctoral Academy
Neville Sweijd	Department of Science and Technology
Michelle Van der Bank	University of Johannesburg
Leopoldt Van Huyssteen	University of Stellenbosch

Switzerland

Heinz Gutscher	Swiss Academies of Humanities and Social Sciences
Uri Ofir	Scientech
Zenda Ofir	STIAS Fellow

USA

Alice Pell	Cornell University
DeAndra Beck	National Science Foundation
Cameron Bess	United States Agency for International Development

Zambia

Daniel Nkhuwa	University of Zambia

European Union

Stéphane Hogan	EU Delegation to the African Union

FARA (Forum for Agricultural Research in Africa)

Aggrey Agumya	Technical Advisor to the Executive Director
Idowu Ejere	Office of the Executive Director
Monty Jones	Executive Director

UNDP (United Nations Development Programme)

Maria Mbengashe	Environment and Climate Change

UNEP (United Nations Environmental Programme)

Cecilia Kinuthia-Njenga	UNEP South Africa Liaison Office

OECD Secretariat

Stefan Michalowski	Global Science Forum
Mika Shozaki	Global Science Forum

NOTES

1. 'Target 15' of the Aichi Biodiversity Targets, set at the Conference of the Parties to the Convention on Biological Diversity, asks that “by 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification”.

2. For the purposes of this report, "developing countries" are those enumerated in the OECD Development Assistance Committee (DAC) list of official development assistance recipients (ODA): http://www.oecd.org/dataoecd/62/48/41655745.pdf.

3. The report can be found on the GSF website: http://www.oecd.org/sti/scienceandtechnologypolicy/47737209.pdf.

OECD Global Science Forum

Research Co-operation between Developed and Developing Countries in the Area of Climate Change Adaptation and Biodiversity

This report of the OECD Global Science Forum analyses practices in research co-operation in the area of climate change adaptation and biodiversity. It follows a previous report entitled "Opportunities, Challenges and Good Practices in International Research Cooperation between Developed and Developing Countries" which was published in April 2011. Based on the assessment of several case studies and discussions from two workshops, findings illustrate that a variety of deliberative processes are necessary to establish optimal co-operation among researchers, programme designers, and other stakeholders

Climate change adaptation and biodiversity are issues that are very closely linked to diverse social issues that vary across countries and generations. The different roles of various stakeholders, including local people and holders of traditional and undocumented knowledge need to be fully acknowledged in designing research programmes. An interdisciplinary approach is necessary for the design, implementation and assessment of programmes. Capacity building should be an integral element of these activities.

It is hoped that this study will prove useful and generally applicable in other relevant domains.