Science Technology and Innovation for Implementing 2030 Sustainable Development Agenda

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United Nations Commission on Science and Technology for Development (CSTD)

High-level Segment on '*Implementing the post-2015 development agenda: moving from commitments to results*'

19th Annual Session 9-13 May, 2016

Looking back in history

Sputnik was the beginning of space-based observation which has totally changed our way of seeing our planet.

It was SPUTNIK

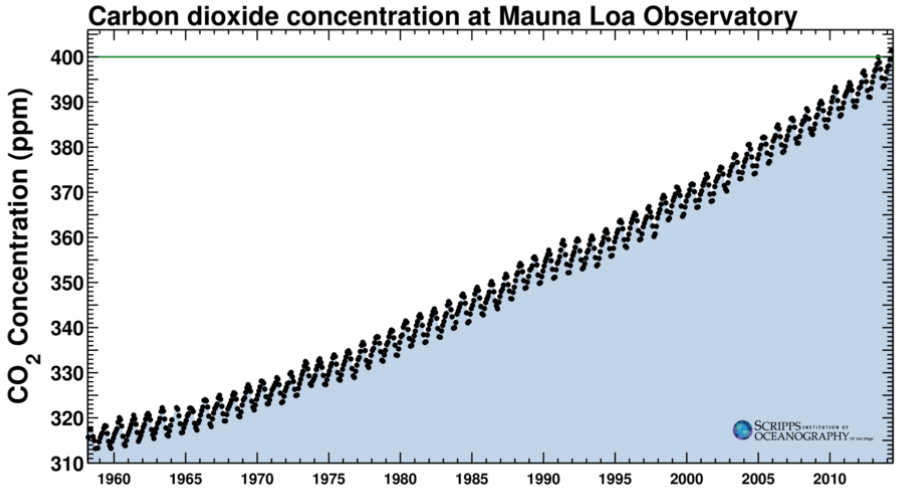
In 1957, I stood with my parents and brothers, looking up to the sky.

Something was passing overhead – far up there and barely visible.

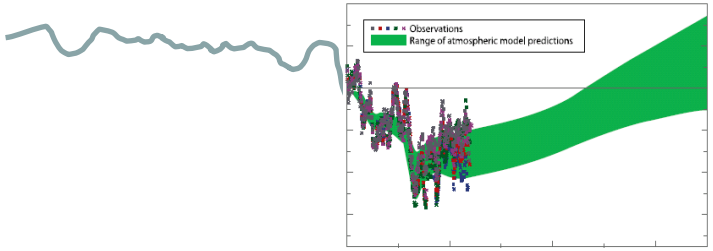
C…se effec…

As I learned about climate change, I learned about …

Then the ozone layer, I learned about the measurements of stratospheric ozone.



Stratospheric Ozone



First systematic measurements of the ozone layer. Started in 1957 and continue today

Measurements started in 1957

1957 –quite a year – next year it will be 60 years ago

- **Sputnik**
- **First systematic global carbon dioxide measurements**
- **First systematic global stratospheric ozone measurements**
- **WHY?**
- **The International Geophysical Year (IGY)**
- **of the International Council for Science (ICSU**

INTERNATIONAL COUNCIL FOR SCIENCE

International Council for Science

120 National Members, 31 Unions/Associations by discipline.

Mission of the International Council for Science - "*to strengthen international science for the benefit of society*"; for all societies

Vision - *for a world where excellence in science (all sciences) is effectively translated into policy making and socio-economic development.*

- ***universal and equitable access to scientific data and information***
- ***all countries - scientific capacity - generating new knowledge - establish own development pathways in a sustainable manner.***

Key priorities and associated activities:

– **Science for Policy - *and policy for science***
– **Universality of Science – *freedom to do***
+ *responsibility of science*
– **International Research Collaboration**

Science for Evidence-Based Decision Making

16. **Strengthen the means of implementation and revitalize the global partnership for sustainable development**

1. Responsibilities in the conduct of science - The responsibility to contribute to post-2015 frameworks, including the Sendai Framework, Agenda 2030, Paris Climate Agreement and the upcoming new Urban Agenda

2. Leave no scientists behind - The policy community has the responsibility, working with scientific community, of "leaving no scientists behind"

3. Science and Technology for SUSTAINABLE Development - Role of the Commission on Science and Technology towards the attainment of Sustainable Development.

International Research Collaboration – and Science for Policy

- 1970's – increased interest in climate change - 1979 - 1st World Climate Conference
- 1980 - ICSU and WMO create World Climate Research Programme
- 1986 – ICSU creates Global Change
  - IGBP Research Programme -
- 1988 – WMO and UNEP create IPCC - WCRP and IGBP are main producers of science – then and now
- 1990 – first IPCC Assessment to 2nd World Climate Conference – feeds into Rio Summit - UNFCCC – 1992
- 1991 – ICSU and partners create Global Research Program on Biodiversity - Diversitas

International Research Collaboration – and Science for Policy

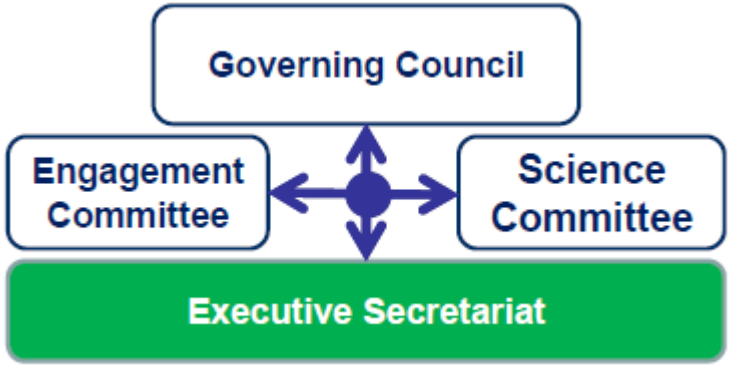
- 1992 –lack of involvement of scientist from developing world, →Global Environmental Change START –
  - capacity enhancement in Africa-Asia.
- 1994 - Inter-American Institute for Global Change
- 1996 – ICSU, ISSC, UNU created International Human Dimensions of GEC Programme
- 1997 – Kyoto Protocol – based on science as assessed by IPCC

  2004 – Indian Ocean tsunami → 2005 - 2nd Conference on Disaster Risk Reduction – Hyogo Framework for Action
- 2008 – ICSU, UNISDR, ISSC create Integrated Research on Disaster Risk Programme
- 2012 – ICSU, UNU, IAMP create Urban Health and Wellbeing Programme – a systems approach

International Research Collaboration – Integrated science and sustainable development

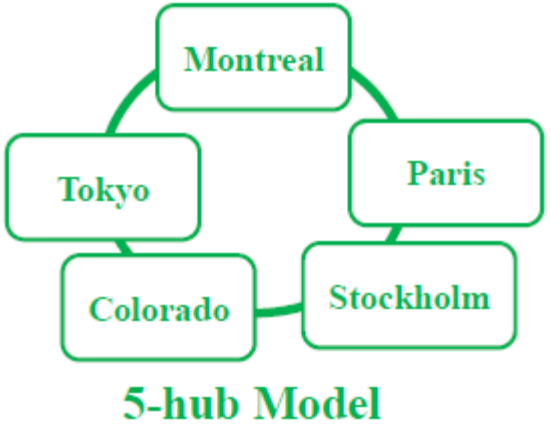
INTERNATIONAL COUNCIL FOR SCIENCE

- 2011-12 – **Integrated science and sustainable development**
- **Future Earth transition team – initial design**
- **2014 – Strategic Research Agenda**
- **2015 – Governance**



appointment of Executive Director

Prof. Paul Srivastava, Concordia University, Montreal



5-hub Model

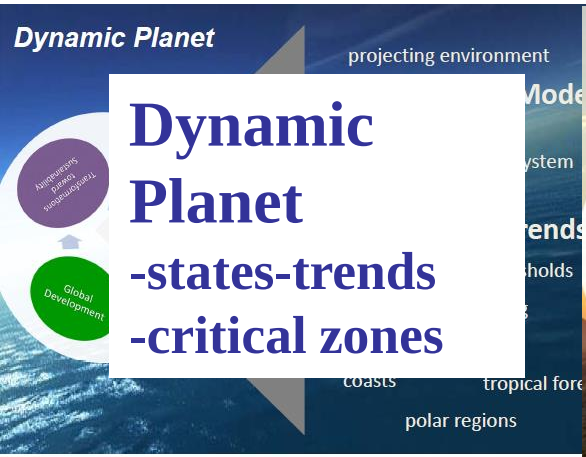
Themes

Goal:

To <u>provide the knowledge</u> required for societies in the world to face risks posed by global environmental change and to seize opportunities in a transition to <u>global sustainability</u>

STS Forum

SDSN



Dynamic Planet
-states-trends
-critical zones

Global Development
-stewardship of resources
-ecosystem services

Transformations towards Sustainability
-innovation, ideas
-megacities

Fostering co-design and co-production of knowledge under Future Earth

Science Committee

↕ ↕

Engagement Committee

futureearth
research for global sustainability

Opportunities – and invitation to:

- **UN CSTD**
- **And all nations and organizations to be involved**

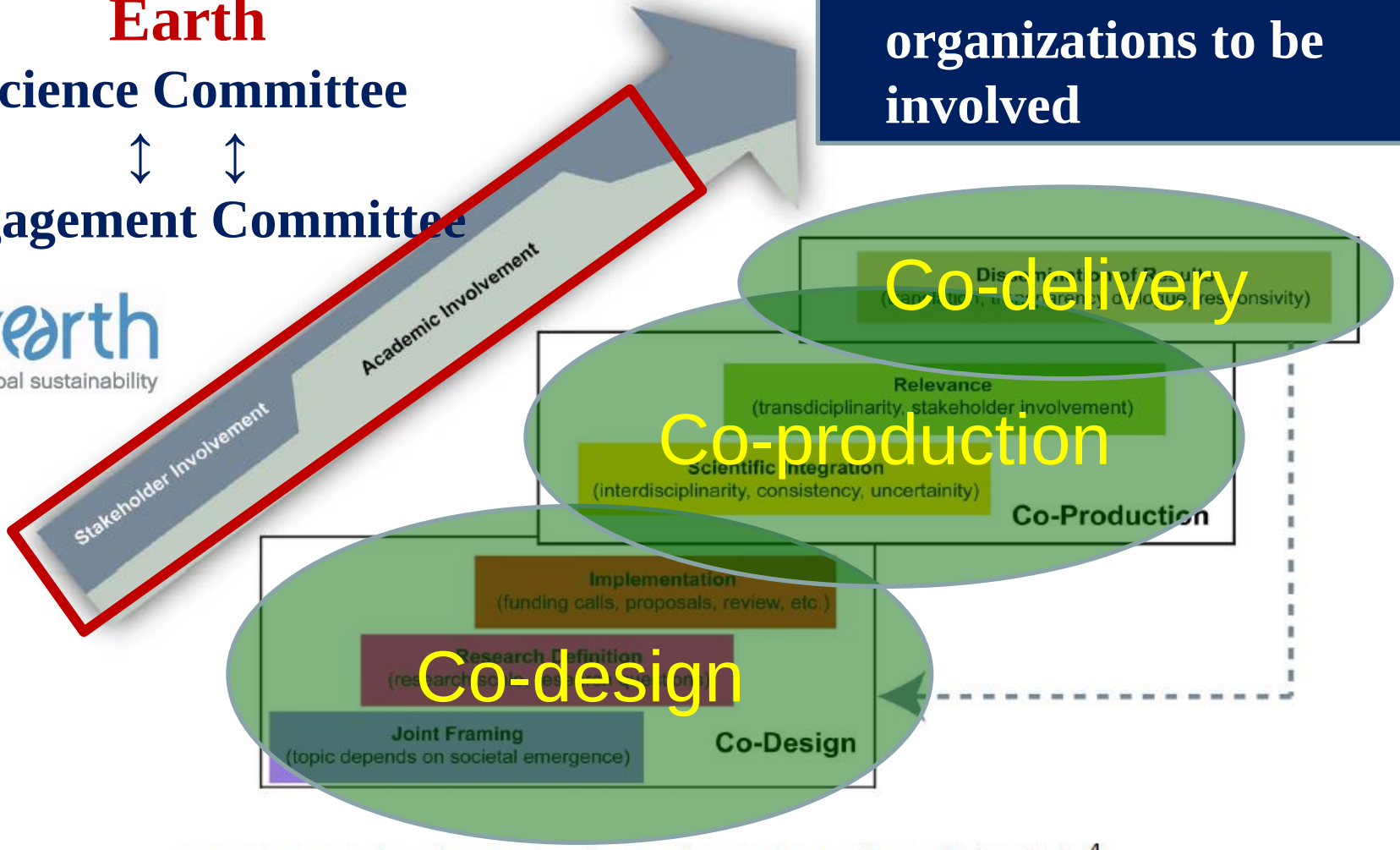


Figure 1: Steps and involvement in co-design and co-production of scientific knowledge[4]

Science for Policy -2015 – and beyond

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Science & the Sustainable Development Goals

INSIGHTS

Enzyme sensitizes plants to TNT pollution p. 1052

The complicated legacy of Ernest Lawrence p. 1062 ▸

PERSPECTIVES

SUSTAINABILITY

Sustainable development agenda: 2030

Building knowledge-based societies is key to transformative technologies

By William Colglazier

On 25 to 27 September, United Nations member states will formally adopt the Sustainable Development Goals (SDGs) as key elements of the post-2015 development agenda (*1*), successors to the eight Millennium Development Goals (MDGs) that focused attention from 2000 to 2015. The final 2030 agenda text for adoption proposes 17 SDGs with 169 targets, to be supplemented in 2016 with numerous indicators. All of the text emphasizing science, technology, and innovation (STI) is most welcome but achieving desired outcomes by 2030 will require deep understanding of how to maximize the contributions of STI. Having had the privilege of addressing this topic to the UN High-Level Political Forum (HLPF) that will oversee the SDG effort, I discuss areas that I believe are essential to success. I focus on three issues: (i) using the Global Sustainable Development Report (GSDR) process to bridge SDGs and scientific communities, (ii) choosing targets, indicators, and roadmaps related to STI, and (iii) the imperative of building knowledge-based societies.

POLICY

BRIDGE SCIENCE AND SDGs. Science can contribute to achieving the SDGs in four general areas: what sc… (i) challenges, (ii) actio… difference, (iii) monitoring progress, and (iv) innovative solutions (see the photos). Preparatory materials for the UN Summit include an important document, the 2015 GSDR, prepared by UN staff and agencies to highlight and strengthen the "science-policy interface" (*2*). The 2015 GSDR, to be a forerunner of future editions, highlights an integrative perspective; linkages among SDGs;

Milk chiller for farmers. In Motur, Tamil Nadu, India, Promethean Power System's Rapid Milk Chiller chills milk instantly to 4°C (39°F), uses a thermal battery instead of diesel fuel, and can chill up to 1000 liters of milk per day in areas with intermittent grid power. Sorin Grama, cofounder of Promethean Power, and Karthik Chandrasekar of Sangam, an investor, are testing the first of more than 100 milk chillers placed in rural India.

PHOTO: NATIONAL INSTITUTES OF HEALTH

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"BRIDGE SCIENCE AND SDGs. Science can contribute to achieving the SDGs in four general areas: what science can say about (i) challenges, (ii) actions that can make a difference, (iii) monitoring progress, and (iv) innovative solutions…"

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Building Knowledge Action Networks

Challenges \ Themes	Dynamic Planet	Sustainable Development	Transformations to Sustainability
1. Water, food, energy for all			
2. Decarbonise socioeconomic systems			
3. Safeguard natural assets			
4. Build healthy, resilient cities			
5. Sustainable rural futures			
6. Improve human health under GEC			
7. Sustainable consumption and prod'n			
8. Social resilience to future threats			

Food and the nexus

Future Oceans

Natural assets

Future cities

UN World Conference on Disaster Risk Reduction 2015 Sendai Japan

Future health

Transformations

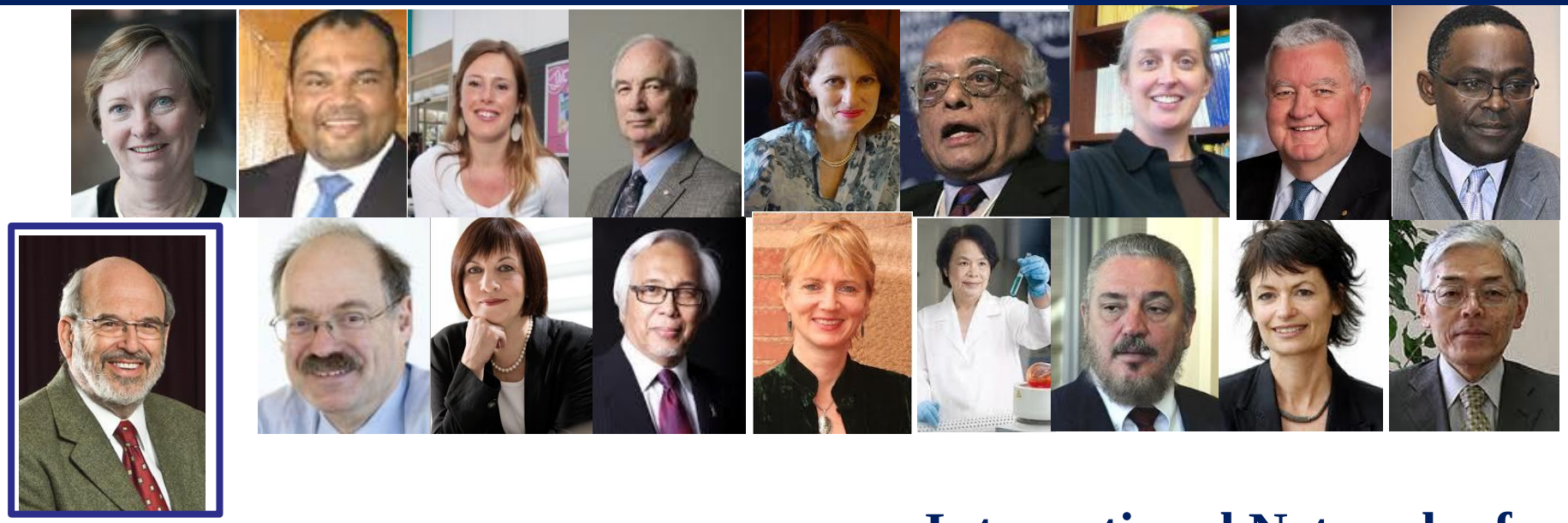
PARIS2015 UN CLIMATE CHANGE CONFERENCE COP21·CMP11

SDGs

Sustainable Development Goals

19.05.2016

International Network of Government Sciences Advisers



INGSA provides a forum for policy makers, practitioners, academies, and academics to share experience, build capacity and develop theoretical and practical approaches to the use of scientific evidence in informing policy at all levels of government.

International Network of Government Sciences Advisers – 650 members

1st mtg - Auckland, 2014

- Major events - biannually

- Workshops – regularly

- http://www.ingsa.org/

Science Policy - Open Data in a Big Data World

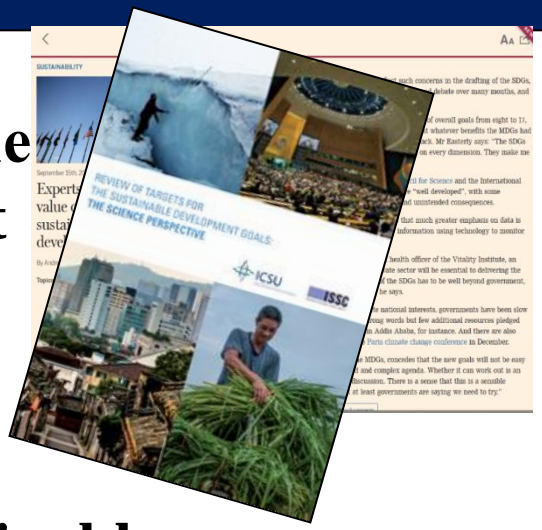
INTERNATIONAL COUNCIL FOR SCIENCE | ISSC international social science council | Science International 2015 | twas | EB115/10.4.2 | iap SCIENCE RESEARCH HEALTH the interacademy partnership

OPEN DATA IN A BIG DATA WORLD - AN INTERNATIONAL ACCORD

- **International science - global voice of science in addressing issues of policy for science.**
- **The Accord**
  - **opportunities and challenges of the data revolution - predominant issues for global science policy.**
  - **fundamental principles …be adopted in response.**
  - **distinctive voice of the scientific community**
  - **fundamental pre-requisite - rigour of scientific inquiry and maximising public benefit … in both developed and developing countries.**
- **…promote discussion and adoption of these principles and their endorsement by … bodies of science at national and international levels.**

Science for Policy - Reports/Studies - Conferences

1st ICSU/ISSC Report "Review of Targets for the Sustainable Development Goals: the science perspective" launched at UN in February 2016



Global Sustainable Development Report (GSDR) -

➢Our Common Future Under Climate Change" Science Conference, Paris. France, July 2015

OUR COMMON FUTURE UNDER CLIMATE CHANGE

DECLARATION OF THE
7TH WORLD SCIENCE FORUM ON
The Enabling Power of Science

Text adopted on 7th November 2015, Budapest

PREAMBLE

With the encouragement and support of the founding organisations of World Science Forum, the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Council for Science (ICSU), the Hungarian Academy of Sciences, and all invited organisations and fellow scientists, we, the participants of the 7th World Science Forum held from 4th to 7th November 2015 adopt the present declaration.

World Science Forum (WSF), an outcome of the 1999 World Conference on Science, is a biennial event that since 2003 has been successfully assembling scientists, decision-makers from the world of politics and industry, representatives of civil society and the media to discuss critical global issues and the contribution of science towards meeting the challenges they present.

In line with the outcomes of 1999 World Conference on Science (WCS) and taking into account the 2011 Budapest Declaration on the New Era of Global Science and the 2013 Rio de Janeiro Declaration on "Science for Global Sustainable Development" we renew our commitment towards the responsible and ethical use of scientific knowledge in addressing the grand challenges of humankind.

The accelerating accumulation, use and diffusion of scientific knowledge

World Science Forum

UN World Conference on Disaster Risk Reduction
2015 Sendai Japan

2. Leave no scientists behind - S&T Capacity-Building

The Abdus Salam International Centre for Theoretical Physics
www.ictp.it

CODATA

IAEA

RDA RESEARCH DATA ALLIANCE

twas The Association of Commonwealth Universities

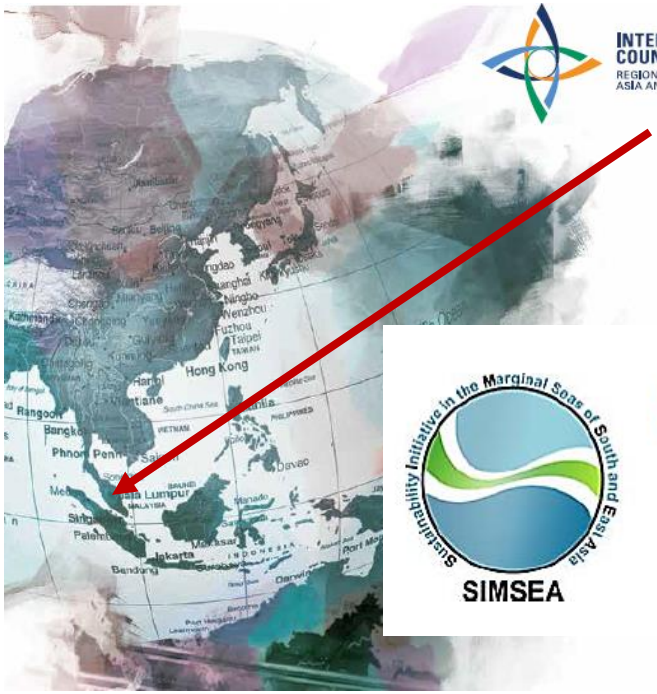
The CODATA-RDA School of Research Data Science

1 - 12 August 2016

www.ictp.it

START
global change SysTem for Analysis, Research & Training

Enhancing scientific capacity to inspire informed action on global environmental change



INTERNATIONAL COUNCIL FOR SCIENCE
REGIONAL OFFICE FOR ASIA AND THE PACIFIC

Regional Office for Asia and the Pacific

SIMSEA
Sustainability Initiative in the Marginal Seas of South and East Asia

IAI INTER-AMERICAN INSTITUTE FOR GLOBAL CHANGE RESEARCH

FAPESP

cena USP

São Paulo School of Advanced Science on Nitrogen cycling, environmental sustainability and climate change

The biogeochemical cycle of nitrogen involves and affects multiple issues, such as food security, conservation of biodiversity, water and air quality and climate regulation.

This School is directed at graduate students from Brazil and abroad and provides an integrated and multidisciplinary approach to the crosscutting themes of nitrogen cycling as well as to the complex interactions among nitrogen, agriculture, sustainability and global changes.

Full Announcement

APPLICATIONS OPEN!

31 July – 10 August 2016, São Pedro, Brazil
Information: IAI.brazil2016@dir.iai.int

2. Leave no scientists behind – S&T Capacity-Building – Young Scientists

INTERNATIONAL COUNCIL FOR SCIENCE

APECS Association of Polar Early Career Scientists

ISSC-ICSU Villa Vigoni Conferences

Science Diplomacy Training

International Research Collaboration + Science for Policy & Building Capacity

INTERNATIONAL COUNCIL FOR SCIENCE

Capacity Enhancement

Regional Offices

START
global change SysTem for Analysis, Research and Training

Big Science Open Data

CODATA

PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

UN World Conference on Disaster Risk Reduction
2015 Sendai Japan

WCRP
World Climate Research Programme

futureearth
research for global sustainability

IRDR
Integrated Research on Disaster Risk

URBAN HEALTH AND WELLBEING
A SYSTEMS APPROACH

Intersecting Issues:

- Climate change
- Disaster Risk Reduction
- Sustainable Development
- Cities, energy, resilience, …
- People, health, …

Integrated Science to Policy

3. Science and Technology for SUSTAINABLE Development

Commission on Science and Technology towards the attainment of Sustainable Development.

The CSTD –

- **→ new frameworks on sustainable development**
- **→ be the Commission on Science and Technology FOR SUSTAINABLE DEVELOPMENT**
- **Integrated science encompassing the three pillars of sustainable development: economic, environmental and social.**
- **The scientific community stands ready to enable that transition**
- **And support the Technology Facilitation Mechanism and the STI Forum**
- **The scientific community has been focusing on this "transition" since Sputnik … from the earth, to earth system … to sustainable development,**

Global Cooperation in Science for Sustainable Development

Integrated Sciences - for sustainability

- **Building on science to "see the future" – and through collective actions to have the "future we want".**

Thank you
for your attention.
We look forward to working together for the benefit of all societies.