DIVERSITAS

is an international, non-governmental programme with a dual mission:

to promote an integrative biodiversity science, linking biological, ecological and social disciplines in an effort to produce socially relevant new knowledge; and

to provide the scientific basis for the conservation and sustainable use of biodiversity.
CONTENTS

FOREWORD
3 From the Chair and the Executive Director

SECTION 1 - Key developments
5 The DIVERSITAS vision for 2012-20: Biodiversity and ecosystem services science for a sustainable planet
6 Future Earth
8 Planet under Pressure 2012
11 Rio+20

Core Projects
12 Implementing the framework for integrated biodiversity science
13 International Project Offices’ contacts
14 bioGENESIS
15 bioDISCOVERY
16 ecoSERVICES
17 bioSUSTAINABILITY

Cross-cutting Networks
18 Tackling topical issues in an integrated way
19 Cross-cutting Networks’ contacts
20 agroBIODIVERSITY
21 freshwaterBIODIVERSITY
22 Global Mountain Biodiversity Assessment (GMBA)
23 ecoHEALTH

Earth System Science Partnership (ESSP)
24 Applying integrated approach to global issues
25 ESSP Joint Projects’ contacts
26 Global Water System Project (GWSP)
26 Global Environmental Change and Human Health (GECHH)
27 Global Carbon Project (GCP)
27 Climate Change, Agriculture and Food Security (CCAFS)

SECTION 2 - Assessment
28 The Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES)

SECTION 3 - Observations
30 Group of Earth Observations-Biodiversity Observation Network (GEO BON)

SECTION 4 - Policy
32 Convention on Biological Diversity (CBD)
33 Convention on Climate Change (UNFCCC)

SECTION 5 - Events and Publications
34 List of events
36 List of publications

SECTION 6 - National Committees
39 Expanding network strengthens international framework

40 People: Committees and Secretariat
42 Financial Summary
43 Acknowledgements
44 Acronyms

Getting involved…
2011 was a busy and eventful year for DIVERSITAS. We have continued to develop new collaborations with both scientific and policy partners, and have seen increased interest from both sectors in our work and networks.

International Platform for Biodiversity and Ecosystem Services, IPBES

The DIVERSITAS community has been accompanying the IPBES process ever since it was first proposed by President Jacques Chirac of France in January 2005, at an international conference on biodiversity that he convened at UNESCO. Seven years, and many meetings later, including three intergovernmental and multi-stakeholder consultative meetings and two IPBES plenary meetings, over 90 nations present in Panama adopted on 21 April 2012 the following resolution: “We, the representatives of the Governments listed hereunder, assembled on the occasion of the second session of the plenary meeting to determine modalities and institutional arrangements for an IPBES (...) decide to establish an independent intergovernmental body to be known as the IPBES”.

The role of DIVERSITAS, and of the incoming Future Earth new programme, will be, from now on, to serve as a scientific arm for this new mechanism. Its responsibility will be to act as a catalyser for the generation of new knowledge on which future IPBES assessments will be based. The DIVERSITAS community is pleased about the decision taken in Panama, and looks forward to this new role in IPBES. Ultimately, it is our sincere hope that IPBES will live up to the expectations of the scientific and other communities, and contribute to improve political support to biodiversity via a better knowledge and understanding of biodiversity and ecosystem services related issues.
Preparing DIVERSITAS for Future Earth

The moves to bring greater integration among the Global Environmental Change (GEC) programmes of the International Council for Science (ICSU), have gathered pace in 2011 and 12. The success of the Planet under Pressure (PuP) Conference (26-29 March 2012, London), organised by IGBP, together with DIVERSITAS, IHDP and WCRP, which attracted 3,000 participants, illustrated the extraordinary convening power of this global environmental change community. DIVERSITAS launched its new strategic plan at PuP, entitled “The DIVERSITAS vision for 2012-20: Biodiversity and ecosystem services for a sustainable planet” (see this report).

On 14 June 2012, in Rio, the new Future Earth initiative for global sustainability was launched, at the ICSU Forum on Science, Technology and Innovation for Sustainable Development, in the margins of the Rio+20 Conference.

During the course of 2011 and early 2012, we have been involved in many discussions about the new Future Earth initiative as well as about new funding streams designed and delivered in the spirit of Future Earth through the Belmont Forum of research funding agencies. We have been actively exploring the many ways that the new Future Earth programme may support key objectives in the new strategic plan of DIVERSITAS mentioned above. At the same time, the uncertainties associated with changing structures and scientific directions have resulted in a greater than usual amount of time and effort considering questions of network design and focus.

We are fortunate to have a strong scientific committee who has been active in both strategic planning and implementation of projects. This group represents broad geographical and topical areas, and provides essential support for biodiversity science. At the same time, our Executive office staff brings efficient and professional support to all that we do. All of this provides us with confidence that we will continue to be able to stimulate and support the important work in biodiversity science in new structures and programmes that will evolve in coming years.

All of the items mentioned above of course are going on in the background of the real work of DIVERSITAS which resides in the integrated research projects. The extraordinary accomplishments of the volunteers that move our science ahead along a broad front, within integrated international projects, is clearly shown in the reports that follow.

In closing, we would like to thank our colleague and friend, Hal Mooney, for having chaired so ably the SC-DIVERSITAS over the past 4 years (2008-11). Hal continues to display an extraordinary commitment and enthusiasm for DIVERSITAS and for international science policy activities, in general, which inspire us all.

Georgina Mace,
Chair Scientific Committee of DIVERSITAS

Anne Larigauderie,
Executive Director, DIVERSITAS
The DIVERSITAS vision for 2012-20: Biodiversity and ecosystem services for a sustainable planet

The Scientific Committee of DIVERSITAS has led over the past years a process which produced a new strategic plan, entitled: “Biodiversity and ecosystem services science for a sustainable planet: the DIVERSITAS vision for 2012-20”. This DIVERSITAS vision was launched on 27 March 2012 at a special event during the Planet under Pressure Conference.

I- A bit of history

The decision to produce this new vision was driven by the needs to:

- Provide solutions to the biodiversity crisis in order to address the increased sense of urgency following the failure of the 2010 biodiversity target
- Re-structure DIVERSITAS to adapt to the fast evolution of biodiversity and ecosystem services science
- Strategically adapt in order to contribute to several new mechanisms at the science-policy interface, which DIVERSITAS contributed to establish, including:
  > A global observing system for biodiversity called GEO BON (p. 30), and
  > An assessment mechanism, called IPBES (p. 28)
- Prepare for the transition to the new Future Earth programme (p. 6).

The new vision, including a description of the process followed to engage the community at large in the production of this vision, are described in Larigauderie et al. 2012. COSUST (see Publications).

II- The DIVERSITAS vision for 2012-20

The new DIVERSITAS vision shares the grand vision of the CBD Strategic Plan for Biodiversity 2011-2020: “By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people”. It identifies three scientific and one organisational challenges to achieve this vision:

Challenge 1: Critical detrimental changes in biodiversity and ecosystem services
Identify critical detrimental changes in biodiversity and ecosystem services and provide the knowledge to avoid, limit or mitigate such changes

Challenge 2: Capacity of social-ecological systems to adapt
Enhance the capacity of social-ecological systems to support biodiversity and ecosystem services under global change

Challenge 3: Patterns, origins and changes in biodiversity
Develop a sufficient understanding of the patterns, trends, origins and function of biodiversity and their
Future Earth: research for global sustainability

www.icsu.org/future-earth

The Alliance, a consortium composed of ICSU, the International Council for Science (one of the institutional sponsors of DIVERSITAS), ISSC, the International Social Science Council, the Belmont Forum of research funding agencies, UNEP, UNESCO and UNU, with WMO as an observer, has been leading a strategic visioning process, to identify the key questions in sustainability research that need to be addressed over the next decade. On 14 June 2012, the Alliance launched the new “Future Earth” research initiative in Rio de Janeiro, during the Rio+20 Conference.

I- A bit of history

2008

The ICSU General Assembly in 2008 decided that ICSU is “to organise a consultation, including a high-level meeting, with relevant partners to outline options for an overall framework for global environmental change research and its policy relevance”.

2009


2011

ICSU approved the new Earth System Sustainability Initiative at its 2011 General Assembly. The Alliance appointed a Transition Team to develop a research and implementation strategy for the new initiative, and to plan the transition from current Global Environmental Change (GEC) Programmes (DIVERSITAS, IGBP, IHDP and WCRP) to the new initiative. The Transition Team (TT) is co-chaired by Johan Rockström, Executive Director, Stockholm Resilience Centre, Sweden and by Diana Liverman, Co-Director, Institute of the Environment, University of Arizona, USA. The Executive Directors of the four global change programmes (DIVERSITAS, IGBP, IHDP and WCRP) are observers on the TT.

III- Next steps: Transitioning to the new DIVERSITAS vision and to Future Earth

Next steps will consist in adapting the DIVERSITAS vision to the new Future Earth programme, in order for Future Earth to have a strong biodiversity and ecosystem services component. The intent is for Future Earth to build upon existing global environmental change programmes (DIVERSITAS, IGBP, IHDP, WCRP), and to progressively replace DIVERSITAS, IGBP and IHDP, which should merge over the next two years.

The next steps in this process will thus be:

- For DIVERSITAS, IGBP and IHDP to work together with Members of the Alliance to plan for their transition to Future Earth
- For DIVERSITAS to explore with the Alliance, in charge of Future Earth, and all other interested partners, how to include its vision for 2012-2020 in Future Earth.

underlying drivers to enable effective interventions to preserve unique elements and sustain ecosystem services and human well-being

Challenge 4: A global network of biodiversity science

Build an effective global network of biodiversity science.
At its December 2011 meeting, the TT decided to rename the Earth System Science for Global Sustainability, “Future Earth”.

2012


II- Introducing Future Earth

The vision underpinning Future Earth is one in which the scientific community provides knowledge through open and collaborative processes for society to define pathways towards sustainability and respond effectively to the risks and opportunities of global environmental change. Future Earth will be a global platform to deliver:

- Solution-orientated research for sustainability, linking environmental change and development challenges to satisfy human needs for food, water, energy, health;
- Effective interdisciplinary collaboration across natural and social sciences, humanities, economics, and technology development, to find the best scientific solutions to multifaceted problems;
- Timely information for policy-makers by generating the knowledge that will support existing and new global and regional integrated assessments;
- Participation of policy-makers, funders, academics, business and industry, and other sectors of civil society in co-designing and co-producing research agendas and knowledge;
- Increased capacity building in science, technology and innovation, especially in developing countries and engagement of a new generation of scientists.

III- Next steps: Transitioning to Future Earth

Future Earth will build upon the success of existing global environmental change programmes (DIVERSITAS, IGBP, IHDP, WCRP), to help develop a stronger and broader community. The merging of 3 of these 4 programmes, namely DIVERSITAS, IGBP and IHDP is under consideration, with WCRP remaining a separate programme.

The next steps in this process will thus be:

- For the Alliance to appoint a Scientific Committee, tasked with developing a science plan for Future Earth.
- For DIVERSITAS, IGBP and IHDP to work together with Members of the Alliance to plan for their transition to Future Earth.
- For DIVERSITAS to explore how to include its vision for 2012-2020 as part of Future Earth (see page 5).

The five grand challenges in global sustainability research (after Reid et al. 2010)
A HUGE SUCCESS FOR OUR COMMUNITY!

The Planet Under Pressure (PuP) conference, convened by the global change research programmes (IGBP, DIVERSITAS, IHDP, WCRP, ESSP) and ICSU, was undoubtedly a huge success! The conference brought together the world-leading experts in a broad range of fields. It attracted 3000 scientists, decision makers, business representatives, journalists and others, and led to over 400 articles in the press worldwide in 15 languages. Thanks to an ambitious and experimental communication strategy, the conference arranged 150 events worldwide reaching 12,000 people, from Columbia to the US, from the Philippines to Egypt. Conference updates reached one million people via Twitter.

The conference highlighted the urgent need to focus on solutions to global challenges. It marked the beginning of a refocus of the international research community, led by the four global change programmes, towards a programme of research focusing on global sustainability, Future Earth.

PuP also produced nine policy briefs and a suite of white papers commissioned for Rio+20, and has been viewed by the UN as a key event in preparations for the Rio+20 Conference.

I welcome the State of the Planet declaration issued today by the Co-chairs of this conference. Its timing, two months before the UN Conference on Sustainable Development, could not be better. Rio+20 is a major opportunity to advance the policy-science interface.”

— The UN Secretary General Ban Ki-moon, at the PuP conference.

OUTLINE

The four-day conference followed this flow:

**Day 1: State of the planet:** the latest knowledge about the pressures on the planet
**Day 2: Options and opportunities:** exchanging knowledge about ways of reducing the pressures on the planet, promoting transformative changes for a sustainable future and adapting to changes in the global system
**Day 3: Challenges to progress:** clarifying what is preventing or slowing humanity from implementing potential solutions
**Day 4: Ways ahead:** a vision for 2050 and beyond, and exploring new partnerships and pathways towards global sustainability;

Each day included relevant aspects of the conference themes (details below).

THEMES

a) Meeting global needs: food, energy, water and other ecosystem services
b) Transforming our way of living: development pathways under global environmental change

c) Governing across scales: innovative stewardship of the Earth system

DIVERSITAS WAS ACTIVELY INVOLVED IN PuP

The DIVERSITAS community of scientists participated actively in the organisation of the PuP conference, as well as in the organisation of sessions on a wide range of topics placing biodiversity science in a broad social-ecological context. Examples of sessions included: “Tragedies and hopes of the global commons” (Lovejoy et al.), “Staying away from the edge: avoiding biophysical, ecological and social tipping points” (Leadley et al.), “Biodiversity loss and the emergence of infectious diseases” (Mills et al.), “Reconciling food security, biodiversity and multiple ecosystem services in agricultural landscapes” (Brussaard, Jackson et al.), or “Highlights from biodiversity and ecosystem services research: a DIVERSITAS perspective” (Mace et al.). DIVERSITAS launched its new scientific strategy at a session entitled: “Biodiversity and ecosystem services science for a sustainable planet: the DIVERSITAS vision for the decade 2012-2020”.

Photo above:
Lidia Brito, Head of Science Policy, UNESCO, and Mark Stafford Smith, Science Director, CSIRO, Co-chairs of PuP’s Scientific Organising Committee.

Prof. Elinor Ostrom served as PuP’s Chief Scientific Advisor. She passed away on 12 June 2012. Prof. Ostrom was the first woman to receive the Nobel Memorial Prize in Economic Sciences.

THE PLANET UNDER PRESSURE CONFERENCE:

- Attracted 3000 delegates: scientists, policy, industry, business, media, NGOs
- Presented the current “State of the Planet” regarding global sustainability, covering the natural, social and economic dimensions
- Announced a major new ten-year international research initiative for global sustainability called Future Earth
- Received broad media coverage
- Produced 9 Policy briefs
- Produced the State of the Planet Declaration
- Contributed to the UN Conference on Sustainable Development, Rio+20
STATE OF THE PLANET DECLARATION

Planet under Pressure culminated with the publication of the State of the Planet Declaration.

EXCERPTS FROM SECTION B: NEW SOLUTIONS


Research plays a significant role in monitoring change, determining thresholds, developing new technologies and processes, and providing solutions. The international global-change research community proposes a new contract between science and society in recognition that science must inform policy to make more wise and timely decisions and that innovation should be informed by diverse local needs and conditions. This contract needs to encompass three elements:

B1. Integrated goals for global sustainability based on scientific evidence are needed to provide essential targets for societies. In support of this, the international scientific community calls for a framework for regular global sustainability analyses that link existing assessments that build on the foundations of the Intergovernmental Panel on Climate Change, Intergovernmental Platform on Biodiversity and Ecosystem Services and other ongoing efforts.

B2. The challenges facing a planet under pressure demand a new approach to research that is more integrative, international and solutions-oriented.

B3. New mechanisms to facilitate an interactive dialogue on global sustainability among the various stakeholders and the policy-making community at different scales. Such interactions should be designed to bring societal relevance and trust to science-policy interfaces, and more effectively inform decision-making to keep pace with rapid global change.

To these ends, the initiatives above must be supported by:

- A greater commitment to fund and support capacity-building in science and education globally, and particularly in developing countries.
- A strong commitment to both applied and pure research and increased efforts to bring together disciplines, across all research domains.
- Strengthened support for observing systems, particularly in developing countries, including the new observations needed to support decision-making for global sustainability. New approaches should fully integrate global observing systems for environmental and social issues.
- Continued exploration of new areas of knowledge, such as theoretical and applied research in behavioural science and economics addressing ecological and social tipping points and irreversibility at multiple levels.
Involvement in the UN Conference on Sustainable Development, Rio+20

June 2012, Rio, Brazil

www.earthsummit2012.org

The UN Conference on Sustainable Development, also known as Earth Summit 2012, or “Rio+20” took place 20-22 June 2012, in Rio, Brazil.

Alongside governments, there were nine Stakeholder-Major Groups participating in the conference. ICSU and the World Federation of Engineering Organisations (WFEO) were co-organising partners for the Science and Technology Community Major Group. DIVERSITAS was invited to contribute to Rio+20 through ICSU.

OBJECTIVES
- Securing Political Commitment to Sustainable Development
- Assessing Progress Towards Internationally Agreed Commitments
- New and Emerging Challenges

THEMES
- Green Economy in the context of Poverty Eradication and Sustainable Development
- Institutional Framework for Sustainable Development
- 

ICSU contribution to Rio+20
- Participation in official global and regional intergovernmental preparatory meetings
- Organisation with UNESCO of regional science and technology workshops:
  - April 2011: Rio+20 Regional Workshop for Asia and the Pacific, Kuala Lumpur, Malaysia
  - May 2011: Rio+20 Regional Workshop for Africa, Pretoria, South Africa
  - August 2011: Rio+20 Regional Workshop for Latin America and the Caribbean, Mexico City, Mexico
  - October 2011: Regional Workshop for Europe, Helsinki, Finland.

The results of these workshops were presented at the Rio+20 Regional Preparatory Meetings, in order for region-specific scientific knowledge, issues and concerns to be integrated into the Rio+20 conference.

DIVERSITAS contribution to Rio+20
- Planet under Pressure 2012 Conference
  - Co-convener, with IGBP, IHDP, ESSP, WCRP and ICSU of PuP
  - Policy Brief number 4: “Biodiversity and ecosystems for a planet under pressure”, Diaz et al. 2012; part of a series of 9 policy briefs presented by ICSU to the UN Conference on Sustainable Development, Rio+20
  - State of the Planet Declaration

- Contribution to ICSU/UNESCO regional science and technology workshops
- Organisation, with UNESCO, of the session on Ecosystem services and biodiversity at the ICSU Forum on Science and Technology for Sustainable Development at Rio+20 (Rio, 13 June 2012).
CORE PROJECTS

Implementing the framework for integrated biodiversity science

DIVERSITAS Core Projects cover four important aspects of biodiversity science:

- **bioGENESIS** aims to facilitate the development of new strategies and tools for documenting biodiversity, to understand the dynamics of diversification, and to make use of evolutionary biology to understand anthropogenic impacts.

- **bioDISCOVERY** focuses on developing a scientific framework to investigate the current extent of biodiversity, monitor its changes and predict its future changes.

- **ecoSERVICES** explores the link between biodiversity and the ecosystem functions and services that support human well-being and seeks to determine human responses to changes in ecosystem services.

- **bioSUSTAINABILITY** concerns itself with the science-policy interface, looking for ways to support the conservation and sustainable use of biological resources.

Individually, these Core Projects assemble the expertise required—from both natural and social disciplines—to address specific aspects of biodiversity science. Collectively, they ensure the continued development of a truly international and integrated approach.
International Project Offices implement DIVERSITAS Science Plans

DIVERSITAS Core Projects and cross-cutting networks get implemented by International Project Offices (IPOs). IPOs represent an important mean of strengthening DIVERSITAS’ presence throughout the world and building links to existing research institutes and programmes.

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bioGENESIS

Providing an evolutionary framework for biodiversity science

Co-Chairs: D Faith, Australian Museum, Australia and T Yahara, Kyushu University, Japan
www.biogenesis-diversitas.org

The primary aim of bioGENESIS is to catalyse the international communication and integrated research that are necessary to bring evolutionary approaches to bear on pressing issues related to biodiversity and human well-being.

GEO Biodiversity Observation Network (GEO BON)

D Faith and T Yahara co-chair the Working Group “Genetic/Phylogenetic Diversity” of GEO BON and lead the development of this section of the GEO BON implementation plan. In August 2011, the Global Legume Diversity Assessment was initiated to review the changes in genetic diversity in targeted species/taxonomic groups of legumes, which are crucial for the delivery of key ecosystem services (soil fertility, food items). The goals of this initiative include capturing legume species distributions and its hot spots, modelling distribution of rare species, and assessing functional and phylogenetic diversity of targeted subgroups of legumes (e.g. Darbegia).

bioGENESIS is also strongly involved in the development of AP-BON, the regional node of GEO BON in the Asia-Pacific region.

Training workshop for young scientists “Evolutionary Approaches to Biodiversity Science”

A three-day training workshop was held back to back with the Association for Tropical Biology and Conservation (ATBC) annual conference (June 2012, Bonito, Brazil). This workshop aimed at providing a current outlook on some of the most relevant evolutionary approaches for the study of biodiversity. The curricula was developed by SC-bioGENESIS members for graduate students and early-career scientists.

Biodiversity assessment

Assessing biodiversity with evolutionary perspectives and developing its methodologies has progressed through various research activities of SC-bioGENESIS members. Current efforts are focused on: 1) Effects of forest fragmentation on species and phylogenetic diversity in forest plots to assess whether a certain evolutionary lineage is sensitive to logging activities; 2) Effect of climate change on distribution of rare and endemic alpine species and its adaptive responses to past and current climate changes; and 3) Phylogenetic-functional trait diversity framework, producing a broad set of useful functional diversity calculations for decision-makers.

bioGENESIS website launched

The bioGENESIS website was launched in October 2011 with support from Museum für Naturkunde (Germany).
Ecological, economical and societal impacts of bioenergy crop development

A joint workshop with ESSP (November 2011, Leiden, The Netherlands) brought together scientists from a wide range of disciplines (ecology, economy, sociology, policy...) to investigate the ecological, societal and economic costs and benefits of terrestrial land use change for bioenergy production, and to develop interdisciplinary approaches to quantify and integrate these impacts. A paper is under preparation 1) reviewing current state of knowledge, 2) identifying knowledge gaps, and 3) proposing a way forward for future research on this topic.

Improving the representation of biodiversity in vegetation modelling

The TRY (Refining plant functional classifications for earth system modelling) and BBS (Advanced prediction of Biome Boundary Shifts in regional and global dynamic vegetation models) initiatives held their second joint workshop in Paris (March 2011).

The focus of the TRY part of the meeting was to take stock of finished and ongoing projects and activities using TRY data, to identify future needs of the scientific community and foster the development of new core research activities.

The BBS part of the workshop focused on the development of two collaborative projects, aimed at 1) understanding the role of plant migration and dispersal in biome shifts, and 2) investigating the interactions between fire, land use and climate change in creating potential tipping points. The joint workshop day was dedicated to improving the representation of plant functional traits and biological diversity in vegetation models.

The TRY data base was presented in a publication that appeared in July 2011 (Kattge et al. 2011: See publications).

Novel Models: Exploring the boundaries of ecological modelling

There is a need for “new” approaches to modelling plant diversity responses to global change, and in particular for models that can treat many species and at the same time include a large number of mechanisms/processes.

In June 2011 (Arrábida, Portugal), a brain-storming workshop was held to 1) assess the current status of research, 2) identify current trends in modelling of biodiversity responses to global change, and 3) develop a framework for model assessment that guides model selection and development for biodiversity scenario predictions.
ecoSERVICES
Linking biodiversity to ecosystem functioning and services

Chair: S Naeem, Columbia University, USA
www.ecoservices.asu.edu

A review of the scientific foundations of payments for ecosystem services programmes
Project supported by DIVERSITAS, ecoSERVICES, USAID, Wildlife Conservation Society, University of Columbia – Centre for Environmental Research and Conservation.

The motivation for this project stems from the rapid expansion of the use of Payments for Ecosystem Services (PES) as a major instrument for conservation and environmental programmes. This expansion has led to a rich diversity of programmes, some of which being built upon excellent scientific (social and natural) foundations and some being less well designed. The first phase of the project assessed a global set of PES programmes in three of the most active environmental markets: carbon, water, and biodiversity, to better understand the extent to which science has been integrated into the development, planning, and ongoing monitoring of these PES projects. Given the increasing importance of PES and the different PES designs that have emerged, it seems that a global science-based standard for establishing PES schemes could significantly aid project developers and help ensure that PES programs deliver upon their intended ecological, social and economic goals. This is the aim of the second phase of this project, which brought together a mix of scientists, practitioners, policy-makers and business partners for a first workshop to develop such standards (May 2012, New-York, USA).

Building resilience with common capital – Managing shared resources: meeting the challenges of a rapidly modernising world under climate and ecosystems change
This project is a joint endeavour between IHDP, DIVERSITAS, the Asia-Pacific Network for global change research (APN), and the United Nations University (UNU-ISP).

This project aims at exploring ways and means of enhancing resilience of communities to climate and ecosystems change by establishing new shared governance and management systems – new commons – where various actors and stakeholders can participate in working towards a low carbon, resource circulating, and nature-harmonious society. The objective is to identify new governance systems overseeing the management of the New Commons, supply of ecosystem services and enhancement of socio-ecological resilience against climate and ecosystem changes in an efficient and equitable manner across a range of stakeholders.

Two workshops were organised (January 2012, Tokyo, Japan; May 2012, Colombo, Sri Lanka) to discuss characteristics of a “new commons framework” based on case studies from the Asia-Pacific region.
bioSUSTAINABILITY develops new knowledge to guide policy and decision making that support sustainable use of biodiversity and ecosystem services. It studies the social, economic and political context of management and governance of biodiversity and ecosystem services.

Launch of the Cities and Biodiversity Outlook I (CBO1) – Assessment of urbanisation, biodiversity and ecosystems

The Convention on Biological Diversity charged bioSUSTAINABILITY to conduct an assessment on how urbanisation and urban growth impact biodiversity and ecosystems. The end goal will be to deliver key messages on the conservation and the sustainable use of natural resources to decision-makers.

The Outlook is proposed in two complementary forms:

1) CBO-1 Synthesis: a summary for policy- and decision-makers of the Convention;

2) CBO-1 Scientific Foundation: a wider publication of its scientific basis, each with its specific messages, production, and launch/dissemination strategy but sharing the same basic goals and content.

Exploring the biodiversity planetary boundary: concepts, methods and analysis

A Royal Society and Stockholm Resilience Center initiative in collaboration with DIVERSITAS

The planetary boundaries concept introduced by Rockström et al. (2009) identified 9 critical global-scale thresholds that together describe ‘a safe operating space for humanity’. The concept is based on identifying coherent components of the Earth system whose functioning is essential for life on Earth and especially for human survival and development. Biodiversity loss was identified as one of these 9 boundaries, and one of 3 boundaries which have already been crossed. The authors of the paper, however, recognised that the biodiversity boundary was difficult to assess, and that the conclusion that it had been crossed was based on a simple comparison of past and present rates of species extinction. The goal of the workshop held in March 2012, in London, UK, was to further explore the concept of biodiversity planetary boundary at the regional and global level.
CROSS-CUTTING NETWORKS

Tackling topical issues in an integrated way

DIVERSITAS Cross-cutting Networks embrace issues addressed in all four Core Projects, in the context of specific topics or ecosystems:

agroBiodiversity
- Facilitating interdisciplinary research approaches for understanding the role of biodiversity in agricultural landscapes.
- Establishing the scientific basis for addressing the trade-offs and synergies between production, biodiversity conservation, ecosystem services and human well-being in agricultural landscapes.

FreshwaterBiodiversity
- Facilitating research on urgent challenges posed by critical threats on freshwater biodiversity.
- Establishing the scientific basis for addressing the trade-offs between management and conservation of freshwater ecosystems.

Global Mountain Biodiversity Assessment (GMBA)
- Exploring and explaining the great biological richness of the mountains of the world.
- Providing input to policy makers and stakeholders for the conservation and sustainable use of mountain biodiversity.

EcoHealth
- Providing a conceptual framework to carry out interdisciplinary research on the links between biodiversity and emerging infectious diseases.
- Providing accurate information to decision-makers to set up appropriate public health and environmental policies.
### International Project Offices implement DIVERSITAS Cross-cutting Networks

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1. Mandate ended in December 2011
agroBIODIVERSITY addresses the trade-offs between food production, biodiversity conservation and ecosystem services in agricultural landscapes, which can be described as mosaics of agricultural fields, natural/wild land, and urban areas.

**Agrobiodiversity science for sustainable agricultural landscapes**
The main project of agroBIODIVERSITY entitled “Assessment and Adaptive Management of Biodiversity in Agricultural Landscapes; A Global Perspective” aims at: 1) synthesising literature and data on biodiversity utilisation and conservation in agricultural landscapes; 2) cataloguing approaches for assessment of biophysical and socioeconomic tradeoffs in biodiversity-friendly landscape management; and 3) comparing these interactions across eight sites along a global gradient of agricultural intensification.

The eight study sites are: 1) Jambi, Sumatra, Indonesia; 2) Western Ghats, India; 3) Eastern Amazon, Brazil; 4) Zona da Mata, Minas Gerais, Brazil; 5) La Sepultura, Chiapas, Mexico; 6) Hoeksche Waard, The Netherlands; 7) Sacramento Valley, California, USA; 8) Koubri Central Plateau, Burkina Faso. Each site includes examples of biodiversity-friendly management, aimed at simultaneously supporting sustainable agricultural production and biodiversity conservation. On-going research at these network sites is providing scientific data on the interconnections between biodiversity, ecosystem services and socioeconomic sustainability.

**Additional activities in 2011-12**
- March 2011, Arizona, USA: agroBIODIVERSITY symposium at the Resilience Conference on “Sustainable weighting of ecology-economics tradeoff (SWEET): Agrobiodiversity, sustainability and sustainagility across land use intensification gradients in a global comparative study”.
- March 2012, London, UK: agroBIODIVERSITY symposium at Planet under Pressure conference “Reconciling food security, biodiversity and multiple ecosystem services in agricultural landscapes”.
- September 2011, Wageningen, The Netherlands: agroBIODIVERSITY contribution at the Wageningen Soil Meeting through a symposium “Biodiversity” and a keynote address on “Nitrogen cycling, soil biota and agricultural intensification” by L Jackson.
- New agroBIODIVERSITY collaboration with INRA and CIRAD on agrobiodiversity and ecological intensification.
- Launch of the UNEP-GEF project on “Agrobiodiversity conservation and use in Sri Lankan agroecosystems” (Bioversity International, agroBIODIVERSITY).
- Participation in The European Learning Network on Functional Agrobiodiversity (ELN-FAB) aiming at knowledge sharing between scientists, policy makers, farmers and other land managers (www.eln-fab.eu).
- Participation of agroBIODIVERSITY Scientific Committee Members to various advisory committees, policy debates and outreach programmes on (agro)biodiversity conservation at national and regional levels.
freshwaterBIODIVERSITY

Chair: M A Palmer¹, University of Maryland, Solomons, USA
www.diversitas-international.org/freshwaterbiodiversity

freshwaterBIODIVERSITY aims at establishing the scientific basis for effective conservation measures and actions, thereby ensuring a sustainable use of freshwater resources and of the ecosystem goods and services they provide.

Freshwater biodiversity and ecosystem services
The main goal of this activity is to bring, in a joint framework, the following projects:

- EU-Biofresh project (Leader: K Tockner): 1) to build an information platform as a gateway for scientific research on freshwater biodiversity; 2) to raise awareness of the importance of freshwater biodiversity and its role in providing ecosystem services; and 3) to predict the future responses of freshwater biodiversity to multiple stressors in the face of global change. More information on 2011-12 activities:
  www.freshwaterbiodiversity.eu/
- AquaBase – Biophysical basis of freshwater ecosystem services (Leader: M Palmer). Activities in 2011-12 included an expert review panel meeting on predicting the effectiveness of best management practices (BMPs) and restoration measures in delivering freshwater ecosystem services (February 2012, Annapolis, USA).

Rivers in Crisis study – DIVERSITAS/GWSP project
- The Impacts of Global Change Scenarios on Ecosystem Services from the World’s Rivers: NSF award to C. Vörösmarty (GWSP) and P. McIntyre (DIVERSITAS) for the period 2011-2013. The main goal of this project is to refine some of the models and data used in the Nature paper, and to develop some scenario analyses.
- Other on-going projects on this topic include:
  - Global freshwater biodiversity hotspots analysis (led by P McIntyre, M Gessner, D Dudgeon).
  - Global mapping of freshwater fisheries as a key service (P McIntyre, C Reidy-Liermann, C Revenga).

GEO BON – Freshwater ecosystems working group (WG4)
- WG4 of GEO BON is working with the Ramsar Convention on Wetlands and DIVERSITAS to develop a Global Wetlands Observation System (GWOS). A first meeting involving key stakeholders was organised to develop a vision for GWOS and to secure a commitment and a plan for achieving this vision (December 2011, Wageningen, NL).
- WG4 of GEO BON is collaborating with WG7 (on in situ and remote sensing integration) to develop and test a set of 6 eco-region-wide models of freshwater biodiversity status.

¹. Mandate ended in December 2011
Global Mountain Biodiversity Assessment (GGBA)

Chair: C Körner, Institute of Botany, University of Basel, Switzerland
http://gmba.unibas.ch and www.mountainbiodiversity.org

The Global Mountain Biodiversity Assessment (G MBA) actively explores and explains the great biological richness of the mountains of the world. G MBA seeks to provide input to policy makers and stakeholders for the conservation and sustainable use of biodiversity in mountain regions.

Mountain Biodiversity Portal: a gateway to biodiversity data in mountains
The G MBA Mountain Biodiversity Portal (www.mountainbiodiversity.org) is based on a mountain definition independent of altitude, as defined by Körner, Paulsen, and Spehn (2011), and therefore applicable at a global level. Latest developments related to this Portal include:

- Development by geographer Nadine Brinkmann in the context of a 4 month-G MBA internship, of a GIS map with 1550 polygons of each mountain region of the world (e.g. the Pyrenees, Sierra Nevada, etc.).
- Collaboration between G MBA and the Map of Life (MoL) started in April 2012 to work on a mountain specific

Mountain LTER network
Long term observations to detect changes in high mountain ecosystems are necessary as these areas are important bellwethers of global change. In 2011, G MBA co-organised a meeting at the Col du Lautaret LTER site in France with the aim of establishing a mountain Long-Term Ecological Research (LTER) network worldwide, involving a nucleus of core sites using common protocols to ensure comparability of data.

Capacity development activities
- ALPANDINO, an e-learning course on Alpine Ecology of the Andes (March 2011, La Paz, Bolivia): training for lecturers of an e-learning course on alpine ecology, focused on the Andes. 26 participants from Switzerland, Bolivia, Colombia, Chile, Peru, Venezuela and Ecuador attended the course.
- Meetings/trainings organised by the GLORIA network for long-term observations of plant biodiversity on mountain summits (January 2011, Lima, Perú; April 2011, La Rioja, Argentina; July 2011, Ruboni and Budadiri, Uganda).
- February-March 2011: establishment of the ICIMOD Regional Node of GBIF (Falk Huettmann).

Additional activities in 2011-12
- G MBA-MRI key contact workshop for Mountain Biodiversity Researchers (September 2011, Avila, Spain).
- G MBA Workshop “Distribution, predictions and conservation of alpine species in the Great Caucasus” (June 2012, Tbilisi, Georgia).
- MIREN (Mountain Invasion Research Network, www.miren.ethz.ch) and GLORIA (Global Observation Research Initiative in Alpine Environments, www.gloria.ac.at) are initiatives associated to G MBA.
ecoHEALTH
Building bridges between biodiversity science and health

Chair: P Daszak, EcoHealth Alliance, USA
www.diversitas-international.org/ecohealth

The goal of ecoHEALTH is to study the relationships between plant and animal biodiversity and the emergence or re-emergence of infectious diseases, and the consequences for wild biodiversity and human societies, including economical consequences.

The DIVERSITAS ecoHEALTH Economics of Emerging Diseases project (DEEED)
The objective of DEEED is to provide a bi-economic modelling framework to evaluate the risk posed by Emerging Infectious Diseases (EIDs) from wildlife in trade. This includes formulation of the underlying model describing the transport of infected wildlife to new destinations, deriving the distribution of the net present value for evaluating the underlying economics, and providing a risk management strategy for making decisions. DEEED developed bi-economic models evaluating the risk of EIDs from wildlife in trade, and collected data to test it (DEEED 4th meeting; March 2011, USA).

The DIVERSITAS ecoHEALTH on Biodiversity and Emerging Diseases project (DEBED)
This project is based on studies showing that the properties of local species-rich communities would protect against invaders and pathogens. The so-called “dilution effect” theory may represent a “flag” for research on biodiversity and ecosystem services. Alternatively, papers have shown that at large spatial scales, increased biodiversity is linked to increasing risk of zoonotic diseases in people (disease from wildlife). The objective of DEBED is to develop causal inference in emerging disease ecology looking at what are the main ecological drivers of emerging infectious diseases. In 2011-12, DEBED submitted grant proposals and organised the symposium “Biodiversity and Emerging Diseases” at Planet Under Pressure, March 2012, UK.

New project funded: Modelling anthropogenic effects in the spread of infectious diseases (September 2011 – August 2012), which investigates links between anthropogenic effects and spread of infectious diseases using models.

Science – Policy activities
The collaboration, initiated in 2010 with the Convention on Biological Diversity (CBD), led to the following activities:

- Side event at CBD-SBSTTA-15 (November 2011) “Contribution of ecosystem restoration to the objectives of the CBD and a healthy planet for all people” (S-CBD, DIVERSITAS, FAO, UNU, IUCN, UQAM);
- Publication of an editorial in EcoHealth (Campbell et al. 2011);
- Side event at CBD-SBSTTA-16 (April 2012) “Biodiversity and health: linkages and benefits” (DIVERSITAS, S-CBD, EcoHealth Alliance).

Capacity building activities
- Ecology, Environmental Science and Health Research Network (RCN EcoHealthNet): This NSF-funded project aims at providing graduate training on ecoHEALTH activities. The first two workshops (June 2011; June 2012) focused on mathematical modelling of disease dynamics and spatial analyses of disease risk and epidemiology and outbreak investigation, respectively. They also included 2 month-long research training projects.
- EcoHealthNet WriteShop: two WriteShops were held (June 2011 with IDRC; February 2012) on writing and submitting manuscripts to international academic journals.
The Earth System Science Partnership (ESSP) facilitates the study of the Earth’s environment as an integrated system in order to understand how and why it is changing, and to explore the implications of these changes for global and regional sustainability.

Joint research projects on carbon dynamics, water and health are ongoing and Global Environmental Change and Food Systems (GECAFS) successfully completed its project life cycle on 31 March 2011.

In 2011-12, the ESSP actively engaged in the development of the next decade of research of global sustainability research (Future Earth); co-organised the Planet Under Pressure (PUP) Conference; coordinated the scientific review of the UNEP Global Environment Outlook-5; organised a biofuels workshop (with DIVERSITAS and GLP); convened a major international workshop on advancing our understanding of trans-disciplinary research (in collaboration with ISSC, ICSU and the German Global Change committee). The ESSP pioneered journal (Current Opinion in Environmental Sustainability, COSUST) is becoming a community journal for timely synthesis/review papers.

The ESSP is grateful for financial support of IGFA member countries in 2011: Austria (Ministry for Education, Science and Culture), Germany (DFG), Norway (Research Council), The Netherlands (NWO), UK (NERC), and the USA (NSF).

ESSP Joint Projects include:
- GWSP – Global Water System Project
- GECAFS – Global Environmental Change and Food Systems (completed)
- GCP – Global Carbon Project
- GECHH – Global Environmental Change and Human Health

ESSP Regional Projects include:
- MAIRS – Monsoon Asia Integrated Regional Study
- CCAFS – Climate Change Agriculture and Food Security

The ESSP is a partnership between the following programmes:
- DIVERSITAS
- International Geosphere-Biosphere Programme (IGBP)
- International Human Dimensions Programme on global environmental change (IHDP)
- World Climate Research Programme (WCRP)

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## International Project Offices implement ESSP Joint Projects

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Global Water System Project (GWSP)

Co-chairs: C Pahl-Wostl, University of Osnabrueck, Germany, and C Vörösmarty, The City University of New York, USA

www.gwsp.org

The central research questions of the GWSP are: “How are humans changing the global water cycle, the associated biogeochemical cycles, and the biological components of the global water system; and what are the social feedbacks arising from these changes?”. In order to address these challenges, the GWSP launched three Global Initiatives:

1) Global Scale Initiative (GSI): Ranking of Threats to the Global Water System
2) Global Catchment Initiative (GCI): Bringing the Global Perspective to
3) Global Water Needs Initiative (GWNI): Assessment of the Water Needs of Humans and Ecosystems

The GWSP is now approaching the end of its 10-year-long first phase. On one hand GWSP is focusing on its “harvest period” with scientific publications, events, conferences, policy documents and awareness-raising brought forward by the Integrated Study Areas (ISAs) of GWSP, the Global Scale Initiative (GSI), the Global Catchment Initiative (GCI) and the Global Water Needs Initiative (GWNI) as well as by its expertise in Global Water Governance (GWG). On the other hand it is also a period of intensive strategic planning. The future of “water science” in general, and that of the GWSP in particular, have to be analysed both in the context of policy and science challenges and the increased attention paid to the global dimensions of water, as reflected in the on-going evolution of the GEC science landscape and programme infrastructure.

Global Environmental Change and Human Health (GECHH)

Co-chairs: M Rosenberg, Queen’s University, Canada and U Confalonieri, National School of Public Health, Brazil

www.gechh.unu.edu

The main research objectives of the project are to:

1) Identify and quantify health risks posed by Global Environmental Change, now and in the reasonably foreseeable (scenario) future;
2) Describe spatial (geographic, inter-population) and temporal differences in health risks, to better understand vulnerabilities and, therefore, intervention priorities;
3) Develop adaptation strategies to reduce health risks, assess their cost-effectiveness, and communicate results;
4) Foster research training, to boost networked international research capacity in Global Environmental Change and Human Health.

Highlights include a GECHH 2011 Symposium “Global Environmental Change and Human Health:

Healthy Forests for Life” organised in partnership with two Institutes of the Italian National Research Council (CNR), namely the Institute of Ecosystem Study (CNR-ISE) and the Water Research Institute (CNR-IRSA), Verbania, Lake Maggiore, Italy, September 2011. Outcomes of this workshop were presented to SBSTTA-15 of CBD, Montreal, Canada, November 2011.
Global Carbon Project (GCP)

Co-chairs: P Ciais, Institut Pierre Simon Laplace, France; and C Le Quéré, University of East Anglia and British Antarctic Survey, UK

www.globalcarbonproject.org

The main added value of the GCP is integration of multiple components of the carbon cycle into a coherent picture, which includes both natural and human components. This integration is implemented at the global and regional scales to understand 1) the drivers of atmospheric CO2 accumulation, 2) the magnitude of the carbon-climate feedback, and 3) points of intervention in managing future carbon trajectories.

In 2011, the GCP updated the data for the global carbon budget, which is now more strongly emphasising regional budgets and the methane budget. The carbon budget also showed that the abrupt decline in fossil fuel emissions by 1.3% in 2009 was indisputably the result of the global financial crisis. However, the effect was short lived as the growth rate climbed to 5.9% in 2010, the highest annual growth rate since 2003. Additionally, GCP started research on how to achieve ‘negative emissions’ to reach the ambitious temperature targets adopted in UNFCCC’s Copenhagen accords.

Climate Change, Agriculture and Food Security (CCAFS)

Chair: T Rosswall

http://ccafs.cgiar.org/

A major legacy of GECAFS is Climate Change, Agriculture and Food Security (CCAFS), which is a 10-year research initiative launched by the Consultative Group on International Agricultural Research (CGIAR) and the Earth System Science Partnership (ESSP). CCAFS seeks to overcome the threats to agriculture and food security in a changing climate, exploring new ways of helping vulnerable rural communities adjust to global changes in climate. CCAFS brings together the world’s best researchers in agricultural science, climate science, environmental and social sciences to identify and address the most important interactions, synergies and trade-offs between climate change and agriculture. CCAFS will thus define and implement a uniquely innovative and transformative research program that addresses agriculture in the context of climate variability, climate change and uncertainty about future climate conditions.

CCAFS is initially focusing on three regions – East Africa, West Africa and South Asia – to carry out its research. The 36 benchmark sites in these regions represent areas that are becoming both drier and wetter, and are focal locations that will generate results that can be applied and adapted to other regions worldwide. A significant CCAFS achievement is the recent prioritisation of agriculture on the United Nations Convention on Climate Change agenda. Instrumental in this effort was the CCAFS high-commission report on Sustainable Agriculture and Climate Change (http://ccafs.cgiar.org/commission).
After several years of international negotiations, representatives of more than 90 Governments established IPBES in Panama City on Saturday 21 April 2012, at the end of the second session of the IPBES plenary. IPBES is thus now formally established! The first IPBES Plenary meeting is likely to occur early 2013.

DIVERSITAS has actively promoted IPBES over the past years and looks forward to help generate scientific knowledge relevant to future IPBES assessments.

I- The formal IPBES process

3-7 October 2011: First session of IPBES plenary (Nairobi)
This was the first of two plenary sessions to design the IPBES process. The meeting focused on the following items:
1) Principles and rules of procedure
2) IPBES governance structure
3) Process and criteria for nominating and considering offers to host IPBES
4) Preliminary consideration of the work programme

The meeting spent quite some time on legal issues and agreed on a procedure to host the secretariat.

16-21 April 2012: Second session of IPBES plenary (Panama City)

A) Work Programme: The 16 potential activities proposed to operationalise the four functions of IPBES were discussed only briefly; delegates agreed to start immediately some inter sessional work, focusing on these key deliverables:
a) An overview of existing assessments with a critical analysis of their policy impact;
b) A draft multidisciplinary conceptual framework for IPBES;
c) A draft compilation and analysis of capacity building needs for IPBES;
and
d) Draft guidelines for governments and observers to submit requests to the Plenary.

B) Functions and Structures of bodies that might be established: It was agreed to establish two subsidiary bodies: a Bureau to perform the administrative functions of IPBES, and a Multidisciplinary Expert Panel (MEP) to perform its scientific and technical functions.

C) Rules and procedures: Agreement was reached on many of the rules of procedure for the meetings of the plenary of the platform, although many
gaps in the rules remain to be negotiated. Other rules for the full operationalisation of IPBES will be agreed at the First Plenary.

D) **Physical location of the platform’s secretariat:** Germany won the bid to host the secretariat in Bonn. UNEP will continue performing IPBES interim secretariat functions until the secretariat is fully in place in Bonn.

E) **Host institutions** (option envisaged: jointly hosted by FAO, UNDP, UNEP, and UNESCO);

No agreement was reached on this issue. Representatives asked the four organisations to further elaborate on their joint proposal and present a final version at the first plenary meeting of IPBES.

F) **Budget:** Delegates had before them several options ranging from a low end of 5 Million per year to a high end of 13 Million per year. This issue was not discussed.

**II- The contribution of DIVERSITAS to the IPBES process**

DIVERSITAS was present at the two sessions of this IPBES Plenary in 2011 and 2012. The scientific community at IPBES meetings is represented by ICSU. Anne Larigauderie, Executive Director of DIVERSITAS, is the ICSU representative to IPBES and the Head of the ICSU Delegation.

**TO THE FORMAL PROCESS**

**First session of IPBES Plenary (October 2011)**

- Two information documents: UNEP/IPBES.MI/1/INF/11 on the knowledge generation and UNEP/IPBES.MI/1/INF/12 on the assessment functions of IPBES
- Side event on the assessment and knowledge generation functions of IPBES organised by Japan, South Africa, UN and ICSU
- Co-chairing of multistakeholder day (ICSU and IUCN)

**Second session of IPBES Plenary (April 2012)**

- Two information documents: UNEP/IPBES.MI/2/INF/11 on the knowledge generation and UNEP/IPBES.MI/2/INF/10 on the assessment functions of IPBES
- Side event on the assessment and knowledge generation functions of IPBES, organised by the governments of Japan, UN, South Africa and ICSU
- Co-chairing of multistakeholder day (ICSU and IUCN)

**ADDITIONAL CONTRIBUTIONS**

**Preparing for the first session of the IPBES plenary:**

**June 2011**

Workshop of international scientific organisations interested in IPBES (Paris); convened by DIVERSITAS and IHDP (for ICSU), in collaboration with UNESCO.

**July 2011**

Workshop on the assessment function of IPBES (Tokyo); convened by IHDP, UN, Japan and South Africa, in collaboration with DIVERSITAS.

**Preparing for the second session of the IPBES plenary:**

**February 2012**

- Workshop on the generation of knowledge function (SESYNC, Annapolis, Maryland); convened by DIVERSITAS, ICSU and the USA (USGS).
- e-survey for natural and social scientists interested in IPBES answered by 2,235 people from 136 countries; organised by IHDP, UN in collaboration with DIVERSITAS.

**March 2012**

Workshop on the assessment function of IPBES, based on the e-survey; convened by IHDP, UN, Japan and South Africa, in collaboration with DIVERSITAS.

DIVERSITAS with IHDP, on behalf of ICSU, have also been producing “IPBES e-news” to inform the wider scientific community about progress with IPBES process.

Several of the workshops and side events above, organised to seek input from the scientific community, were made possible thanks to a small scale funding agreement of UNEP, Division of Environmental Policy Implementation. DIVERSITAS thanks UNEP DEPI for this contribution.
Building a global biodiversity observation system: GEO BON

www.diversitas-international.org/geo-bon

Background: the Global Earth Observation System of Systems (GEOSS)
The Group of Earth Observations (GEO; http://earthobservations.org/) is engaged in a process to build a GEOSS, designed around nine Societal Benefit Areas (SBAs): disasters, health, energy, climate, water, weather, ecosystems, agriculture and biodiversity.

DIVERSITAS, US-NASA, and EU-EBONE have accepted the lead in coordinating the planning stages to build a global biodiversity observation system. We call the system and the partners who develop it “GEO-BON”, which stands for “Group of Earth Observations – Biodiversity Observation Network”. GEO BON is being built by some 100 governmental and non-governmental organisations.

The vision of GEO BON
The vision of GEO BON is for a coordinated, global network that gathers and shares information on biodiversity, provides tools for data integration and analysis, and contributes to improving environmental management and human well-being.

The first GEO BON implementation plan
GEO BON released the first version of its implementation plan on 22 May 2010 (International Day of Biodiversity) at CBD-SBSTTA 14. The implementation plan proposes to the global observing community activities and deliverables at the genetic, species and ecosystem levels, including ecosystem services, in terrestrial, freshwater and marine ecosystems.

GEO BON contributes to the implementation of the Strategic Plan for Biodiversity 2011-2020
In response to a request made by CBD-COP10, the GEO BON community produced the GEO BON Adequacy report of Biodiversity Observations Systems to support the CBD 2020 Targets. This report constitutes the first attempt to assess the adequacy of global observation systems for the monitoring of biodiversity, specifically in relation to the information needs of the twenty ‘Aichi targets’ defined by the Convention on Biological Diversity (CBD) for the period 2011-2020.

Key developments in 2011-12

March 2011

➤ GEO BON meeting (Wageningen, NL) to respond to invitation in COP10 decision X/7; production of an adequacy report of existing observation capabilities for the 2020 targets

June 2011

➤ CBD AHTEG (Ad Hoc Technical Expert Group) meeting (High Wycombe, UK) on indicators for the Strategic Plan for Biodiversity 2011-2020; GEO BON represented

➤ 3rd SC-GEO BON meeting (Geneva, Switzerland)
November 2011

→ GEO BON side event at CBD-SBSTTA 15. SBSTTA 15 recommends: “GEO-BON to continue its work on the identification of *essential biodiversity variables* (…) and report to a meeting of SBSTTA prior to the twelfth meeting of the Conference of the Parties”

→ GEO VIII Plenary meeting (Istanbul, Turkey): Plenary presentation on GEO BON latest achievements (A Larigauderie)

February 2012

→ Essential Biodiversity Variables (EBVs) meeting (Frascati, Italy); production of a tentative list of EBVs for genes, species, ecosystems and ecosystem services, in response to SBSTTA 15 request.

**Landmark documents**

GEO BON concept document (Oct 2008)
GEO BON implementation plan version 1.0 (May 2010)
GEO BON Adequacy of Biodiversity Observations Systems to support the CBD 2020 Targets (May 2011)

**Role of DIVERSITAS**

The initial role of DIVERSITAS has been to coordinate the development of the GEO BON concept and implementation plan, and to ensure, in particular, that GEO BON develops within a robust scientific framework.

Since 2010, DIVERSITAS has focused its contribution to GEO BON, around three sets of activities:

1) Science-policy work: Represent GEO BON at CBD and IPBES, and position GEO BON within the science-policy interface as the global observing system for biodiversity

2) Support activities (funding and coordination) of two of the working groups, selected because they need a strong scientific contribution:

   a) The genetic diversity group (via bioGENESIS / D Faith-T Yahara) and

   b) The ecosystem services group (H Tallis-B Reyers); coordination via the bioDISCOVERY project office (C Krug);

3) Occasional support to other working groups (e.g. freshwater GEO BON working group).
DIVERSITAS at the interface between science and policy making: Contribution to the work of Conventions

DIVERSITAS is playing an increasingly important role at the interface between science and policy. In 2011, it contributed actively to the work of the CBD, and together with the Earth System Science Partnership, also collaborated to the work of the Convention on Climate Change, the UNFCCC.

Convention on Biological Diversity

I- Contribution to CBD work on indicators and monitoring via GEO BON

DIVERSITAS currently contributes to the work on the 2020 targets, via its contribution to GEO BON (see page 30):

- GEO BON contribution to the work of the Ad Hoc Technical Expert Group (AHTEG) of the CBD on indicators for the Strategic Plan 2011-2020 (Adequacy report)
- GEO BON work on Essential Biodiversity Variables.

II- Contribution to the 4th Global Biodiversity Outlook (GBO-4)

CBD-COP10 has requested to prepare a 4th edition of the Global Biodiversity Outlook (GBO-4), and outlined its scope.

DIVERSITAS will coordinate as a contribution to GBO-4 a “Scenario study on future implementation needs for the Strategic Plan for Biodiversity and the Aichi Biodiversity Targets”. The coordinating lead authors for this study are: Paul Leadley and Henrique Pereira (DIVERSITAS), Rob Alkemade, Ben ten Brink and Marcel Kok (Netherlands Environmental Assessment Agency, Bilthoven), Jorn Scharlemann and Matt Walpole (UNEP-WCMC), and Rashid Sumaila and Villy Christensen (UBC Fisheries Centre).

III- Additional contributions to CBD

- CBD-SBSTTA 15, Side event (November 2011)
- GEO BON: Building a Global Biodiversity Observing System (with GEO Secretariat)
- CBD-SBSTTA 16, Side event (May 2012)
- Biodiversity and Health: Linkages and Benefits (with Secretariat of CBD, and ecoHEALTH of DIVERSITAS)
UN Framework Convention on Climate Change (UNFCCC)

DIVERSITAS has been invited over the past four years by the SBSTA of the Climate Change Convention (UNFCCC) to participate in annual “Research Dialogues” between Parties to UNFCCC on one hand, and programmes and projects of the ESSP on the other hand.

In May 2012 (Bonn, Germany), ESSP programmes (DIVERSITAS, IGBP, IHDP and WCRP) reported at UNFCCC-SBSTA 36 on emerging scientific findings, at a session dedicated to research and systematic observations, chaired by Mr. Richard Muyungi, Chair of the SBSTA.

Presentations were made on the three following themes selected by delegates:

- Updates from recent climate change research on aspects relevant to the long-term global goal: emission pathways, new scenarios and recent global and regional emission trends
- Coastal and marine ecosystems: Greenhouse gas sources, sinks and reservoirs
- Updates from recent climate change research: Other areas of relevance to the Convention, including research-related capacity building
Below is a summary of all events directly organised or co-organised by DIVERSITAS between January 2011 and June 2012.

<table>
<thead>
<tr>
<th><strong>EVENTS</strong></th>
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<tbody>
<tr>
<td><strong>February 2011</strong></td>
</tr>
<tr>
<td>Freshwater Consortium Meeting (with EU-BioFresh)</td>
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<td><strong>March 2011</strong></td>
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<tr>
<td>GEO BON Ecosystem Services working group</td>
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<tr>
<td>SC-DIVERSITAS</td>
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<tr>
<td>TRY-BBS workshop (with FRB and GIS)</td>
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<tr>
<td>4th meeting of the DIVERSITAS ecoHEALTH Economics of Emerging Diseases project (DEEED)</td>
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<tr>
<td><strong>June 2011</strong></td>
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<tr>
<td>bioDISCOVERY Novel Models workshop</td>
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<tr>
<td>Informal meeting on IPBES (with ICSU and IHDP); hosted by UNESCO</td>
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<tr>
<td>EcoHealthNet Workshop</td>
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<tr>
<td><strong>July 2011</strong></td>
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<tr>
<td>IPBES-Assessment function: Informal pre-plenary scientific workshop</td>
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<td><strong>August 2011</strong></td>
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<tr>
<td>International workshop on global legume diversity assessments</td>
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<tr>
<td>SC-agroBIODIVERSITY</td>
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<tr>
<td><strong>September 2011</strong></td>
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<tr>
<td>Workshop on Global Change research in mountain regions</td>
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<td><strong>October 2011</strong></td>
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<tr>
<td>Stakeholder day meeting at first session of the plenary of IPBES</td>
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<tr>
<td>Co-chaired with IUCN</td>
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<tr>
<td><strong>November 2011</strong></td>
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<tr>
<td>Side event on GEO BON at SBSTTA 15 of CBD</td>
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<td>Land for Bioenergy workshop</td>
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### DECEMBER 2011

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>4th AP BON Workshop</td>
<td>Tokyo, Japan</td>
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<tr>
<td>AP BON Symposium</td>
<td>Tokyo, Japan</td>
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<tr>
<td>Global Wetlands Observation System Scoping Meeting</td>
<td>Ede, The Netherlands</td>
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### JANUARY 2012

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>Project Building Resilience with Common Capital: Managing Shared Resources – 1st workshop</td>
<td>Tokyo, Japan</td>
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<tr>
<td>Scientific expert workshop: Develop potential work program elements for the IPBES (with USGS)</td>
<td>Annapolis, USA</td>
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### FEBRUARY 2012

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>Scientific workshop on IPBES</td>
<td>Tokyo, Japan</td>
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<tr>
<td>GEO BON Workshop: Essential Biodiversity Variables</td>
<td>Frascati, Italy</td>
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### MARCH 2012

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>Workshop: Tipping Points in Ecological Systems</td>
<td>Berlin, Germany</td>
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<tr>
<td>SC-DIVERSITAS</td>
<td>London, UK</td>
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<tr>
<td>SC-agroBIODIVERSITY</td>
<td>London, UK</td>
</tr>
<tr>
<td>Planet Under Pressure Open Science Conference</td>
<td>London, UK</td>
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<tr>
<td>Workshop on the Biodiversity Planetary Boundary</td>
<td>London, UK</td>
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<tr>
<td>Workshop of BESTNet, the Biodiversity and Ecosystem Services Network of DIVERSITAS</td>
<td>London, UK</td>
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### MAY 2012

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>Side event of ecoHEALTH during SBSTTA 16 of CBD</td>
<td>Montreal, Canada</td>
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<tr>
<td>Workshop: A Global Standard for Payments for Ecosystem Services</td>
<td>New York, USA</td>
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<tr>
<td>2nd workshop on new commons</td>
<td>Colombo, Sri Lanka</td>
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### JUNE 2012

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<tr>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>SC-bioGENESIS</td>
<td>Bonito, Brazil</td>
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<tr>
<td>bioGENESIS Capacity Building Workshop</td>
<td>Bonito, Brazil</td>
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<tr>
<td>Session on biodiversity during the Forum on Science, Technology and Innovation for Sustainable Development, prior to Rio+20</td>
<td>Rio, Brazil</td>
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</tbody>
</table>
PUBLICATIONS

2012


2011


PUBLICATIONS


Policy Brief : The need for a community of practice on biodiversity and public health in Belgium


Policy Brief 1: Water security for a planet under pressure.


Policy Brief 2: Food security for a planet under pressure.


Policy Brief 3: Transforming governance and institutions for a planet under pressure.


Policy Brief 4: Biodiversity and ecosystems for a planet under pressure.


Policy Brief 5: Interconnected risks and solutions for a planet under pressure.


Policy Brief 6: Human well-being for a planet under pressure.


Policy Brief 7: A green economy for a planet under pressure.

Duraïappah A, Neskakis L, Munoz P, Fueternebro P, Kopsel V, Darkey E and Smith L

Policy Brief 8: An energy vision for a planet under pressure.


Policy Brief 9: Global health for a planet under pressure.

DIVERSITAS COMMITTEES

Expanding network strengthens international framework

DIVERSITAS Committees enlarge DIVERSITAS’ scientific and policy networks, thereby helping to establish crucial links between national biodiversity programmes and international framework activities. They also make it possible to implement the DIVERSITAS science plan, adapting where necessary to local and regional concerns. To this end, each DIVERSITAS Committee is encouraged to include representatives from three key groups: active scientists, policy makers and managers of national biodiversity programmes.

The DIVERSITAS National Committees include:

- Full members, who provide an annual financial contribution to DIVERSITAS
- Affiliated members who have identified a contact point or assembled a national committee, but who do not contribute financially to the programme.

**DIVERSITAS NATIONAL COMMITTEES IN 2011/12**
(Established committee**)

<table>
<thead>
<tr>
<th>Full Members</th>
<th>Affiliated Members</th>
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<tr>
<td>Argentina</td>
<td>Australia**</td>
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<td>Austria**</td>
<td>Belarus**</td>
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<td>Belgium**</td>
<td>Brazil</td>
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<td>China – Taipei**</td>
<td>Chile</td>
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<td>France**</td>
<td>China**</td>
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<td>Germany**</td>
<td>Estonia</td>
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<td>Mexico**</td>
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<td>Norway**</td>
<td>Indonesia**</td>
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<td>Slovak Republic**</td>
<td>Ireland**</td>
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<td>South Africa</td>
<td>Japan**</td>
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<td>Switzerland**</td>
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<td>The Netherlands**</td>
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<td>United Kingdom**</td>
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<td>USA**</td>
<td>Russia</td>
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<td>Saudi Arabia</td>
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<td></td>
<td>Vietnam</td>
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**DIVERSITAS COMMITTEES’ INITIATIVES IN 2011-12**
The following provides examples of activities undertaken by DIVERSITAS Committees

**2011**

<table>
<thead>
<tr>
<th>February</th>
<th>→ Biodiversity and Climate Change (The Philippines)</th>
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<tbody>
<tr>
<td>March</td>
<td>→ Global Change Research – Engaging Norwegian Scientists (Norway)</td>
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<td></td>
<td>→ European Alliance of Global Change Research Committee Meeting (UK)</td>
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<td></td>
<td>→ Joint FRB-DIVERSITAS Conference: Biodiversity Scenarios: Current progress and challenges (France)</td>
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<tr>
<td>April</td>
<td>→ 12th Swiss Global Change Day (Switzerland)</td>
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<tr>
<td>June</td>
<td>→ III Congreso Nacional de Biodiversidad (Spain)</td>
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<tr>
<td>November</td>
<td>→ Workshop Coastal Marine Biodiversity and Bioresources of Vietnam and Adjacent Areas to the South China Sea (Viet Nam)</td>
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<td></td>
<td>→ Establishing a UK DIVERSITAS Committee? (UK)</td>
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<tr>
<td></td>
<td>→ Public Forum on IPBES (USA)</td>
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<tr>
<td></td>
<td>→ Belgian Biodiversity – Public Health Conference (Belgium)</td>
</tr>
</tbody>
</table>

**2012**

| March                         | → National Committees day at Planet under Pressure (UK) |
# DIVERSITAS Scientific Committee

**Chair**  
Hal Mooney  
Stanford University, USA

**Georgina Mace**  
Imperial College London, UK

**Members**  
David Cooper  
Convention on Biological Diversity, Montreal, Canada

Wolfgang Cramer  
Institut Méditerranéen d’Ecologie et de Paléoécologie (IMEP), Aix-en-Provence, France

Sandra Diaz  
IMBIV, Universidad Nacional de Cordoba, Argentina

**Elva Escobar**  
Universidad Nacional Autonoma de Mexico, Mexico

**Carlos Joly**  
State University of Campinas, Brazil

**Philippe Le Prestre**  
Laval University, Canada

**Mark Lonsdale (Treasurer)**  
CSIRO Entomology, Australia

**Hiroyuki Matsuda**  
Faculty of Environment and Information Sciences, Yokohama National University, Japan

**Harini Nagendra**  
Ashoka Trust for Research in Ecology and the Environment, India

**Belinda Reyers**  
Council for Scientific and Industrial Research – CSIR, South Africa

Eugene Rosa  
Washington State University, USA

Robert Scholes (Vice Chair)  
Natural Resources and Environment, CSIR, South Africa

Billie L. Turner II  
School of Geographical Sciences and Urban Planning, Arizona State University, USA

**Ex-officio Members**

**ICSU**  
Steven Wilson  
ICSU, France

**ESSP**  
Rik Leemans  
Wageningen University, The Netherlands

**SCOPE**  
Lu Yonglong  
China-CAST, China

**IUBS**  
Jean-Marc Jallon  
Institut de Biologie Animale Intégrative et Cellulaire (IBAIC) Université Paris-Sud 11, Orsay, France

**CBD**  
Braulio F. de Souza Dias  
Executive Secretary, Canada

**UNESCO**  
Gretchen Kalonji  
Salvatore Arico  
Natural Sciences, UNESCO, France

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1. First mandate started in January 2012
2. Mandate ended in December 2011
3. The Chairs of DIVERSITAS Core Projects and Cross-Cutting Networks serve as ex-officio members of the SC
4. H Mooney ended his term as Chair of SC-DIVERSITAS in December 2011, and was replaced by G Mace, in January 2012
Global Environmental Change Programmes

IGBP
James Syvitski
University of Colorado, USA

IHDP
Partha Dasgupta
University of Cambridge, UK

WCRP
Tony Busalacchi
University of Maryland, USA

International Advisory Committee

Partha P Dasgupta
University of Cambridge, UK

Paul Ehrlich
Stanford University, USA

Daniel Janzen
University of Pennsylvania, USA

Hiroya Kawanabe
Lake Biwa Museum, Japan

Michel Loreau
CNRS, France

Jane Lubchenco
National Oceanic and Atmospheric Administration, USA

Mohan Munasinghe
Munasinghe Institute for Development (MIND), Sri Lanka

Ghillean Prance
EDEN Project, UK

Peter Raven
Missouri Botanical Garden, USA

Cristián Samper
Smithsonian Institution’s National Museum for Natural History, USA

José Sarukhán
CONABIO, Mexico

Peter-Johan Schei
The Fridtjof Nansen Institute, Norway

Ismael Serageldin
Bibliotheca Alexandrina, Egypt

MS Swaminathan
Centre for Research on Sustainable Agricultural and Rural Development, India

Edward O Wilson
Harvard University, USA

DIVERSITAS Secretariat

Anne Larigauderie
Executive Director

Anne-Hélène Prieur-Richard
Deputy Director

Julie Dardanelli
Executive Assistant

Melinda Seeneevassen
Administrative Assistant
# Financial Summary

Statement of income and expenditure 2011

1st January to 31st December 2011

<table>
<thead>
<tr>
<th>INCOME</th>
<th>EUROS</th>
</tr>
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<tbody>
<tr>
<td>National contributions</td>
<td>595 095</td>
</tr>
<tr>
<td>USA (NSF, NASA, EPA)</td>
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<td>Other income</td>
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<td>Communication and publications</td>
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<td>Operating costs</td>
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<td>Provision for 2012</td>
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<td><strong>TOTAL EXPENSES</strong></td>
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<td>Mandatory reserve</td>
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In kind contribution from France

From CNRS-INEE (Centre National de la Recherche Scientifique – Institut d’Ecologie et Environnement): bioDISCOVERY Science Officer

From MNHN (Muséum National d’Histoire Naturelle): Host of international secretariat

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Acronyms

AHTEG Ad Hoc Technical Expert Group
AP BON Asia Pacific Biodiversity Observation Network
APN Asia Pacific Network for global change research
ATBC Association of Tropical Biodiversity Conservation
BESTnet Biodiversity and Ecosystem Services Training Network
BMBF Federal Ministry of Education and Research (Germany)
CBD Convention on Biological Diversity
CBO Cities and Biodiversity Outlook
CCAFS Climate Change, Agriculture and Food Security
CEA Commissariat à l’Energie Atomique
CGIAR Consultative Group on International Agriculture Research
CIRAD Centre de coopération internationale en recherche agronomique pour le développement (France)
CNR Italian National Research Council
CNR-IREA Water Research Institute (Italy)
CNRS Centre National de la Recherche Scientifique
CONACYT National Council on Science and Technology (Mexico)
CONICET Consejo Nacional de Investigaciones Científicas y Técnicas (Argentina)
COP Conference Of the Parties
COSUST Current Opinion in Environmental Sustainability
CSIRO Australia’s Commonwealth Scientific and Industrial Research Organisation
DEBED DIVERSITAS ecoHEALTH on Biodiversity and Emerging Diseases
DEEED DIVERSITAS ecoHEALTH Economics of Emerging Diseases project
DFG Deutsche Forschungsgemeinschaft - German Research Foundation
DIWPA DIVERSITAS In Western Pacific Asia
EBVs Essential Biodiversity Variables
EID Emerging Infectious Disease
EPA Environmental Protection Agency
ESSP Earth System Science Partnership
EU European Union
EU-EBONE European Biodiversity Observation Network
FAO Food and Agriculture Organization
FRB Fondation pour la Recherche sur la Biodiversité
GBIF Global Biodiversity Information Facility
GBO4 Global Biodiversity Outlook 4
GCI Global Catchment Initiative
GCP Global Carbon Project
GEC Global Environmental Change
GECAFS Global Environmental Change and Food Systems
GECHH Global Environmental Change and Human Health
GEO Group on Earth Observation
GEO-BON Group on Earth Observations Biodiversity Observing Network
GEOS Global Earth Observation System of Systems
GLORIA Global Observation Research Initiative in Alpine Environments
GLP Global Land Project
GMBA Global Mountain Biodiversity Assessment
GSI Global Scale Initiative
GWG Global Water Governance
GWWI Global Water Needs Initiative
GWOS Global Wetlands Observation System
GWSP Global Water System Project
ICIMOD International Centre for Integrated Mountain Development
ICLEI International Council for Local Environmental Initiatives
ICRAF World Agroforestry Center
ICSU International Council for Science
IDRC International Development Research Centre (Canada)
IGBP International Geosphere-Biosphere Programme
IGFA International Group of Funding Agencies for global change research
IHDP International Human Dimensions Programme on global environment change
INRA Institut National de la Recherche Agronomique (France)
IPBES Intergovernmental Platform on Biodiversity and Ecosystem Services
IPCC Intergovernmental Panel on Climate Change
IPO International Project Office
ISSC International Social Science Council
IUBS International Union of Biological Sciences
IUCN International Union for Conservation of Nature
KNAW Royal Netherlands Society of Arts and Sciences
MAIRS Monsoon Asia Integrated Regional Study
MIREN Mountain Invasion Research Network
MNHN Muséum National d’Histoire Naturelle
MoL Map of Life
NASA National Air and Space Administration (USA)
NC National Committee
Ne-Fo Network-Forum for Biodiversity Research (Germany)
NERC Natural Environment Research Council (UK)
NIES National Institute for Environmental Studies (Japan)
NRF National Research Foundation
NSF National Science Foundation
PuP Planet under Pressure
RCN Research Council of Norway
SBSTA Subsidiary Body for Scientific and Technological Advice
SBSTTA Subsidiary Body for Scientific, Technical and Environmental Advice
SC Scientific Committee
S-CBD Secretariat of the Convention on Biological Diversity
SCOPE Scientific Committee on Problems of the Environment
SESYNC Socio-Environmental Synthesis Center
SNF Swiss National Science Foundation
SSEESS Swedish Secretariat for Environmental Earth System Sciences
TT Transition Team
UN United Nations
UNDP United Nations Development Programme
UNEP United Nations Environment Programme
UNEP WCMC UNEP World Conservation Monitoring Centre
UNEP-GEF UNEP – Global Environment Facilities
UNESCO United Nations Educational, Scientific and Cultural Organization
UNFCCC United Nations Framework Convention on Climate Change
UNU United Nations University
UQAM Université du Québec à Montréal
URBES Urban Biodiversity and Ecosystem Services
USAID United States Agency for International Development
US-EPA US Environmental Protection Agency
USGS United States Geological Survey
WCRP World Climate Research Programme
WFEO World Federation of Engineering Organisations
WMO World Meteorological Organisation
Getting involved…

The success of DIVERSITAS is directly related to the voluntary involvement of scientists and organisations from around the world. The following paragraphs briefly describe the primary means of contributing to DIVERSITAS.

as a Scientist

In order for you to automatically be registered to receive our electronic newsletter, and regular information about DIVERSITAS, please register on the web site and complete the DIVERSITAS Personal Profile. Feel free to contact directly any of the Chairs and Science Officers of DIVERSITAS Projects to get more information on how to participate yourself or to propose participants in specific activities.

as a National Committee

DIVERSITAS encourages the establishment of National Committees as a mean of building a truly international network to support integrated biodiversity science. These Committees play an important role in linking national and international programmes, as well as interacting with policy makers and other stakeholders in their home countries. Please visit the National Committees section of the web site for a full description of their role, and find out how to establish a National Committee.

as a Funder

DIVERSITAS is a non-profit, non-governmental organisation, funded by regular contributions from its National Members, and by grants from various organisations. In order to achieve its objectives, the Programme is actively seeking additional support for the following:

- Scientific activities
- Core activities
- Capacity building activities

Funding DIVERSITAS initiatives provides an excellent opportunity for individuals and organisations to demonstrate a strong commitment to conservation and sustainable use of biodiversity. DIVERSITAS welcomes the opportunity to collaborate with private industries, non-governmental/inter-governmental organisations, foundations and associations.

If you would like to support our activities please contact the DIVERSITAS Secretariat.