



Fourth Meeting of the Scientific Committee

**IRDR International Programme Office
Beijing
15-17 November 2010**



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SUMMARY REPORT

Members present:

Gordon McBean (Chair), Omar Darío Cardona, Raymond Chan, Susan L. Cutter, Richard Eiser, David Johnston, Allan Lavell, Maria Patek, Kuniyoshi Takeuchi, Coleen Vogel, Angelika Wirtz.

Apologies: Ortwin Renn and Hormoz Modaressi

Ex officio:

Huadong Guo (CEODE), Heide Hackmann (ISSC), Andrew Maskrey (UNISDR), Howard Moore (ICSU), Jane Rovins (Executive Director, IRDR)

Other participants:

Ian Burton (University of Toronto), Deliang Chen (Executive Director, ICSU), Mohd Nordin Hasan (Director, ICSU Regional Office for Asia and the Pacific), Lang Lang (Administrative Officer, IRDR IPO), Dong Liang (Project Assistant, CEODE)

Opening and introduction of participants and guests

The Chair opened the meeting by welcoming all participants (see above).

Approval of Draft Agenda

The draft agenda was approved.

New IRDR Scientific Committee members

Two new Science Committee members have been approved by the Sponsors, to replace outgoing members Michel Lang and Steven Sparks. They are (CVs attached):

- Dr. Djillali BENOUAR, Algeria (Attachment 1)
- Dr. Chamhuri SIWAR, Malaysia (Attachment 2)

Rovins will send formal letters to both informing them of their appointment and outlining their roles and responsibilities.

In addition, there was a general discussion about the desired shape of the SC in anticipation of forthcoming vacancies as members come to the end of their terms of office. It was agreed that it was important to ensure that new members were able to make a full commitment to the business of the SC and attend meetings as long as possible.

McBean will send letters to Lang and Sparks thanking them for their service to the Scientific Committee (SC).

SC members are to submit names and CVs of new members by February.

Summary Report of the Third Meeting

The Summary Report of the Third Meeting of the IRDR SC was approved.

Status of the IRDR Constitution

The constitution presented in draft form at the 3rd meeting in April 2010 was approved with minor revisions. It was signed by the sponsors of IRDR – ICSU, ISSC, and ISDR (Attachment 3). It had received minor revisions since.

Co-Sponsor Updates

1. ICSU

Chen gave a presentation on ‘_ICSU-ISSC Visioning Process and Institutional Challenges’, which will both encourage scientific innovation and address policy needs (Attachment 4).

ICSU was commissioned to conduct analysis of international research capability to respond to the Belmont Challenge. The final Belmont report was approved by the ICSU EB in July and submitted to the BF in August. Deliang Chen presented on the Belmont Challenge (Attachment 5).

The full report is available at: [http://www.irdrinternational.org/reports/Belmont Report.pdf](http://www.irdrinternational.org/reports/Belmont%20Report.pdf)

Moore briefed on the meeting between ICSU, the IRDR Executive Director, and the new Assistant Director-General for Science at UNESCO, Mrs. Gretchen Kalonji. UNESCO is still keen to become a sponsor of IRDR, however, it is the feeling of the ICSU Executive Board that they must provide some regular funding in order to do so.

COST research activity

A COST (European Commission's Cooperation in Science and Technology program) Action proposal involving ICSU has been developed within the context of the GEO Hazards Community of Practice (GHCP) and has been submitted. ICSU's input will be channeled through IRDR. A copy of the final draft of the COST Action proposal was provided within the study domain of Earth System Science and Environmental Management (Attachment 6).

2. ISSC

Hackmann responded to the Visioning presentation by pointing out three areas of integration:

- Integration across scientific fields: integration of natural and social sciences
- Bringing in co-production of knowledge

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- Bringing together multiple social, geographic, and cultural perspectives

Hackmann also suggested a short advisory study. It is a one-year study looking at how the three areas interact. There will be a conference on this issue in 2011 in Germany.

Hackmann presented the ISSC World Social Science Report and the process used for its development and release.

The ISSC General Assembly will be December 10-14, 2010 in Nagoya, Japan. Both McBean and Rovins will attend to represent IRDR and McBean will be a speaker at the associated ISSC-CIPSH scientific assembly. ISSC will be electing a new executive committee.

Starting in 2011, Gudmund Hernes (Norway), outgoing President, will be the new ISSC ex-officio member.

3. UNISDR

Maskrey briefed on the changes within UNISDR. UNISDR has requested that IRDR take a more active role in the Global Platform in an attempt to better link science to the policy process. They are examining how to use the Science and Technical Committee (S&TC), including how to provide a better linkage between science and practitioner communities. They want to use the Global Platform to help mainstream science and are looking to IRDR to serve as the link.

Global Platform on Risk Reduction

- Global Platform Third Session, 8-13 May 2011, Geneva Switzerland. IRDR will be represented at the platform by members of the SC as well as the IPO. IRDR requested a more timely position in the agenda (earlier in the week) in order to maximize exposure and access to participants
- IRDR will be the body which helps UNISDR to convene and coordinate the Science Forum at the 4th session of the platform in 2013

GAR 2013

- The question of how IRDR can engage with UNISDR on the 2013 report was discussed. This discussion will be continued at the scoping meeting. The SC members noted their desire to be fully involved and the potential for using the GAR2013 as an integral part of the scientific research program.
- UNISDR will convene the scoping meeting jointly with IRDR in 2011, probably in the 2nd or 3rd quarter after the Global Platform. ISDR has funding for this.

International Programme Office update

Rovins described the current situation of the IPO. The IPO just moved its office to the new CEODE Headquarters building and the internet was not available until two weeks after the move. The IPO has two offices in the building; one is for the Executive Director and the other for the IPO staff.

It has taken the IPO several months to gain access to the finance system in CEODE. However, this problem has now been resolved. The budget of the IRDR IPO is 2.7 million RMB a year. Roughly 800,000 RMB will be rolled-over to 2011 and primarily spent to fund the IRDR conference in 2011.

Several meetings have been conducted with funding agencies including the National Science Foundation (USA), the European Science Foundation and the Joint Research Centre of the European Commission. The feedback was positive and the process of developing ways to move forward is underway.

Cutter expressed concern that the Exec Dir has been away from the office too much and therefore the IPO function has been neglected, but did not offer specific examples.

Questions were raised as to when the IRDR website would be finished and running. It was announced that a meeting between the IPO and web contractors was to be held immediately following the SC meeting. The importance of having even a temporary website on line was underlined.

IRDR IPO staffing:

- Administrative Officer, Lang, has been hired as a full-time staff member.
- There is still a vacancy for the IRDR Science Officer. It has been difficult to find qualified candidates. During the ISSC assembly both McBean and Rovins discussed this with the representatives of CASS (Chinese Academy of Social Sciences) and they will assist in finding suitable candidates. As a follow-up to the meeting with NOAA in May 2010, the Agency has been approached about a possible secondment to the IRDR IPO to serve as a Science Officer. In the meantime, IPO continues to look for a qualified Chinese national to fill the position.
- The engagement of a Communication person for three months to handle the website development, posters, brochures, etc. was discussed. The person should be skilled in web layout and be able to work with the local web design company. The website could be fully functional in 5 weeks after signing a contract. IRDR IPO will have full control of the website.

1. IRDR Work plan (Attachment 7)

Rovins provided an outline of the work plan of the IRDR IPO, which shows the key events. McBean suggested that a number of important international events should be added to the work plan. It was agreed and the SC is requested to send the events to the IPO for inclusion.

It was clarified that the IPO's funding, provided by CAST, is strictly for funding the office and associated costs. The only travel that can be paid is the IPO's travel and one SC meeting in China per year.

2. IRDR Calendar

The SC members were requested to provide the IPO with the dates and information on relevant events or events where assistance from the IPO is requested. The SC was also reminded of the conference summaries that have been previously requested.

The response to a question about access to the calendar was that it is currently not available due to technical difficulties, including not even being able to be shared between people in the IPO. However, it is hoped that once the website is complete there will be several options available.

IRDR National Committees Update

- IRDR Japan continues to operate
- IRDR China launched in October 2010
- Association Française pour la Prévention des Catastrophes Naturelles (AFPCN) has joined as IRDR France
- IRDR Canada is finalized
- Two are in the works: IRDR Germany (DKKV) and IRDR New Zealand.

Moore cautioned that those proposing potential IRDR National Committees should liaise with existing national committees serving other international programs (WCRP, IHDP, and IGCP) and ICSU National Members to avoid overlaps and unnecessary confusion at the national level.

It was noted that the National Committee take-up for other organizations is not working in Africa and there is limited success in Latin America. It is suggested that a regional option be included.

Terms of Reference (Attachment 8)

SC members are requested to submit to the IPO their proposed changes to the ToR by the end of December. It was suggested that the ToR could foresee not only national but also sub-regional committees.

IRDR SC new members and chair process

The processes for nominating and approving new members and the chair were described. The nominations for membership first go to the IPO which will maintain a file. These will be vetted internally by the SC and a recommended and prioritized list of nominees will be provided to the co-sponsors. The nominations are then examined and decided upon by the co-sponsors. In practical terms, once a short list is created it is sent to ICSU to be examined by the CSPR. Its recommendations then go forward to the Executive Board of ICSU, and thereafter to the ISSC Executive Committee, and UNISDR for consideration and then final approval.

The mandate of Dr. Gordon McBean as Chair has been extended by the co-sponsors to 31 October 2011. He will then present IRDR to the forthcoming ICSU General Assembly. Nominations for his successor can be made from within or outside the SC. In line with the IRDR Constitution, at least three names are required. These, plus up to six to eight names for other open member seats must be submitted to the IPO no later than February 2011 as the ICSU CSPR meets at the end of March 2011. Names should be those of outstanding scientists in a range of disciplines with the ability to interact both inside and outside their respective countries. It was explained that Eiser's term of office finishes in April 2011 and is non-renewable; and that while McBean's mandate ends in October 2011, his replacement should be identified in April to ensure a transition; and there may be up to two other vacancies.

Update on collaboration discussions

1. ICSU Regional Offices

Dr. Mohd Nordin Hasan gave an introduction to the ICSU Regional Office for Asia and the Pacific (ROAP) and its priority program on hazards and disasters. The ICSU-ROAP presentation is attached (Attachment 9).

2. Signed Partnership letters/MOUs

- WCRP
- Work with the National Research Institute of Electronics and Cryptology in Turkey (TUBITAK UEKAE) on a FP7 – 4.21 Security Call Post crisis lessons learned exercise.

3. Pending partnerships letters/MOU

- Joint Research Centre of the European Commission—doing research together on RIA and FORIN – under review by the IPO.
- As agreed at the earlier meetings, START and IRDR will partner in the area of capacity building and regional networks. A formal agreement needs to be pursued.
- IRDR was approached by both the Integrated Risk Governance Project (IRG-P) and the Land-Oceans Interactions in the Coastal Zone (LOICZ) Project for MOUs. However, since IRG and LOICZ are

projects under the International Human Dimensions Program, it was agreed that an arrangement should be made with IHDP itself. IHDP has been approached.

- WWRP – under consideration by WMO. It was noted that Wirtz sits on the WWRP/SERA (socio-economic research activities) committee.
- CODATA (Attachment 10)
- Confederation of Academies of Engineering and Technological Societies (CAETS). Professor M. Manton is the contact and he has contacted McBean.

4. Others partnerships needed

The potential partners would be partners in research. Creating relationships with all the organizations doing disaster research is suggested. The IPO asked the SC for recommendations of organizations with which it should sign MOUs.

It was agreed that agreements with other programs needed to be substantive. This would include ongoing consultation on priorities and actual projects, review of and comments on project plans and conduct (ongoing activities), invitations to attend relevant meetings and workshops, agreement on the involvement of scientists from the corresponding communities to participate in projects and meetings and agreement to consult and work together on funding opportunities.

Consultative Forum

It was agreed upon that the following would be used as opportunities to hold consultative forums:

- ISSC General Assembly, Nagoya, Japan Dec. 2010
- UNISDR Global Platform, Geneva, Switzerland May 2011
- Pacific Science Congress, Kuala Lumpur, Malaysia, June 2011
- IUGG General Assembly, Melbourne, 28 June-7 July, 2011
- ICSU General Assembly, Rome, Italy, Sept. 2011
- IRDR Conference, Beijing, China Oct/Nov 2011

IRDR Centre of Excellence

1. Terms of Reference

The general Terms of Reference were presented and accepted with the addition of an annual report requirement to the IPO. Each Centre will have a national and international component. The 'ToR ICoE' document is attached (Attachment 11).

2. Taipei ICoE

McBean and Chen will be traveling to Taipei to sign the agreement on the formation of the ICoE at the Academy of Sciences located in Taipei. The Centre will have an international component as well as a national component. There will be an International Advisory Board which includes SC members McBean and Takeuchi. McBean will chair. The initial Director will be Prof. Chao Han Liu, Vice-President of the Academy and former President of the National Central University (Taiwan).

3. Selection process

The SC was asked to consider how locations of Centres will be chosen in the future. It was agreed that each centre must have a program on integrated research consistent with the IRDR objectives, recognizing that there would be appropriate regional and disciplinary foci. Funding for a national as well as international component was needed. Since there are many centres of DRR excellence around the world already, any designated IRDR centres would have to demonstrate their net contribution towards IRDR's objectives and legacy.

IRDR Conference

1. Updated information

- Time: the last week of October 2011 or first week of November 2011
- Duration: three days
- Scale: 300-500 people
- The IRDR IPO has applied for partial funding from CAS and is awaiting the result (beginning of 2011).
- The IPO requested financial support from CAST and their reply was positive. However, no specifics have been given.
- Registration fee will be required.
- The IPO would also contribute significant funds to the conference.
- It is a large conference and there is a limited IPO staff; the IPO plans to hire a conference planner with the help of CAST, and would like to bring in both Chinese and foreign interns.
- Chen suggested the use students as volunteers.

2. SC-Conference Sub-Committee

The IPO proposed the formation of a sub-committee to develop the technical component of the conference and serve as the point of contact for the conference. It will be responsible for managing the technical contents for the conference. It was agreed that the members would be: Chan, Johnston, Lavell, and Wirtz. The Sub-committee met informally and presented a general structure of breakouts and keynotes. The theme of “Disaster Risk: Integrating Science and Practice” was decided upon.

Working Groups

1. Risk Interpretation and Action (RIA presentation is attached-Attachment 12)

Eiser (Lead) provided a summary of RIA and what was happening to date. The Risk Interpretation and Action working group will present a project science plan and action process at the October 2011 meeting. There are going to be two meetings – one in early March 2011 in New Zealand and another immediately following the April SC meeting in Paris. Rovins stated that there is roughly 15,000 USD to be used to fund these RIA meetings; other funds will be sought as needed.

2. Disaster Loss Data (Attachment 13)

Cutter and Wirtz (Lead) made a presentation on Disaster Loss Data and stated it will establish an overall framework and nodes and networks for databases. The quality and quantity of data on the impacts of hazards has been identified as a major issue both for research programs like IRDR and for gaining societal responses of the type needed to achieve the IRDR legacy. McBean indicated that the Disaster Loss Data Project is to address both the research objectives (how to develop and use high-quality data sets) and the broader societal as well IRDR research needs for high-quality data. A list of the disaster databases was provided.

3. Forensic Investigations (Attachment 14)

Burton (Lead) provided the SC with a summary of what has happened to date, including a wrap up of the recent FORIN workshop held in Geneva. It was stressed by the Sponsors that the FORIN working group needed to produce a project that could be marketed or it would be difficult to find funding for future FORIN meetings.

The Forensic Investigations working group will:

- Identify a set of questions and complete development of a template in April 2011
- Identify up to 8 pilot studies for proof of concept and testing of the template
- Complete pilot studies and synthesize into a report in 2012

4. Disaster Assessment (Attachment 15)

Cutter presented a project proposal to the SC to develop an integrated research assessment report similar to the “Disasters by Design” concept and similar in style to the IPCC. Cutter will develop a prospectus that, once approved by the SC, can be shopped to funding agencies. This is a two-year project, estimated at 3-4 million USD.

Sponsor Funding

1. ICSU 2011 grant application

Funding: max 30,000 EUR

One possibility is to hold a specific science conference or host one or two workshops. The IPO will work with the ICSU ROAP to develop the application. It was decided that a one-day symposium would be submitted as part of the Pacific Science Congress in Malaysia.

Other funding opportunities

SC members were encouraged to be proactive regarding alternate funding opportunities to fund the various working groups and projects.

Extreme Natural Hazards and Societal Implications (ENHANS) project update

Vogel and Rovins provided a summary of ENHANS South Africa to date. Vogel, Wirtz, and Rovins will be in attendance and speaking. IRDR is a co-sponsor of the ENHANS project.

Coastal Cities at Risk project update

This is a Canadian proposal to Canadian funding councils. The full proposal for a program of research on Bangkok, Manila, and Lagos with funding of 500,000 CAD per year for five years has been submitted. The decision will be announced in January 2011

Promotion of IRDR and its objectives

Drawing on their experience with other established international programs, Hackmann and Chen described a variety of possible types of international program activities for IRDR (Attachment 16). These included agenda-setting, prioritization, and promoting networks. Others included:

- International collaborative research projects – requiring a la carte funding from national research councils
- International community building and networks – such as ENHANS, appointing IRDR fellows/champions, scoping exercises
- Data and information systems – creation of new systems
- Events – workshops, conferences, symposia, seminars
- Pathway to Policy – creating demand for IRDR knowledge
- Training and capacity building
- Association initiatives – Centres of Excellence, events
- Others – research services, events calendars, funding opportunities
- Campaigns

Each activity should have a (time-bound) objective, an outcome (impact/achievement), and outputs (products).

McBean shared a summary PowerPoint about IRDR (Attachment 17). It will be revised with new information and distributed for general use.

Date and venue of next meeting

It was agreed by the SC that the 5th meeting would be held 27- 29 April 2011 at ICSU in Paris. The 6th meeting will be in Beijing immediately prior to the IRDR Conference. The SC has requested that additional locations be considered for future meetings.

A list of Action Items is included.

Chair's Action Items

No.	Item	Principal (s)	Deadline	Result
1.	Letters welcoming new SC members	Rovins	December 2010	Done
2.	Letters thanking outgoing members	Mc Bean	December 2010	
3.	Recruitment of Science Officer	IRDR IPO	Ongoing	
4.	Recruitment of Communication Officer	IRDR IPO	November 2010	Hired but need replacement March 2011
5.	Update of IRDR work plan	IPO	Ongoing	
6.	IRDR Conference in Oct/Nov 2011 <ul style="list-style-type: none"> · Setting up the Sub-Committee · Technical content (key themes) · Call for full paper · Key speakers · Conference 	<ul style="list-style-type: none"> · SC · Conf. Sub-Committee · IRDR IPO · Conf. Sub-Committee · SC & IPO 	<ul style="list-style-type: none"> · Nov. 2011 · January 2011 · January 2011 · January 2011 · Oct 31- Nov. 2, 2011 	<ul style="list-style-type: none"> · Chan, Johnston, Lavell, Wirtz
7.	IRDR website	IRDR IPO	December 2010	posted
8.	IRDR Germany (DKKV)	IRDR IPO	November 2010	Done
9.	IRDR New Zealand	Johnston & IRDR IPO		
10.	IRDR National Committee ToR <ul style="list-style-type: none"> · Comments to IPO 	SC	December 15, 2010	Done
11.	Nomination of the four seats in SC	SC & IPO	NLT February 2011	
12.	Development of process for selecting ICoE	SC & IPO		
13.	Names for IRDR Chair	SC & IPO	NLT February 2011	
14.	RIA <ul style="list-style-type: none"> · Meeting #1 · Meeting #2 	Eiser	<ul style="list-style-type: none"> · March 2011 (New Zealand) · April 2011 (Paris) 	
15.	FORIN <ul style="list-style-type: none"> · Identify a set of questions and complete development of template · Pilot studies and testing of template; · Complete pilot studies. 	Burton	<ul style="list-style-type: none"> · April 2011 · June 2011 · 2012 	
16.	Data <ul style="list-style-type: none"> · Data to be provided in accordance 	Wirtz		

	with the list of disasters			
17.	Disaster Assessment · Prospectus · Funding	· Cutter · SC, Co-Sponsors, IPO	January 2011	
18.	MOU · IHDP · JRC · WWRP	IRDR IPO	Pending	
19.	ICSU 2010 grant application	IRDR IPO & ICSU ROAP	December 1, 2010	Done
20.	Fifth Meeting of SC	SC	April 27-29, 2011 (Paris)	

ATTACHMENT 1

Djillali BENOUAR C.V.

Dr. BENOUAR Djillali, Eng., B.Sc., M.Sc., Ph.D., DIC
Professor
Director, Built Environment Res. Lab. (USTHB)
Consultant to UNESCO, ALECSO, UN/ISDR, UNDP, IIEED and World Bank
Expert in EDUCATION AND TRAINING / CULTURE AND INFORMATION to the
European Commission – EuropeAid., 7PCRD-European Commission
Associate Member of the Third World Academy of Science (TWAS)
Senior Associate to the International Centre for Theoretical Physics
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Married + 4 children



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CURRICULUM VITAE

1. EDUCATION AND QUALIFICATIONS

- 07/98-08/98 -Disaster Management Course (Cranfield University, **UK**)
06/95-08/95 - **Postdoc studies**, Institute of Industrial Science (University of Tokyo) **Japan**.
10/90-09/93 - Imperial College (University of London, **UK**)
DIC: Diploma of Imperial College
Ph.D. degree in Engineering Seismology: **The Seismicity of Algeria and Adjacent Regions, during the Twentieth Century**
08/80-12/80 - Iowa State University (**USA**) Worked on a research project:
Lightening effects on different types of structures.
09/78-06/80 -Stanford University (**USA**) **Master of Science degree in Civil Engineering**
(Earthquake Engineering) and Post-Master courses.
09/77-06/78 - English language courses at the University of Texas at Austin
and Stanford University (**USA**).
09/72-06/77 - National Polytechnic School (University of Algiers, **Algeria**), 5-year program with thesis,
Civil Engineer Diploma (Bachelor of Science).

2.TEACHING EXPERIENCE

- 10/02-Today - **Professor** at the Faculty of Civil Engineering (University of Bab Ezzouar, **USTHB**),
lecturing Engineering Seismology, Dynamics of Structures, Earthquake Engineering and
Disaster management courses.
01/90-10/02 - **Associate-Professor** at the Civil Engineering Institute (University of Algiers, **USTHB**),
Polytechnic School of Architecture and Urban Planning (**EPAU**), lecturing Engineering
Seismology, Dynamics of Structures and Earthquake Engineering courses.
01/83-06/90 - **Assistant-Professor** at the Civil Engineering Institute (University of Algiers, **USTHB**)
lecturing courses on structural Dynamics and Earthquake Engineering.
01/81-12/82 -Army corps of Engineers (**Algeria**) Lecturing Civil Engineering courses.

3.INTERNATIONAL LECTURES

Invited as keynote lecturer by UNESCO at the “colloque international intitulé: Avancées et propositions en matière d'éducation pour le développement durable" held in Paris (UNESCO), **Paris (France)**, 14 - 16 June 2006

Invited **lecturer** at the 2003 South Africa training course for Africans on seismic hazard and risk management organised by GeoForschungsZentrum Potsdam (Germany), Council for Geological Sciences (South Africa) and UNESCO, **Pretoria (South Africa)**, September 7th - October 11th, 2003.

Invited as a **Resource Person and Moderator** for the Training Course on Seismic Risk Reduction: Learning to Design Seismic Codes, organized by UNESCO Cairo Office, **Cairo (Egypt)**, 10-13 August 2002

Invited **lecturer** at the International School of Geophysics - 21st Course Workshop "Investigating the records of past earthquakes" organized by the Istituto Nazionale di Geofisica e Vulcanologia (INGV), EMSC, **Erice (Italy)** 1-7 July 2002.

Invited **lecturer** at the Euro-Med Project Training Course on Disaster Reduction, Emergency Services College, **Kuopio (Finland)**, 28 May - 03 June 2001.

Invited **lecturer** at the 1997 Kenya training course for Africa on seismic hazard and risk management organised by GeoForschungsZentrum Potsdam (Germany) and UNESCO, **Nairobi (Kenya)**, October 5th - November 8th, 1997.

Invited **lecturer** at the **5th** and the **6th** Intensive European Courses on Local Seismic Cultures, European University Centre for Cultural Heritage, **Ravello (Italy)**, October 1995 and 1996.

4.INDUSTRY EXPERIENCE

10/99-10/01 -Technical Director and Assistant to CEO, SOREPAL (National Construction company), 200 employees.

03/97-08/98 -Director of Research and Development, SCOAL (National Construction Company) with 800 employees.

04/96-02/97 -Technical Director, ECTA (National Construction Company, Algeria) with 4000 employees

02/83-10/88 -ECOBAL (National Construction Company, Algeria) with 1500 employees, Technical director, principal engineer and then Deputy General-Director.

01/81-12/82 - Responsible for all Civil Engineering projects (Design and Construction) in the zone (Algerian army corps of engineers).

5. RESEARCH EXPERIENCE

05/00-Today - Director of the Built Environment Research Laboratory “**LBE**” at the University of Bab Ezzouar (USTHB), Faculty of Civil Engineering.

07/83-10/99 - Research Fellow at the Research Centre in Astronomy, Astrophysics and Geophysics (CRAAG, **Algeria**)

05/89-09/89 - Visiting Scholar at Tohoku University (**Japan**) under the supervision of Professor Eiji Yanagisawa.

10/90-12/93 - Research at Imperial College (University of London, **UK**) under the supervision of Professor N.N. Ambraseys.

01/94-Today - Research work in the field of engineering seismology at the Faculty of Civil Engineering of the University of Bab Ezzouar (**USTHB**).

- 06/95-08/95 -Visiting Research Fellow (Post-Doc) at the Institute of Industrial Science (University of Tokyo; **Japan**) with the collaboration of Professors Fumio Yamazaki and Tsuneo Katayama.
- 09/96-10/97 -Grant from MAPFRE Foundation (**Spain**) and DHA (Geneva, **Switzerland**) in Natural Disasters Reduction: Seismic Hazard Mapping in the Maghreb Countries
- 06/95-08/95 -Visiting Research Fellow at Marmara Research Centre, **Turkey**, (TUBITAK) with the collaboration of Professor Yalçin
- 01/96-12/98 - Associate-Member of the Third World Academy of Science (TWAS), (Three years), International Center for Theoretical Physics (ICTP), Trieste (**Italy**)
- 06/97-11/99 - Member of the Task Group 2 (TG2) of the EAEE on Interpretation of strong ground motion on engineering applications under the supervision of Professor N.N. Ambraseys (Imperial College; **UK**).
- 09/2000 - Member of the Directorate of the 1st World Congress on Disaster Reduction, Washington, **USA**, 18-22 August, 2002.
- 01/01-12/06 - Leader of a **UNESCO-IUGS-IGCP Project 457** on Seismic Hazard Assessment in North African Countries (**Algeria, Egypt, Libya, Morocco, Tunisia**) with the participation of scientists of each concerned country.

6. AWARDS

2005 UNESCO-GADR-AWARD recognition for distinguished professional leadership and personal commitment to ongoing programs on disaster reduction, presented at **Charlotte, North Carolina, USA**, on July 27th, 2005.

7. FELLOWSHIPS

- 98 - Chevening Scholarship from the Foreign and Commonwealth Office (FCO) to attend the Disaster Management Course at Cranfield University (**UK**)
- 96-97 -Research Grant from MAPFRE Foundation (Natural Disaster Reduction) and Department of Humanitarian Affairs (DHA), Geneva (**Switzerland**).
- 95 - Foundation for the Promotion of Industrial Science (Institute of Industrial Science, University of Tokyo, **Japan**), (3 Months)
- 90-93 - Arab-British Chamber Scholarship (**England**) and Overseas Research Scheme, (**England**), Ph.D. degree.
- 89 - Research Fellowship Matsumae International Foundation (**Japan**), (5 months)
- 88 - Grant UNESCO-UNDRP-UNDP-USSR (**USSR**) Seminar (2 weeks)
- 87 - Grant UNESCO-IPG (**France**) Seminar (2 weeks)
- 86 - Grant UNESCO-ZIPE (**Germany**) Seminar (1 month)
- 77 – 80 - Algerian Government Scholarship in the **USA**

8. EDUCATION RELATED TO DISASTER MANAGEMENT

- 05/01 - Euro-Med Project Training Course on Disaster Management, Emergency Services College, **Kuopio (Finland)**, 28 May - 03 June 2001.
- 98 - Disaster Management Course (**Cranfield University, UK**)
- 88 - Federal Emergency Management Agency (**FEMA - USA**) (Home Study Program)
- 12/88: - Preparation Planning for a Nuclear Crisis, **USA** (Certificate)
- 08/88: - Emergency Management, **USA** (Certificate)
- 03/88: - Emergency Program Manager, **USA** (Certificate)
- 80-82: - Military courses and practical training on prevention and response to emergency situations.

9. MEETINGS RELATED TO SEISMIC HAZARD AND DISASTER RISK REDUCTION

- 2009: International Disaster and Risk Conference (IDRC), held in **Chengdu (China)**, 11-15 July 2009.
- 2009: UN-ISDR Global Platform for Disaster Risk Reduction, Second Session, **Geneva (Switzerland)**, 16-19 June 2009.
- 2009: Workshop Overview for Structural and Non-Structural Safety of Health Facilities in Emergencies WHO Mediterranean Center, **Hammamet (Tunisia)**, 17-19 February 2009
- 2009: Thematic Workshop on “Environment, including Climate Change and Risks” for the identification of research topics of mutual interest, to be considered under FP7 forthcoming work programs organized by the European Commission in the framework of MIRA project, **Cairo (Egypt)**, 26-27 January 2009
- 2009: International Association of Seismology and Physics of the Earth Interior (IASPEI) General Assembly held in **Cape Town (South Africa)**, 10-16 January, 2009
- 2009: 3rd Annual Workshop on Disaster Risk Hyperbase (DRH), organized by the EDM-NIED, **Tokyo (Japan)**, 8-9 January, 2009
- 2008: The Great Southern California Shakeout, organized by USGS, **Los Angeles (USA)**, 12-15 November 2008
2008. 4th World Urban Forum (4WUF) organized by UN-Habitat, **Nanjing (China)**, 3-6 November 2008.
- 2008: 14th World Conference on Earthquake Engineering (14WCEE), organized by the International Association of Earthquake Engineering (IAEE) and China earthquake Administration, **Beijing (China)**, 12-17 October 2008.
2008. International Disaster and Risk Conference (IDRC) *on* “**Public-private partnership – key for integral risk management and climate change adaptation.**”, **Davos (Switzerland)**, 25-29 August, 2008.
- 2008: Regional Inter-Agency Workshop on Disaster Risk Assessment, organized by UN/ISDR/WANA and the Arab Academy for Science and Technology, **Cairo (Egypt)**, 11-12 March 2008
- 2008: Second Annual Workshop on Disaster Reduction Hyperbase - Asian Application. Organized by Beijing Normal University and DRH – Asia Project, Beijing Normal University, **Beijing (China)**, 21-23 February 2008
- 2007: Workshop on Seismicity and Earthquake Engineering in the Extended Mediterranean Region, RELEMR, organized by UNESCO, USGS and the Council of Europe, hosted by the Spanish National Research Council (CSIC) at the “Museo Nacional de Ciencias Naturales” **Madrid (Spain)** 26-29 November 2007
- 2007: Euro-Mediterranean workshop “Disaster Reduction at School - Building safer school communities”, organized by the Council of Europe, **Paphos (Cyprus)**, 29 - 30 October 2007.
- 2007: Potential For Very Large Earthquake Disasters In The European-Mediterranean Region Workshop, organized by the Working Group 6, Sub-Commission-F of the European Seismological Commission (ESC), **Marrakech (Morocco)**, 22-23 October 2007.

- 2007: International Disaster Reduction Conference (IDRC), organized by China Association for Science & Technology CAST and others, **Harbin (China)**, 21-25 August 2007
- 2007: Expert Group Meeting on Environmental Ethics, organized by ALECSO, ISESCO and UNESCO, **Tripoli, (Libya)**, 19-21 June 2007
- 2007: Global Platform for Disaster Risk Reduction, First Session, organized by UN/ISDR, **Geneva (Switzerland)**, 5-7 June 2007
- 2007: Fifth International Conference on earthquake Engineering and Seismology (SEE5), organized by the IIEES, **Tehran (Iran)**, 14-16 May 2007
- 2007: First Africa Platform for Disaster Risk Reduction Consultative Meeting, organized by the UN/ISDR and the World Bank, **Nairobi (Kenya)**, 26-27 April 2007
- 2007: Middle East and North Africa Regional Workshop on: “Building Partnerships for Disaster Risk Reduction and Natural Hazard Risk Management” **Cairo (Egypt)**, 18-21 April 2007
- 2007: Fourth Gulf Seismic Forum, organized by the Kuwait Institute for Scientific Research (KISR), **Kuwait City (Kuwait)**, 24-27 March 2007
- 2007: International Disaster Risk Hyperbase (DRH) Contents Meeting, 12-13 March 2007, and the 1st Annual DRH Workshop, **Kobe (Japan)**, 14-15 March 2007.
- 2007: ProVention Consortium Forum, organized by ProVention and the World Bank, **Dar es Salaam (Tanzania)**, 13-15 February 2007
- 2007: International Conference on School Safety, organized by GSDMA and Seeds India, **Ahmedabad (India)**, 18-20 January, 2007
- 2006: Global Partnership with Universities, Academic Institutions, Research Organizations under GFDRR/ISDR, organized by the World Bank and ISDR, **Geneva (Switzerland)**, 13 December 2006
- 2006: Building the future in the euro-Mediterranean area workshop on the Use of the Eurocodes in the Mediterranean Countries, **Varese (Italy)**, 27 – 29 November 2006
- 2006: Réunion du comité des correspondants permanents et 11ème session ministérielle de l'accord européen et méditerranéen sur les risques majeurs (EUR-OPA), **Marrakech (Maroc)**, 30-31 Octobre 2006
- 2006: PHREE way (Partnership for Humanitarian and Risk Education Expansion) Consultative Meeting, **Cape Town (South Africa)**, 20 -21 September 2006.
- 2006: First European Conference on Earthquake Engineering and Seismology (ECEES), A joint event of the 13th European Association on Earthquake Engineering (EAEE) and the 30th General Assembly of the European Seismological Commission (ESC), **Geneva (Switzerland)**, 03 – 08 September 2006.
- 2006: International Disaster Reduction Conference (IDRC Davos 2006), A joint conference organized by GADR (Global Alliance for Disaster Reduction), GDIN (Global Disaster Information Network) and DRM World Institute for Disaster Risk Management, **Davos (Switzerland)**, 27 August – 1 September, 2006

- 2006: Sixth DPRI-IIASA Forum on Integrated Disaster Risk Management, co-organized by the Disaster Management Coordination Center (AKOM) of the Istanbul Metropolitan Municipality (IBB), the World Bank Institute (WBI), the Disaster Prevention Research Institute (DPRI) of the Kyoto University, and the International Institute for Applied Systems Analysis (IIASA), **Istanbul (Turkey)**, 13-17 August 2006
- 2006: XVI ISA World Congress of Sociology, Session Disaster Sociology, Organized by the International Sociological Association (ISA), **Durban (South Africa)**, 23-29 July 2006.
- 2006: ProVention Consortium Applied Grants Workshop: Africa Region, **Johannesburg (South Africa)**, 10 July, 2006
- 2006: Colloque international intitulé: « Avancées et propositions en matière d'éducation pour le développement durable » organized by the Comité français de la Décennie des Nations Unies de l'Éducation pour le Développement durable and UNESCO, Paris (UNESCO), **Paris (France)**, 14 - 16 June 2006
- 2006: Workshop on The Conduct of Seismic Hazard Analyses for Critical Facilities, organized by ICTP, UNESCO and IAEA, **Trieste (ICTP) Italy**, 15 May - 19 May 2006
- 2006: Workshop on Seismicity and Earthquake Engineering in the Extended Mediterranean Region, organized by UNESCO, USGS and U. Malta, **St. Julian's (Malta)**, 27-27 April 2006
- 2006: Séminaire sur la Prévention des Risques Majeurs pour les Ouvrages d'Art et Infrastructures, organisé par ICHU et U. Boumerdes pour M.T.P, **Boumerdes (Algeria)**, 5-6 Avril 2006
- 2006: Third Early Warning Conference (EWC III), organized by the UN, **Bonn (Germany)**, 27-29 March 2006
- 2006: Meeting on Earthquake Risk Assessment, organized by UN/ISDR Africa, **Nairobi (Kenya)**, 21 – 22 March 2006
- 2006: Second Africa Advisory Group Meeting (AAG) organized by UN/ISDR Africa, **Nairobi (Kenya)**, 18 – 19 March 2006.
- 2006: Second consultative meeting on National Platforms for Disaster Risk Reduction in Africa, co-organized by UN/ISDR Africa and IFRC (Nairobi Regional Delegation) "Mainstreaming Disaster Risk Reduction into School Curricula", **Nairobi (Kenya)**, 16-17 March, 2006
- 2006: Workshop on Mainstreaming Disaster Risk Reduction in the Management of Urban Planning and Governance in Africa, organized by UNDP and ProVention Consortium, **Cape Town (South Africa)**, March 7 – 9, 2006
- 2006: Workshop on International Framework for Development of Disaster Reduction Technology List on Implementation Strategy, organized by MEXT-NIED , **Tsukuba (Japan)**, 27-28 February 2006
- 2006: Conference on “Rethinking Capacity Development for Disaster Risk Reduction: Action 2005-2015” organized by UNDP/BCPR, **Geneva (Switzerland)**, 13-15 February 2006
- 2006: Second Public Symposium on Post Disaster Recovery- Lessons on recovery learned from recent major disasters -TeLL-Net Kick-Off Assembly, **Kobe (Japan)**, 19-20 January, 2006
- 2005: African Union Ministerial Conference on Disaster Risk Reduction (DRR) in Africa, organized by the AU and UN/ISDR, **Addis Ababa (Ethiopia)**, 5-7 December 2005

- 2005: International Workshop on Risk Assessment and Disaster management, organized by ENIT and British Gas Tunisia, **Tunis (Tunisia)**, 28-29 November 2005
- 2005: International Association of Seismology and the Physics of Earth's Interior -IASPEI GENERAL ASSEMBLY 2005- **Santiago, (Chile)**, 2-8 October 2005
- 2005: Fifth Annual IIASA-DPRI Forum on Integrated Disaster Risk Management "Innovations in Science and Policy", Beijing Normal University, **Beijing, (China)**, 14-18 September 2005.
- 2005: Seismicity and Earthquake Engineering in the Extended Mediterranean Region organized by UNESCO, RELEMR and Laboratory of Geophysics & Seismology, Technological Educational Institute of Crete (GSL-TEIC) , **Chania, Crete (Greece)**, 11 – 17 September 2005
- 2005: International Framework for Development of Disaster Reduction Technology List on Implementation Strategies, following the UN World Conference on Disaster Reduction (Kobe, Japan, 2005), Core Member Meeting 1, Palais des Nations, **Geneva (Switzerland)**, 16-17 August 2005
- 2005: Expert meeting for the Development of the Strategy for Disaster Management in the Arab Countries, organized by ALECSO (Arab League of States), UNEP and UNESCO Cairo Office, **Tripoli (Libya)**, 5-6 June 2005.
- 2005: International Seminar on Recovery; In support to the development of the International Recovery Platform (IRP) organized by UNDP, UN/ISDR, UN/OCHA, World Bank, ILO, Cabinet Office of Japan, Hyogo Prefecture Government, JICA, ADRC. **Kobe (Japan)**, 11-13 May 2005
- 2005: 2nd Workshop on Earthquake Engineering for Nuclear Facilities, Uncertainties in Seismic Hazard Assessment, organized by IAEA, UNESCO and ICTP, **Trieste (Italy)**, 14-25 February 2005.
- 2005: Seismicity and Seismic Hazard Assessment in the Mediterranean Region, organized by UNESCO, RELEMR and University of Ankara (METU), **Ankara (Turkey)**, 26 – 29 January 2005
- 2005: World Conference on Disaster Reduction (WCDR), Organized by UN/ISDR, **Kobe (Japan)**, 18-22 January 2005
- 2004: Madrid Working-Meeting: Vulnerability Assessment / Reducing Urban Risk, organized by UN Habitat, US/ISDR, **Madrid (Spain)**, 7-9 September 2004
- 2004: Earthquakes and Related Geohazards in Africa: Expert Workshop in preparation for the World Conference on Disaster Reduction, **Nairobi (Kenya)**, 18-19 June 2004.
- 2004: African Regional Consultation on Disaster Reduction (DR): A Preparation for the World Conference on Disaster Reduction (WCDR), **Johannesburg (South Africa)**, 2–3 June 2004,
- 2004: Experts' Workshop to Review a Disaster Risk Reduction (DRR) Strategy for Africa **Johannesburg (South Africa)**, 31 May-1 June 2004
- 2004: Strategies for Disaster Avoidance in Urban Areas of Africa Workshop, **Lusaka (Zambia)**, 5 – 7 May 2004,
- 2004: UNESCO-RELEMR (Reducing Earthquake Losses in the Extended Mediterranean Region) Workshop on Site Effects and Building Response, **Aqaba (Jordan)**, 18-28 January 2004.

- 2004: Integrated disaster management of the Algiers 21 May 2003 earthquake, International Conference on Earthquake Hazard Preparedness, Rescue and Recovery, **Taipei (Taiwan)**, 5-9 January 2004
- 2003: EMI-MEDSAFE 03, Behavior of the population and Government during the 21st May Algiers Earthquake, International Workshop on Mediterranean Cities Exposed to Seismic Risk, **Naples (Italy)**, 19-20 December 2003
- 2003: **Algerian Recovery Experience from the 21st May 2003** Algiers Earthquake, Workshop on Earthquake Reconstruction Experience, **Gujarat (India)**, 28-30 September 2003.
- 2003: UNESCO-RELEMR workshop on Seismic Hazard Analysis and Data Exchange in the Mediterranean Region, **Nicosia (Cyprus)**, 10-13 September 2003.
- 2002 – A. Foufa – Abdessemed, D. Benouar, **Reducing the seismic risk to cultural heritage in the Maghreb countries**, Sustainable City Conference, **Segovia (Spain)**, 3 – 5 July 2002.
- D. Benouar, **Algiers (Algeria) Floods and Debris Flows of 10 November 2001**, 4^{ème} Symposium International de l'eau, Palais des Festivals de Cannes, **Nice (France)**, 3-7 Juin 2002.
- D. Benouar, **The need for an integrated disaster management strategy for cities of geo-techno-environmental risks in north Africa : A case study of Algiers (Algeria)**, the Integrated Disaster Risk Management 2002 : Megacity Vulnerability and Resilience, **Laxenburg (Austria)**, 29-31 Juillet 2002.
- 2002 -Seismic Analysis and Earthquake Hazard Assessment in the Mediterranean Region (**RELEMR**) organized by UNESCO and USGS, 11-14 December 2002, **Antakya (Turkey)**
- 2002 - International Workshop on Earthquakes and Megacities - 31 October, 1 – 2 November 2002, and EMI Cluster Cities Project Coordination Meeting – 3 Nov. 2002, **Shanghai, (China)**
- 2001-Pre-World Congress Workshop on Disaster Reduction, 18-22 August 2001, **Reston (USA)**,
- 2001-Workshop on Reduction of Earthquake Losses for Eastern Mediterranean Region (**RELEMR**) organised by UNESCO and USGS, **Barcelona (Spain)**, 11- 18 May 2001.
- 94-Workshop on the "**Evaluation of seismic risk of nuclear site facilities in the Mediterranean Sea**", **Tunis (Tunisia)**, 28-30 September 1994, Organized by the International Atomic Energy Agency (**IAEA**).
- 94 -European Research Conference on Earthquake Hazards, **Granada, Spain**, 14-19 May 1994. Poster: "**Seismic hazard evaluation in Algeria**"
- 89 - Japan national conference on earthquake engineering, **Tokyo (Japan)**
-International seminar on earthquake engineering and disaster management, **Tipaza (Algeria)**
- 88 -Training seminar on engineering aspects of earthquake risk mitigation, UNDRP-UNESCO-UNDP-USSR sponsored, **Dushanbe (Tadjikistan, USSR)**
- 88 -Training course on seismology, tectonics and seismic hazard assessment, UNESCO-ZIPE, **Potsdam (Germany)**
- International symposium on earthquake engineering, **Ech-Cheliff (Algeria)**
- 86 - Summer school on seismic hazard in Mediterranean region, UNESCO-IPG, Strasbourg (**France**)
- 85 - Seminar on earthquake engineering, Ech-Cheliff (**Algeria**)
- 83 - Seminars and workshops on microzonation of El-Asnam (**Algeria**)
- 79 - Second U.S. National conference on earthquake engineering, Stanford Univ. (**USA**)
- 78 - Workshop on earthquake prediction, Stanford University (**USA**)

10. PUBLICATIONS IN JOURNALS

1. **The Guelma (Algeria) earthquake of 10 February 1937**, European Earthquake Engineering Journal, Vol. VII, Number 3, pp; 24-32, 1993.
2. **Magnitude-Intensity and Intensity-Attenuation Relationships in the Atlas zone and Algerian Earthquakes**, Earthquake Engineering and Structural Dynamics Journal Volume 23, Number 7, pp. 717-727, 1994.
3. **The Bou Medfaa (Algeria) earthquake of 7 November 1959**, Soil Dynamics and Earthquake Engineering Journal, Volume 12, Number 8, pp 451-456, 1993.
4. **The Melouza (Algeria) earthquake of 21 February 1960**, Bollettino Di Geofisica Teorica Ed Applicata, Vol. XXXV, No. 140, 1993.
5. **The Mascara (Algeria) earthquake of 18 August 1994**, Terra Nova, Journal, Vol.6, pp.634-637, 1994.
6. **A reappraisal of the seismicity of the Maghreb region**, Natural Hazards Journal, Vol. 13, No.3, pp. 275-296, 1996.
7. **Seismic hazard evaluation at Alger using Benouar's Catalogue**, Natural Hazards Journal, Vol. 13, No.2, pp.119-131,1996.
8. **Earthquake hazard mapping in the Maghreb countries -Algeria, Morocco, Tunisia-** Earthquake Engineering & Structural Dynamics Journal, Vol. 25, Number 10, pp. 1151 - 1164, 1996.
9. **The Algiers (Algeria) earthquake of 4 September 1996**, European Earthquake Engineering Journal, Vol. XII, No.1, pp. 51-55, 1998
10. **A re-evaluation of the seismicity of Algeria and adjacent regions during the twentieth century: A methodology**, European Earthquake Engineering Journal, Vol.3, pp. 62- 74, 1999
11. **Influence of strong motion attenuation models on seismic hazard evaluation at the site of Algiers**, European Earthquake Engineering journal Vol. xiv, n.2, 2000
12. **Identification of the damping matrix coefficients of linear systems with proportional damping** European Earthquake Engineering journal, Vol.xiv, n°.3, pp.49-58, 2000
13. G. Panza et al., **Realistic modelling of seismic input for megacities and large urban areas**, the UNESCO-OUGS-IGCP project 414, Episodes, 2002
14. **Re-appraisal and seismotectonics in the north-eastern Algeria, Part I: Review of historical seismicity**, Journal of Seismology, 7, pp: 115-136, 2003
15. H. Harbi et al., **Seismicity and tectonic structures in the site of Algiers and its surroundings: A step towards macrozonation**. Pageoph (pure and applied geophysics), 161, pp. 949-967, 2004
16. Y. Ait Meziane et al., **Seismic vulnerability estimation of a representative building in Bab El Oued district (Algiers, Algeria)**, European Earthquake Engineering journal, Vol.xviii, n°.1, pp.27-36, 2004
17. **Materials for the investigation of historical seismicity in Algeria from the records of past earthquakes**, Annals of Geophysics (annali di geofisica), Vol. 47, No.2/3, 2004
18. A. Ayadi et al., **Strong Algerian Earthquake Strikes near Capital City**, EOS, pp. 561-568, 2004
19. M.N. Farsi , P.Y. Bard and D. Benouar, **Dynamic characteristics of common buildings under strong shaking: a statistical study through system identification from c.s.m.i.p. data**, European Journal of earthquake Engineering, Vol. 3, 2006
20. A. Harbi et al., **Seismicity, seismic input and site effects in the Sahel – Algiers region (North Algeria)**, Structural Dynamics and Earthquake Engineering journal (SDEE), Vol. 27, 427-447, 2007
21. A. Harbi et al., **Macroseismic Study of the Zemmouri Earthquake of 21 May 2003 (Mw 6.8, Algeria)**, Earthquake Spectra Journal, Volume 23, Issue 2, pp. 315-332, 2007
22. E.Djakab et al., **Damping matrix and Modal Parameters Identification of Dynamic Structure by Sub-Structuring Technique**, European Earthquake Engineering Journal, Vol.2, pp. 14- 31, 2007
23. A. Abdessemed-Foufa and D. Benouar, **Damage survey of the old nuclei of the Casbah of Dellys (Algeria) and performance of preventive traditional measures in the wake of the Boumerdes 2003 earthquake**. European Earthquake Engineering Journal, Vol.3, pp. 10- 14, 2007

24. Seismic Risk in School Buildings in Algeria, UNCRD Journal, RDD, Vol. 28, No.2, Autumn 2007.
- 25 A. Foufa and D. Benouar, **Investigation of the 1716 Algiers (Algeria) earthquake from historical sources: Effect, damage and vulnerability.** International Journal of Architectural Heritage, 4:3, 270-293
26. A. Meslem, F. Yamazaki, Y. Maruyama, D. Benouar, N. Laouami and N. Benkaci. "**Site-Response Characteristics Evaluated from Strong Motion Records of the 2003 Boumerdes, Algeria Earthquake**". *Earthquake Spectra*, 2010, Vol. 26 (3), 803-823.

11. COMMUNICATIONS IN CONFERENCES

- Ait-Meziane Yamina - Benouar Djillali - Guessoum Nabila, **Identification du taux de dommage sur les bâtiments suite au séisme de Zemmouri - Boumerdes (2003)**, 7eme Colloque National AFPS 2007 - Ecole Centrale, Paris (**France**), 4-6 July 2007
- D. Benouar, **Evaluation of Seismic Hazard in Algiers using different Attenuation Models**, Seminar, Living with risk: Seismic hazards, insurance and sustainability in the Mediterranean Region, Cairo (**Egypt**), 6-8 December 2003
- D. Benouar, **A methodology for the revision of the earthquake data in western Mediterranean countries**, 4th International Conference on Seismology and Earthquake Engineering, Tehran (**Iran**), May 12-14, 2003
- D. Benouar, **Invited Talk: UNESCO-IUGS-IGCP Project 457: Seismic Hazard Assessment in North African Countries**, 3rd International Workshop on Seismic Risk in North Africa, Mansoura (**Egypt**), May 20-22, 2003
- D. Benouar, **Algiers (Algeria) Floods and Debris Flows of 10 November 2001**, 4ème Symposium International de l'eau, Palais des Festivals de Cannes (**France**), 3-7 Juin 2002.
- A. Foufa – Abdessemed, D. Benouar, **Reducing the seismic risk to cultural heritage in the Maghreb countries**, Sustainable City Conference, Segovia (**Spain**), 3 – 5 July 2002.
- D. Benouar, **The need for an integrated disaster management strategy for cities of geo-techno-environmental risks in north Africa : A case study of Algiers (Algeria)**, the Integrated Disaster Risk Management 2002 Conference : Megacity Vulnerability and Resilience, Laxenburg (**Austria**), 29-31 July 2002.
- D. Benouar, **The Need For An Integrated Disaster Management Strategy In North Africa Towards Poverty Reduction**, Urban Development for Poverty Reduction Symposium: Towards a Research Agenda, December 9-11, 2002, Washington, D.C., (**USA**)
- D. Benouar, **A Methodology for a revision of the Earthquake Catalogue In The Maghreb Countries: Towards A Unified Catalogue In The Mediterranean Basin**, Seismic Analysis and Earthquake Hazard Assessment in the Mediterranean Region (**RELEMR**), 11-14 December 2002, Antakya (**Turkey**)
- D. Benouar, **Architects and the earthquake risk reduction philosophy for sustainable architecture in the third millennium**, Séminaire International “ Enseignement et Pratique de l’Architecture, Quelles Perspectives?”, EPAU, **Alger**, 23 – 26 April 2001
- D. Benouar, **Mapping Seismic Hazard in the Maghreb Countries**, The Second Workshop on Seismic Risk in North Africa , Tetouan (**Morocco**), 14-15 Mai, 2001

- D. Benouar, **L'Architecture et la Philosophie du Génie Parasismique**, 2^{ème} Congrès National du Conseil National des Experts Architectes Algériens (CNEA), **Alger**, 29-30 Juin 2000.
- A. Ikhlef, D. Benouar, M. Chemrouk, et al., **Résistance aux séismes des constructions traditionnelles en Algérie**, 2^{ème} Colloque National de Génie Parasismique, **Alger**, 08-10 Octobre 2000.
- D. Benouar, **Earthquake Hazard Mapping in Algeria**, Third Cairo Earthquake Engineering Symposium on Earthquake Preparedness and Response, **Cairo (Egypt)**, 18-20 November 2000.
- D. Benouar, M. Chabaat, **Proposition de création d'une agence nationale de recherche et de gestion des catastrophes naturelles en Algérie**, 2^o Rencontre en Génie Parasismique des Pays Méditerranéens (SISMICA 99), **Faro (Portugal)**, 28-30 Octobre 1999.
- D. Benouar, **Governmental measures to mitigate earthquake impacts in Algeria**, 2nd International Disaster and Emergency Readiness and 5th International Emergency Planning Conference, **The Hague (Netherlands)**, 12-14 October 1999.
- D. Benouar, **A re-evaluation of the seismicity of Algeria and adjacent regions during the twentieth century: A methodology**. Accepted at the 11th World Conference on Earthquake Engineering, **Acapulco (Mexico)**, June 23-28, 1996.
- D. Benouar and Eiji Yanagisawa, **Soil Liquefaction Potential Evaluation with use of the Spectrum at Depth**, Proceedings of the 10th World Conference on Earthquake Engineering, 19-24 July 1992, **Madrid, (Spain)**.

Abstracts

- D. Benouar, **How GDIN can help in the southern Mediterranean**, GDIN 2002 Conference Global Disaster Information Network, **Rome (Italy)**, 17-21 June 2002.
- D. Benouar, **Algiers, the city of all risks**, Urban safety and sustainable development in the Mediterranean, **Naples (Italy)**, 18-20 December 2001.
- D. Benouar, **Influence of attenuation models on seismic hazard mapping in north Africa region (Algeria, Morocco, Tunisia)**, 12th World Conference on Earthquake Engineering, **Auckland (New Zealand)**, 30 January -4 February 2000.
- D. Benouar, **Application du SIG dans la gestion des catastrophes naturelles : Développement d'une banque de données sismiques en Algérie**, Séminaire International sur les Systèmes d'Informations Géographiques « AL-SIG'99 », **Alger**, 15-18 Novembre 1999.
- D. Benouar, **Seismicity and Associated Strain in the Atlas Zone Between 1900 and 1990**, Accepted at the 5th U.S. National Conference on Earthquake Engineering, July 10-14, 1994, **Chicago, Illinois (USA)**.
- D. Benouar, **An earthquake catalogue of the Maghreb region [20°-38°N, 10°W-12°E] for the period 1900-1990**, XXIVth General Assembly of the European Seismological Society, **Athens (Greece)**, 19-24 September 1994.

12. BOOKS

A book on: "**Materials for the investigation of the seismicity of Algeria and adjacent regions during the twentieth century**", Special Issue of the Annali Di Geofisica (Istituto Nazionale di Geofisica, Italy), Vol. XXXVII, No. 4, July **1994**.

Booklet on: "**Earthquake Risk in Africa: A school's guide**" (UN/ISDR Publication) **2005**

Booklet on: "**Earthquake Risk in Africa: A community leader's guide**" (UN/ISDR Publication) **2005**

Book: **Chapter on Disaster Risk Reduction in Algiers, Algeria** in Disaster Risk Reduction: Cases From Urban Africa, Edited by Mark Pelling and Ben Wisner, Earthscan, London, **2009**

13. ORGANIZATION OF MEETINGS

2005: Member of the Scientific and local organizing committees of the "**2nd Mediterranean Seminar on Engineering Education**", Algiers (Algeria), 28-30 May 2005

2005: Member of the International Scientific Committee of the "**International Conference on earthquake Engineering to mark the 40 (1965-2005) years of IZIS-Skopje**", Skopje-Ohrid (Macedonia), 27 August-1 September 2005.

2005: Member of the Scientific Committee of the "**4^{ème} Symposium International sur la Construction**", Chlef (Algeria), 23-25 November 2005

2004: President of the Scientific Committee of the "**1er Congrès International sur la Technologie et la Durabilité du Béton**", USTHB-Alger (Algeria), 24-26 May 2004

2003: Member of the scientific and organizing committees of the "**3rd North African Seminar on Seismic Risk**", Mansoura (Egypt), 20-22 May 2003

2003: Member of the scientific and organizing committees of the "**1st North African Region Seminar on Engineering and Technology Education (NARSETE)**", Algiers (Algeria), 23-25 September 2003

2002: President of the scientific committee of the "**Conférence Internationale sur la Gestion des Milieux Urbains**", USTHB-Alger (Algeria), 16-18 June 2002.

2001: President of the Organizing Committee of the "**Séminaire Euro-Méditerranéen sur les Catastrophes Naturelles, Environnementales et Technologiques**" USTHB-Alger (Algeria), 8-10 October 2001

2000 : President of the Scientific Committee of the "**Conférence Internationale de Géotechnique**", USTHB-Alger (Algeria), 11-13 June 2000

1999 : Member of the scientific committee of the "**1er Séminaire National sur la Géotechnique et le Génie Civil**" USTHB-Alger (Algeria), 8-9 February 1999.

14. CONSULTING

2006-2007: ALECSO (Arab League) Writing of the Arab Strategy for Disaster Risk Reduction Management.

2003-2006: Algerian Ministry of Environment and Land Use Management (MATE)

2005: World Bank (Physical Cultural Resources)

2005 – IIED (International Institute for Economic Development), London, **UK**

2004 – 2005: UN/ISDR (Booklets on earthquake Risk in Africa: Guides for Schools and Communities)

2002 : UNESCO (Design and Moderator of a UNESCO Course on Seismic design Codes (UNESCO Cairo Office)

- 94 - Expert at the International Atomic Energy Agency (IAEA).
- 94 - Consultant to the Afkir-Infrastructures (Algeria).
- 90 - Algeria National Institute for Global and Strategic studies (INESG, Algeria)
 - * A paper on “An introduction to emergency management strategy”.
- 89 - Algeria National Centre for applied earthquake engineering (CGS, Algeria)
 - * Participated in the examination and enrichment of the:
 - + Repair and strengthening code for constructions in seismic regions.
 - + Catalogue of repairing and strengthening methods in seismic regions

15. MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

- Member of the Permanent Sectoral Committee (CSP), Algerian Ministry of Higher Education and Scientific Research (MESRS).
- President of the North African Seismological Group (**NASG**) based at ICTP (**Italy**)
- President of the Algerian Association for the Prevention of Natural Disasters (**AAPNT**), an NGO association (Algeria), (in preparation)
- President of the Scientific Council of the North African Center for Engineering and Technology Education (NACETE)
- Secretary General of the Algerian Association for the Promotion of Sciences (**Tahendous**)
- Algerian national society for earthquake engineering (Member)
- Committee 21 Algeria (Member of the executive board, Vice-President), Agenda 21
- Associate Member of the Third World Academy of Science (TWAS)
- Senior Associate to the International Centre for Theoretical Physics (ICTP), Trieste (Italy).
- Member of the Global Alliance for Disaster Reduction (GADR), US NGO in North Carolina University (USA)
- Member of the Global Disaster Information Network (GDIN), USA based.

16. LANGUAGES

- **Arabic:** mother tongue/ working language
- **English:** Fluent/ working language
- **French:** Fluent/working language

17. OTHERS

- Member of the Permanent Sectoral Commission at the Algerian Ministry of Higher Education and Scientific Research (MESRS)
- Member of the scientific Council (Land Planning and Major Risks Commission) at the Algerian Ministry of Land Planning and Environment (MATE).
- Vice-President of the scientific Council of the North African Centre for Engineering and Technology Education (NACETE), UICEEE affiliated to UNESCO.
- President of the scientific committee of the structures Department at the Faculty of Civil Engineering (USTHB).
- Member of the scientific Council of the Faculty of Civil Engineering.
- Supervisor for twenty (20) civil engineering theses (Bachelor of Science degree) related to aseismic design of buildings and reservoirs at the faculty of civil engineering of the University of Bab Ezzouar (USTHB, Algeria).
- Supervisor of three (08) civil engineering theses (Magistère) related to seismic risk reduction.
- Supervisor of six Doctorate theses related to natural and environmental risks reduction.

ATTACHMENT 2

Chamhuri SIWAR C.V.

CURRICULUM VITAE
(Updated: 09/10)

A.1 PERSONAL DATA

NAME : Chamhuri Siwar

PRESENT POSITION & OFFICE ADDRESS : Emeritus Professor and Principal Research Fellow,
Institute for Environment and Development (LESTARI),
Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor D. E.,
MALAYSIA.
Telephone : (603) – 89214154(O), 89256318 (H)
Fax : (603) - 89255104
Handphone: 012-9238028
Email : csiwar@ukm.my

DATE OF BIRTH : 11th April 1947

RESEARCH INTERESTS : Sustainable Development, Waste Management, Ecosystem Health,
Sustainable development/sustainable livelihood,
Poverty and Income Distribution, Poverty and Environment
Agricultural Development and Policy, Rural Economics and
Development, Food Economics and Security, Socioeconomic
Impacts of Climate Change.

ACADEMIC QUALIFICATIONS and SPECIALIZATION : BA Hons. (UKM, 1974) – Applied Economics
MA (Leeds, UK, 1975) – Agricultural Economics
MSc (Iowa State, USA, 1982) - Agricultural Economics

A.2. MEMBERSHIP IN ASSOCIATIONS

1. Life Member, Malaysian Association of Agricultural Economists (since 1982),
2. Member, International Association of Agricultural Economists (since 1982),
3. Member, ASIAN Society of Agricultural Economists (since 1982) ,
4. Life Member, Malaysian Social of Science Association (since 1986).
5. Member, Business Council for Sustainable Development Malaysia (BCSDM).

B. RESEARCH ACTIVITIES/GRANTS

1. Land Tenure and the Need for land Reform in Malaysia (in Malay), funded by UKM (RM10, 0000), completed 1983 (as Principal Researcher).
2. Food Security and Government Intervention Program, funded by Asian and Pacific Development Centre (APDC) (US\$5000), completed 1986 (as Agricultural Economist).
3. Agricultural Development Year 2000, funded by Socio-economic Research Unit (SERU) (RM100, 000), completed 1986 (as Agricultural Economist).

4. Economic Impact of Food and Nutritional Policies in the ASEAN Region: The Case of Malaysia, funded by ASEAN Agricultural Development Planning Centre (ADPC) (US\$5000), completed 1986 (as Agricultural Economist and Country Expert).
5. Poverty among paddy Farmers: A Case study in Besut, Kemubu, Seberang Prai, Tanjung Karang and Jasin (in Malay), funded by Bank of Tokyo Research Grant (RM12, 000), completed 1987 (as Project Leader and Poverty Expert).
6. Integrated Rural Development in Malaysia, funded by Centre For Integrated Rural Development For Asia and The Pacific (CIRDAP) , Bangladesh (US\$5000), completed 1987 (as Rural Development Expert).
7. Agricultural and Rural Development in ASEAN , funded by Institute of Southeast Asian Studies (ISEAS) Singapore, completed 1987 (as Research Fellow).
8. Rural Industries: Problem and Prospect (in Malay), funded by UKM (RM20,000), completed 1991 (as Principal Researcher).
9. The Impact of Technological change on Employment and Income in Padi farming. A Case Study of Muda Irrigation Scheme, funded by IRPA (RM30,000), completed 1991 (as Economist).
10. Poverty and Socio Economic Study of Ten Districts in Peninsular Malaysia (in Malay), funded by UKM-SERU (RM180,000), completed 1991 (as Principal Researcher).
11. Poverty Among Fishermen (in Malay), funded by Bank of Tokyo Research Grant (RM12,000), completed 1992 (as Principal Researcher).
12. Sustainable Resource Development: Marine Fisheries for National Spatial Planning Study, funded by UNDP-ISIS (RM5000), completed 1994 (as Fishery Economist).
13. Human Development Through Poverty alleviation, funded by UNDP (RM6000), completed 1994 (as Poverty Expert).
14. Rural Development and Poverty Alleviation, funded by FAO (US\$5000), completed 1994 (as Rural Development Expert).
15. Impact Study of Ikhtiar Loan Scheme (in Malay), funded by UKM (RM40,000), completed 1994 (as Principal Researcher).
16. Sustainable Agricultural Development, funded by IRPA (RM30,000), completed 1995 (as Economist)
17. Economic Factors Affecting Bio-diversity, funded by ISIS (RM5, 000), completed 1995 (as Economist)
18. Development administration for Poverty Alleviation in Malaysia, funded by Overseas Economic Co-operation Fund, Japan (RM50, 000), completed 1996 (as Project Leader and Rural Development Expert).
19. Micro-finance Capacity Assessment: Malaysia, funded by Asia Pacific Development Centre (US\$11,000), completed 1996 (as Country Expert on Micro-finance)
20. Good Governance and Poverty Alleviation: Case of Malaysia, funded by Organization for Economic Cooperation and Development (OECD) (US\$11000), completed 1997 (as Country Expert on Poverty).
21. Urban Poverty and The Informal Sector, funded by IRPA (RM90, 000), completed 1998 (as Project Leader and Poverty Expert).

22. Urban Poverty Action Research, funded by Malaysian Islamic Development Foundation (YPEIM) (RM250,000), completed in 1999 (as Project Leader and Economist)
23. Municipal Solid Waste Minimization, funded by UNDP/ISIS (RM50,000), completed 1998 (as Project Leader and Economist)
24. Impact Study of Amanah Ikhtiar Malaysia Loan Scheme, funded by Bank of Tokyo Research Grant (RM50,000), completed 1999/2000 (as Project Leader and Economist).
25. The Impact of Economic Crisis on the Low Income Groups, funded by IRPA (RM180,000), 2000/2001 (as Project Leader and Economist).
26. Sustainable Development and Agenda 21 for Selangor State, for Selangor State Government, Selangor State Planning Unit and Department of Town and Country Planning, Selangor ,on-going 1998/2001 (as Economist). Completed. 1999/2001
27. Policies for Improving the Quality of Municipal Solid Waste Management in Malaysia, funded by IRPA (RM 345,000), completed, 1999/2001 (as Project Leader and Economist).
28. Integrated Ecosystem Health Study of the Langat Basin, Selangor, funded under IRPA, Ministry of Science, Technology and Environment, Malaysia. (2001/2003) (as Leader of Socioeconomic Sub-study), completed 2004.
29. Waste Minimization and recycling potential of construction materials, funded by Construction Industry Development Board (CIDB), on-going, 2002/2004, (as leader of economic sub-study).
30. Sustainable Agriculture: Study of status and Case study in Malaysia, short term research project, LESTARI, UKM, completed, 2002/2003 (as Project Leader).
31. A Study on the Effectiveness of Neighbourhood Community Development Programme, for Yayasan Strategik Sosial, Kuala Lumpur, completed, 2002 (as Project Leader and Socioeconomists
32. Sustainable Agriculture: Review and Evidences for Malaysia, LESTARI Short term grant (RM15,000), completed December 2003 (Project leaser).
33. Poverty and Environment: Linking Resource Use, Governance and Sustainable Development Policies. IRPA project funded by MOSTE, (RM164,000) completed 2004/2006 (a project leader).
34. Policy and Instruments for Sustainable Agricultural Development, LESTARI Short term grant (RM17000), completed 2004 (Project leader).
35. Corporate Social Responsibility (CSR) in the Context of Sustainable Development. Fundamental Research Grant. Ministry of Higher Education Malaysia, 2007/2009 (RM60,000). Project Leader.
36. Sustainability of Natural resources Use in Malaysia, Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education Malaysia, 2007/2009 (RM66,000) as Economist.
37. Science and Governance for Sustainability, Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education Malaysia, 2007/2009 (RM66,000) as Economist.
38. Masyarakat terpinggir dan Kemiskinan di kalangan Orang Asli (*Marginalization and Poverty amongst the Orang Asli Communities*). Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education Malaysia, 2007/2009 (RM60,000) as Economist
39. Trade and Development: Carbon Taxation Policy to Mitigate Environmental Pollution in Malaysian Economy, Research Universiti Grant (UKM-GUP-ASPL-07-06-011, RM80,000), 2007/2009, as Lead Researcher.

40. The economics of climate change: Economic dimensions of climate change, impacts and adaptation in agriculture sector: Case of Paddy sector in Malaysia (UKM0GUP-PI-08-34-081, 01/6/08-31/05/11)
41. Poverty, Resource use, Governance and Sustainable Livelihoods in Muslim Countries: Case study of OIC member countries.(UKM-GUP-PLW-08-13-053), 01/06/08-31/05/11.
42. Towards Sustainable Computer waste management: An assessment of the awareness for recycling of computer waste in UKM (UKM-PTS-094-2009) 2009/2010 (as leader of project.)
43. Socio-economic Impacts and Response Supporting Group for Working Group on Vulnerability and Adaptation of Climate Change , Malaysia Second National Communications (NC2)- (as Socio-economic Impacts Resesrcher)
44. Sustainable Development Indicators for Malaysia- LESTARI, UKM-EPU Collaborative Research (as Leader of Economic Thrust), Funding of RM300,000 under Sustainable Regional Development Niche Research.
45. Sustainable Development of the Eastern Corridor Economic Region (ECER), Malaysia : Poverty & Vulnerability, Resourceuse, Intervention and Governance in the framework of sustainable livelihood (as project leader, RM450,00). UKM Niche Area Research on Sustainable Regional Development.(2010-2012)

C. CONSULTANCY

Participated As Consultant to The Following Study/Projects

C.1 International Consultant/Expert

1. “Klang Valley Environmental Improvement Project , For Asian Development Bank and Government of Malaysia (as Country Counterpart), completed 1986.
2. Human Resource Development Project –The Agricultural Sector , For United Nations Development Program and Government of Malaysia, (UNDP) (as Agricultural Economist), completed 1988.
3. Kampung (Village) Based Human Development Project , For Asian Development Bank and Government of Malaysia) (as Agricultural Economist), completed 1989.
4. Socioeconomic Impact Study of Persistent Organic Pollutants (POPs) Use in Malaysia, for DOE and United Nations Environment Programme (UNEP), June 2004-December 2005 (as leader of Socioeconomic Impact study).
5. Regional Energy program for Poverty Reduction: Malaysia, for UNDP Bangkok and Kuala Lumpur (as leader), June-December 2005.
6. Facts finding Mission on Lessons Learned and Good Practices in the National Implementation Plan (NIP) for Persistent Organic Pollutants (POPs) in Asia-Pacific for UNEP (as expert) . Mission to Fiji, Papua New Guinea, Sri Lanka, Vietnam and China, January-March 2006. Participated in Global Report preparation, Geneva, April 2006. Output: “Global Report: Lessons Learned and Good Practices in the Development of National Implementation Plans for the Stockholm Convention on Persistent Organic pollutants (POPs), “ UNEP & GEF, Geneva, April 2006.
7. Expert Review Meeting on Socioeconomic Guidance for the Stockholm Convention on Persistent Organic Pollutants(POPs) in National Implementation Plans (NIP), UNEP, Geneva, Switzerland, 6-8 October 2006.

8. Development and Implementation of Programme Monitoring System for the Malaysian-Danish Environmental Cooperation Programme (PMS-MDECP) 2003-2006- consultant for the Solid waste management (SWM) component for DANIDA-EPU, completed 2006/7
9. Facilitator/Intervener, Langkawi International Dialogue (LID 2007), on “Poverty Eradication Through Human Capital Development and Capacity Building”. Lasngkawi, 5-7 August 2007.

C.2 National Consultant

10. “Socioeconomic Sub-study for the Tembeling Hydro –Electric Project” For National Electricity Board, Malaysia (as Economist), completed 1983.
11. “Socioeconomic Sub-study for the Nenggeri Hydro–Electric Project” , For National Electricity Board, Malaysia (as Economist), completed 1986.
12. Impact Assessment of Fisheries Development Areas (1991) for Ministry of Agricultural Malaysia) (as Assistant Project Leader and Fishery Economist), completed 1991.
13. An Economic Study of Rural Growth Center: Kampung Alor Pongsu, Kerian Perak For Department of Town and Country Planning (as Project Leader and Rural Economist) , completed 1993.
14. An Economic Study of Merbau Berdarah Rural Growth Center, Sabak Bernam, Selangor for Department of Town and Country Planning (as Rural Economist), completed 1993.
15. Terengganu Utara Structure and Development Plan For Department of Town and Country Planning (as Agricultural Economist) , completed 1994.
16. Environment Impact Assessment of the Kota Kinabalu Industrial Park, for Sabah Urban Development Council, Kota Kinabalu, Sabah, 1993 (as Economist),., completed 1994.
17. A study on The Feasibility of Hot Springs For Tourism Development for Ministry of Public Enterprise, Malaysia (1993/1994) (as Project Leader and Economist),., completed 1994.
18. Malaysian Development Policy Studies project , Malaysian Institute of Economic Research (MIER) (Consultant – Rural Development), (1994/1995).
19. EIA of Ammonia/Urea Project, Gurun, Kedah for PETRONAS, 1994 (as Socio-Economists).
20. “EIA of Bintulu LPG Extraction Project” for PETRONAS. 1995 (as Socio-Economist).
21. EIA of Kuala Lumpur Linear City and PRT for Linear City Sdn. Bhd. (as Socio-economist) 1995.
22. Impact of Development Programme for the Very poor, for Economic Planning Unit, Prime Minister’s Dept., 1997/1999 (as Project Leader and Poverty Expert).
23. EIA of Liwagu Hydro Electric Power Project for Sabah State Planning Unit (as Socio-economist), 1997/98.
24. Socioeconomic study of Kuala Lumpur City Council Low Cost Flat Dwellers (as Project Leader and Economist) for Kuala Lumpur City Council ,1998/1999
25. Economic Evaluation of Agro-based Cooperatives for Farmers Organization Authority (as Project Leader and Economist) ,1998/1999
26. Fisheries Development Study, for Economic Planning Unit, Prime Minister’s Department (as Socio-economist), 1998/2000.

27. Socioeconomic Impact Assessment of Federal Road Expansion Project for the World Bank and Public Works Department (as Socioeconomist), Completed, July 1999.
28. Impact Study of Rural Development Programmes for Ministry of Rural Development, (as Rural Economist), Completed, 1999/2002.
29. Environmental Impact Assessment of Land Reclamation Activities by the Singapore Authorities for Department of Environment, Malaysia (as Socioeconomists), completed , 2002/2003.
30. Socioeconomic Study of Petty Traders the Kuala Lumpur for Dewan Bandaraya Kuala Lumpur (DBKL), as Project Leader/Socioeconomists, completed, 2002/2003.
31. Impact Study of Bridging the Digital Divide of the Urban Poor in Kuala Lumpur, for National ICT Council, (NICTC), as Leader of Socioeconomic Research Component, completed 2004
32. Assessment/ Audit of City/Town of Shah Alam and Bandar Baru Bangi. For Selangor State Development Corporation (PKNS), completed, 2004/5.
33. Impact Study of Bridging Digital Divide amongst Rural Communities, for Ministry of Rural and Regional Development and MIMOS, completed, 2005.
34. Impact Study of Bridging the Digital Divide of the Urban Poor in Petaling Jaya, National ICT Council, as Leader of Socioeconomic Research Component, completed 2006
35. Malacca State Master Plan Study for Malacca State Economic Planning Unit, (as project leader). Completed 2006
36. Impact study of Pusat Pertumbuhan Desa (Rural Growth Centre) Negeri Pahang for Pahang State Development Corporation, as Project Leader, completed 2007.
37. Impact Study and Plan of Action for Amanah Ikhtiar Malaysia (AIM) Expansion in Malaysia, for Economic Planning Unit, Prime Minister's Department, as project Leader, 2009/2010
38. Study on Urban Poverty in Sarawak, for Sarawak State Planning Unit, 2009/2010 (as Team Leader).
39. Fourth National Agricultural Policy – Commodity Sector, for Ministry of Commodity and Plantation Development, Malaysia, 2009/2010 (as Deputy Leader).
40. Study of Perak State Industrial Development-Plan of Action, for Perak Investment Company, State of Perak, Malaysia , 2010 (as Project Leader).

D. Thesis Supervision and Examiner

Summary (1990-2010)

1.PhD supervision	Completed= 18	On-going=16
2. PhD Examiner	16	
3. Masters supervision	Completed= 14	On-going=7
4.Masters Examiner	10	

D1. Masters Degree (completed):

1. Er Ah Choy (1990), "Suatu Analisis Ekonomi ke atas Penawaran dan Permintaan Padi Semenanjung Malaysia," (*An analysis of the Supply and demand of Rice in Peninsular Malaysia*). M.Ec. thesis submitted to Faculty of Economics, Universiti Kebangsaan Malaysia (UKM) (as thesis committee member).
2. Pardamean Hutahut (1993), "Impak Program Pembangunan Sektor Pertanian terhadap pertumbuhan, agihan pendapatan dan kemiskinan di Sumatera Utara," (*Impact of Agricultural Development Program on growth, income distribution and poverty in North Sumatera*), M.Ec. thesis submitted to Faculty of Economics, UKM. (as thesis committee member)
3. Ridzuan Salleh (1995), "An Evaluation of the Hardcore Poor Development Programme (PPRT) in the Central Perak District, (in Malay)," M. Ec. Thesis submitted to Faculty of Economics, UKM. (as major supervisor)
4. Wan Zuraini Wan Yusof (1997). "Kemiskinan dan Pembangunan: Kajian Kes terhadap Setinggan di Kuala Lumpur," (*Poverty and Development: Case study of Squatters in Kuala Lumpur*), M.Ec. thesis submitted to Faculty of Economics, UKM (as major supervisor).
5. Mahani Ahmad. (1999). "Kajian Sosioekonomi dan kemiskinan di Skim Pembangunan Tanah FELDA (Socioeconomics and Poverty study in FELDA Land Development Scheme). M.Ec. thesis submitted to Faculty of Economics, UKM. (as major supervisor).
6. Mohd Saifoul Zamri (2000), Kajian Kepuasan Kerja Peringkat Operasi Kakitangan Amanah Ikhtiar Malaysia (*A study on work satisfaction among Operational Staff in Amanah Ikhtiar Malaysia (AIM)*), MBA thesis submitted to Faculty of Business Management, UKM (as major supervisor).
7. Choon Shay Wei (2001), Penilaian Terhadap Penswastaaan Pengurusan Sisa Pepejal Perbandaran Di Wilayah Selatan Semenanjung Malaysia (*An evaluation of Privatization of Municipal Solid Waste Management in Southern Region of Peninsular Malaysia.*). M.Ec. thesis submitted to Faculty of Economics, UKM (as major supervisor).
8. Nurasyikin Ahmad (2003), Peranan dan Keberkesanan Institusi Baitulmal dan Zakat Dalam Membasmi Kemiskinan Penduduk Ummat Islam di Selangor dan Wilayah Persekutuan Kuala Lumpur (*The Role and effectiveness of Baitulmal and zakat Institutions in Poverty Alleviation in Selangor and Kuala Lumpur*), M.Ec thesis submitted to Faculty of Economics, Universiti Kebangsaan Malaysia (as major supervisor).
9. Gowaria Dafa Alla Abd. Elgadir. 2003. *Rural Poverty and Environment: Case of Sub-Sahara Africa*. MA thesis submitted to Institute for Environment and Development (LESTARI), UKM. (as major supervisor).
10. Rospidah Ghazali. 2004. "Potential Use of Market-based Instrument for Solid Waste Management, MA thesis submitted to Institute for Environment and Development (LESTARI), UKM. (as major supervisor)
11. Nuha Ahmad Osman. 2005. *Globalization, Development and Poverty: Case of Sudan*. M.Ec thesis Submitted to Faculty of Economics and Business, UKM. (as major supervisor). Degree awarded September 2005.
12. Rashidi Said. 2005. *Competitiveness of Malaysian Wood-based Industries: Focus on Furniture Industry*. (in Malay). M.Ec Thesis submitted to Faculty of Economics and Business, UKM. (as supervisory committee member). Degree awarded September 2005.
13. Md Mahmudul Alam (P49093). The Impacts of Climate Change on Vulnerability, Socioeconomics and Sustainability: Case Study of Rice farming in North West Selangor, Malaysia. (as major supervisor). Completed October 2010.
14. Aki/Zaki Aman. (P37143). *Development of Oil Palm Plantation Through Sustainable Management Practices towards better protection of the Environment*. (in Malay). MSc thesis submitted to LESTARI, UKM, (as major supervisor). viva December 2009. Passed with corrections.

D2. Masters degree (in progress):

1. Azhar Abdul Aziz. *Sustainable Urban Development from Islamic Perspective. MA Thesis, LESTARI*, (as thesis Committee member).
2. Siti Khatijah Satari. Penilaian Ekonomi Sistem Binaan Industri (IBS,) calon sarjana, LESTARI UKM. (Penyelia: Joy J Pereira, Chamhuri Siwar, Abdul Hamid Jaafar). Mulai 2007/2008.
3. Nuhammad Yasar (P51437). Aplikasi Sistem Maklumat Geografi untuk pengendalian Konversi Kawasan Sawah di Provinsi Aceh, Indonesia. (as major supervisor)
4. Nashrah Ahmad Damanhuri (P52820) Pendekatan Pembangunan Ekonomi dalam konteks Ekonomi: Analisis Terhadap Penunjuk Kelestarian Ekonomi. (as major supervisor).
5. Affiah Din (P52429). Kajian keberkesanan mikro kredit AIM dalam melahirkan usahawan wanita Berjaya: Kajian kes negeri Kelantan. (sebagai penyelia utama).
6. Tasnuba Haque (P 57882). Assessment of Islamic Microfinance Institutions in Bangladesh. (as major supervisor).
7. Jannat Fatema (51362). A study of woman's empowerment in Bangladesh. (main supervisor).

D3. Masters degree (examiner/external examiner):

1. Ooi Boey Lee (2001), Gelagat Penjanaan dan Kitar Semula Sisa Pepejal Isi Rumah: Kes Majlis Perbandaran Seremban (*Behaviour of waste generation and recycling household wastes: Case of Seremban Municipality*). M.Env. Mgt. thesis submitted to Centre of Graduate Studies, UKM (as examiner)
2. Ng Soo Meng (2001), Gelagat Penjanaan dan Kitar Semula Sisa Pepejal Isi Rumah: Kes Majlis Perbandaran Kajang (*Behaviour of waste generation and recycling household wastes: Case of Kajang Municipality*) M.Env. Mgt. thesis submitted to Centre of Graduate Studies, UKM (as examiner)
3. Salmah Mahmud. 2005. A Comparative Case Study on Outreach and Impact of Ikhtiar Loan Scheme and Special Programme for the Hardcore Poor in Seberang Perai, Pulau Pinang. Master of Social Science thesis submitted to Centre for Graduate Studies, Universiti Sains Malaysia, (as external examiner).
4. Antonius Budisusila. 2006. Sustainable Rural Development (A Study on Traditional and Modern Paddy Peasants in Lorejo Village, Moyudan Subdistrict, Sleman District, Yogyakarta Province, Indonesia). Master of Social Science, Universiti Sains Malaysia. (as external examiner).
5. Yogi Suprayogi Sugandi. 2006. Pelaksanaan Program Pembasmian Kemiskinan di Perkotaan: Kajian Perbandingan di Bandung Indonesia dan Kuala Lumpur Malaysia (*Implementation of Urban Poverty Alleviation Program: Comparative Study of Bandung Indonesia and Kuala Lumpur Malaysia*). Master Of Social Science thesis submitted to Faculty of Arts and Social Science, Universiti of Malaya, Kuala Lumpur (as external examiner).
6. Onuegbu Ikenna Eric. 2007. Solid Waste Management in Developing Cities: A comparative Study of Kuala Lumpur and Lagos City. Master of Arts thesis submitted to Faculty of Social Science and Humanities, Universiti Kebangsaan Malaysia (as internal examiner)

7. Roslina Mat Salleh. 2007. Penilaian Penapis Air Domestik: Persepsi dan Kepuasan Pengguna (*Evaluation of Domestic Water Filter: Consumers' Perception and Satisfaction*). MS Thesis submitted to School of Graduate Studies, Universiti Putra Malaysia.
8. Hong Ngit Ming. 2008. A study of the Economics Fundamental with reference to the Insistence of the Presence of Energy Provider in relation to Wealth Creation. Master of Economics Thesis, School of Business and Economics, University Malaysia Sabah (external examiner).
9. Bitu Parsa. 2008. Study of Financial Status among Malaysian Elderly, Master of Science Thesis, submitted to Faculty of Human Ekologi, Universiti Putra Malaysia, Serdang (external examiner).
10. Wu Ping. 2009. Life Cycle assessment of Palm Derived Biomass Energy in Malaysia, School of Graduate Studies, Universiti Putra Malaysia, Serdang (external examiner). October.

D3.1. Ph.D degree (completed):

1. Azhar Harun , “ Respons Penawaran dan Impak Lembaga Pembaharuan Tanaman Semula Getag (LPTSG) terhadap Sektor Kebun getah asli Thailand, 1961-1995 (*Supply response and Impact of Replanting and Advancement Authority (LPTSG), Thailand, 1991-1995*, Ph.D thesis submitted to Faculty of Economics, UKM (as major supervisor). Degree awarded, July, 2000.
2. Md . Wahid Murad, “Poverty and Environment: Case Study of Squatters and Low Cost Flat Dwellers in Kuala Lumpur.” PhD thesis Submitted to Institute for Environment and Development (LESTARI), UKM (as major supervisor), degree awarded, October 2002.
3. Md Mazarul Islam. “ *Impact of Financial Crisis on Social Capital of Low Income Households*, Ph.D thesis submitted to Faculty of Economics, UKM. (as major supervisor). Degree Awarded, August 2003.
4. Nurlina Tarmizi. Pemberdayaan Ekonomi Keluarga Desa Melalui Agihan Masa Wanita Pekerja Keluarga: Kes Di Provinsi Sumatra Selatan (*Economic Empowerment of Rural Households via time allocation of Women household workers: Case of South Sumatera Province*), Ph.D thesis submitted to Faculty of Economics, UKM. (as major supervisor). Degree awarded, October 2003.
5. Md Azmad Hossain, *Impact of Scavengers' Status on Waste Recycling: Case Study of Klang Valley*, Ph.D thesis submitted to Faculty of Economics, UKM (as major supervisor). Degree awarded, October 2003.
6. Samia El Sheikh. *Poverty and Socioeconomic Change : Case Study of Gezira Scheme, Sudan*. Ph.D thesis submitted to Faculty of Economics and Business, UKM.(as major supervisor). Completed February 2005.
7. Rawshan Ara Begum. *Waste Minimization and Recycle Potential of Construction Materials: Economic Perspective*. Ph.D thesis submitted to Graduate Studies centre/LESTARI,UKM (as major supervisor). Completed November 2005. Degree awarded August 2006.
8. Hendri Yani. *Management of Solid Waste and quality of Life in the Klang Valley, (in Malay)*, Ph.D thesis submitted to Centre for Graduate Studies, UKM (as thesis committee member). Completed April 2006. Degree awarded August 2006.
9. Irina Safitri Zen, *A study on Waste Recycling Practice in Klang Valley, Malaysia, (in Malay)*, Post Graduate Centre, Universiti Kebangsaan Malaysia (as major supervisor). Completed December 2006.
10. Md Elias Hossain. *Growth and Environmental Degradation in Malaysia: An Empirical Analysis*. Institute for Environment and Development (LESTARI), UKM (as major supervisor)- Completed December 2006. Degree awarded August 2007.

11. Abul Quasem Al-Amin, (P36535). *A Computable General Equilibrium Approach to Trade and Environment Modelling: Impacts of Carbon Tax Policy in the Malaysian Economy*, Ph.D thesis submitted to LESTARI, UKM, Completed June 2009 (as major supervisor), degree awarded August 2009.
12. Roslina Kamaruddin. (P31562). *Pembangunan Industri Akuakultur di Kedah, Malaysia: Impak Alam Sekitar dan Socioekonomi*. PhD thesis submitted to Institute for Environment and Development (LESTARI), UKM. (as major supervisor), Degree awarded August 2010.
13. Choon Shay Wei. (P31560). *Pembangunan Indeks Bandar Lestari bagi Bandar-bandar Utama di Malaysia (Building a Sustainable Development Indicator for Major Towns in Malaysia.)* (in Malay). PhD thesis submitted to Institute for Environment and Development (LESTARI, as major supervisor), Completed April 2010. Degree August 2010.
14. Sharina Abdul Halim. (P32671). *Kelestarian Penghidupan dalam Arus Pembangunan Pelancongan: Kajian Periyertaan Komuniti setempat di Kepulauan Langkawi, Malaysia (Sustainable Livelihood and Tourism Development: A study on Community participation in Langkawi, Malaysia)*. Institute for Environment and Development (LESTARI), UKM. (as committee member), Degree awarded August 2010.
15. Abdul Mumin Abdulai (P40532). *Poverty in the Muslim World: Resources, Development, Governance, and Zakat as an Alternative Tool for Poverty Alleviation*. PhD thesis submitted to LESTARI, UKM, (as major supervisor). Degree awarded August 2010.
16. Mohd Arshad Abas, (P27678). *Kajian Permasalahan dan Prestasi Usahawan Melayu*. Institute for Environment and Development (LESTARI), UKM. (as major supervisor). Degree awarded August 2010.
17. Md Istiaque Hossain. (P29457). *Impacts of Aquaculture Farming on Environmental Quality and Socio-economics of Fish Farmers in Bangladesh*. Institute for Environment and Development (LESTARI), UKM. (as major supervisor), Degree awarded August 2010.
18. Walid Ahmed. (P42344). *Impacts of Sustainable Livelihood projects in Yemen*. PhD thesis submitted to LESTARI, UKM, (as major supervisor). Completed October 2010.

D3.2. Ph.D degree (in progress):

1. Nor Diana Mohd Idris. (P31561). *Sustainable Agriculture and Poverty Alleviation: Case of Upland Padi Farming in Sarawak*. Institute for Environment and Development (LESTARI), UKM. (as major supervisor), Submitted thesis for examination August 2010..
2. Md Tareq Hussain. *Practices of CSR in the context of Sustainable Development: An Empirical Study on Selected Corporation in Malaysia*. Institute for Environment and Development (LESTARI), (as major supervisor). Notice for submission of thesis in 3 months.
3. Osukun Ignatius Odianosen. (P35862). *Urban Poverty Alleviation in Nigeria: An Assessment of Issues, Progress, Constraints, Socioeconomic Impacts*. Ph.D candidate, LESTARI, UKM. Starting November 2005 (as major supervisor).
4. Ferdoushi Ahmed. (P38181). *Impact of Microcredit on Socioeconomic Status and Poverty Alleviation amongst Rural Women of Bangladesh*. Ph.D candidate Institute for Environment and Development (LESTARI), UKM, Commencing August 2006. (as Major supervisor).
5. Supratman (P34061). *Peranan dan Perkembangan Industri Kecil dalam Pembangunan di Provinsi Jambi, Indonesia (Role and development of Small-Medium Scale Industry in Jambi Province, Indonesia)*, Ph.D candidate, LESTARI, UKM, Commencing August 2006 (as major supervisor).

6. Mohd Kher Hussein. A perceptual study of Recreational Forests in Malaysia, PhD candidate, Institute for Environment and Development (LESTARI), UKM. Commencing 2008 (as major supervisor).

7. Rabiul Islam (P). *Trade and Environment: Impact on the Forestry and Timber Trade*. PhD candidate, LESTARI, UKM (as major supervisor). Commencing 2008/2009

8. Abul Bashir Buiyan (P) Impact of Microcredit on Poverty Alleviation, Empowerment and Socio-economic Status of Women in Bangladesh (as major supervisor). Commencing 2008/2009

9. John Babington Chibunna (P49305). A study of Awareness, Perception and Recycling Practices of E-Waste in Malaysia. Institute for Environment and Development (LESTARI). UKM. Commencing 2008/2009 (as major supervisor).

10. Rahana Abdul Rahman (P37028). Pengukuran daya tahan Firma Tempatan: Aplikasi Indeks Kemudahteracaman. PhD candidate. Institute for Environment and Development (LESTARI). (as major supervisor).

11. Iwan. Solid waste management in Malaysia. PhD candidate. Institute for Environment and Development (LESTARI), Commencing 2008/2009 (as major supervisor).

12. Mehe Zebunnesa Rahman (P54196). A Study of Urban Poverty and Sustainable Livelihood in Dhaka, Bangladesh. PhD candidate Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia (commencing November 2009/2010, as major supervisor).

13. Anowar Hossain (P). Potential and impacts of eco-tourism for livelihood security in Terengganu, Malaysia., PhD candidate Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia (commencing November 2009/2010, as major supervisor).

14. Ferdous Alam (P49083). The Impacts of International Migrations on Economic Development, Sociocultural Change and poverty alleviation in Bangladesh: A study of Non-Residence Bangladeshi working in Malaysia. (as major supervisor).

15. Golam Morshed (P54903). A study on Greening of the Malaysian Economy. (as major supervisor). Starting September 2010.

16. Desa Saad (P46044). Dasar Awam Sektor Perikanan: Kesan Terhadap Penggunaan Sumber dan Agihan Pendapatan Nelayan. (as major supervisor).

D3.3. Ph.D degree (external /internal examiner)

1. K. Revathi (1995), “ *Economics of Dryland farming. A Study in Manapparai Taluk, Tamil Nadu, India,* ” Ph.D thesis submitted to Department of Economics, Bharathidasan University, Tamil Nadu, India, in partial fulfilment of the requirement for Ph.D in Economics (external examiner)
2. Djanus Djamin. 2002. “Pengawasan dan Pengurusan Alam sekitar Dalam Dimensi Politik, Ekonomi dan Sosiobudaya di Bandar Medan dan Sekitarnya, (*Environmental Control and Management in Medan Sumatra: Political, Economic and social Dimensions* “ Ph.D thesis submitted to Pusat Pengajian Sains Kemasyarakatan, Universiti Sains Malaysia, Penang, Malaysia. (external examiner)
3. Muawia Balla Magboul. 2005. *The role of Amanah Ikhtiar Malaysia (AIM) in Poverty Alleviation in Malaysia: Lessons for Sudan*. Ph.d Thesis submitted to Faculty of Economics, Universiti Malaya, Kuala Lumpur. (external examiner)

4. Mohd Fauzi Mohd Harun. *Peminggiran dan Kemiskinan Orang Asli di Negeri Perak, (Marginalization and Poverty amongst the Indigenous Communities in Perak, Malaysia)*. Ph.D thesis submitted to Fakulti Ekonomi dan Perniagaan, Universiti Kebangsaan Malaysia, Oktober 2005 (internal examiner)
5. Mhd. Asaad. *Pembangunan Masyarakat: Kajian Kes Pelaksanaan Program Pembasmian Kemiskinan dengan Bantuan Dana Bergulir di Bandaraya Medan, Indonesia (Community Development: Case Study of Poverty Alleviation Program via Microcredit in Medan, Indonesia)*. Ph.D thesis submitted to Fakulti Sastera & Sains Sosial, Universiti Malaya, October 2005.(external examiner).
6. Edy Yusuf Agunggunanto. Suatu Kajian Empirik Kemiskinan dan Ketidaksamaan Pendapatan Nelayan di Kabupaten Pati, Jawa Tengah, Indonesia (*An Empirical Study of Poverty and Inequality amongst Fishermen in Kabupaten Pati, Central Java, Indonesia*), Ph.D thesis submitted to Institute of Graduate Studies, Universiti Sains Malaysia, Penang, Malaysia. 2006 (external examiner).
7. Qaiser Munir. *The Influence of Income Inequality on Economic Growth in Less Developed and Developed Countries*. PhD Thesis submitted to School of Business and Economics, Universiti Malaysia Sabah, March 2007 (external examiner).
8. Zulkarnain Lubis. Keperluan Kredit Koperasi dan Implikasinya kepada pengukuhan Ekonomi Rakyat: Kajian Kes Kabupaten Karo, Sumatera utara (*Needs for Cooperative Credit and Implications on Empowerment of People's Economy: Case Study in Kabupaten Karo, North Sumatera*), PhD Thesis submitted to Faculty of Economics and Business, Universiti Kebangsaan Malaysia, May 2007(internal examiner).
9. Er Ah Choy. *A Quantitative Methodology to Test Ecological Modernization Theory in The Malaysian Context*. PhD Thesis submitted to Wageningen University, Neatherlands. October 2007 (external examiner).
10. Ratnawati Yuni Sury Andari. 2008. Pertukaran Gunatanah Pertanian dan Kesannya Kepada Corak Sosioekonomi Penduduk Asal Pinggiran Bandar: Kes Bandar Baru Serpong Damai, Tangerang, Banten Indonesia. Tesis PhD, Fakulti Sains Sosial dan Kemanusiaan, Universiti Kebangsaan Malaysia, 2008, (internal examiner).
11. Fauzi Husin. 2008. Impak Pelaburan dan Perbelanjaan Kerajaan terhadap Pertumbuhan Ekonomi: Kajian Kes Negeri-negeri di Malaysia, 1980-2005. Tesis PhD, Institut Pengajian Siswazah, Universiti Sains Malaysia, November (external examiner)
12. Aliakbar Gulasan. Penilaian Penempatan Semula Setinggalan Bandar: Kajian Kes di Kota Kinabalu, Sabah. PhD thesis submitted to Faculty of Social Science and Humanities, Universiti Kebangsaan Malaysia. April 2009. (internal examiner).
13. Irfan Syaqui Beik. 2010. Economic Role of Zakat in Reducing Inequalities and Poverty in Jakarta Indonesia, PhD Thesis, Centre for Graduate Studies, International Islamic University Malaysia. April (external examiner).
14. Ahmad Nazri Sulaiman. 2010. Impak Modenisasi dan Kolonialisme Terhadap Pembangunan dan Perancangan Pembangunan Malaysia. PhD thesis. Fakulti Sains Sosial dan Kemanusiaan, Universiti Kebangsaan Malaysia. Mei. (internal examiner).
15. Robert Tua Siregar. Analisis Potensi Pembangunan Agro-industri di Wilayah Barat Propinsi Sumatera Utara, Indonesia, tesis PhD, Jabatan Rancangan Pengajian Perbandaran dan Perancangan, Fakulti Sastera dan Sains Sosial, Universiti Malaya, Kuala Lumpur, 2010 (external examiner).
16. Md Jahan Boksh Moral. Locating the Poor: Spatial Poverty Mapping of Individual in Rajshahi City, Bangladesh. PhD thesis submitted to Universiti Sains Malaysia (USM), 2010 (as external examiner)..

E. SUBJECTS TAUGHT:

Microeconomics, Macroeconomics, Agricultural Economics, Development Economics, Malaysian Economics, Agricultural Marketing, Agriculture and Food Policy, Resource and Environmental Economics, Graduate Seminar on Agriculture and Development Policy. Graduate seminar on Sustainable Economic Development

F. PUBLICATIONS:

F.1. Articles In Journals

1. Chamhuri Siwar and Mohammad Hj. Alias, "Underutilization of Labour in Agriculture: A Survey of Concepts and Empirical Measures for Malaysia", *The South East Asian Economic Review*, Vol. 1, No. 2, August 1980, pp. 153-164.
2. Chamhuri Siwar, "Costs and Benefits of Socioeconomic Research" (in Malay) *Akademika*, No. 29, July 1986, pp. 49-64.
3. Chamhuri Siwar, "Performance of Malaysian Economy 1988 and Budget For 1989" (in Malay) *Jurnal Ekonomi Malaysia*, No. 18, December 1988.
4. Chamhuri Siwar, "Food and Nutrition Among Poor Household: A Case Study" (in Malay) *Akademika*, January 1989.
5. Chamhuri Siwar, Ahmad. Md. Zin and Abdul Hamid Jaafar, "The Role of Rural Industries in Malaysian Industrial Development" (in Malay) *Jurnal Ekonomi Malaysia*, No. 21&22 (1990), pp. 205-305.
6. Chamhuri Siwar, "Credit Programme for Rural Development and Poverty Alleviation in Malaysia" *Asia Pacific Journal of Rural Development*, Vol. I, No. 2, December 1991, pp. 35-64.
7. Chamhuri Siwar, Abdul Hamid Jaafar and Ahmad Md. Zin, "Rural Small Scale Industries: Profile, Constraints and Policy Issues" *Akademika*, No.44, January 1994, pp. 1 1-24.
8. Chamhuri Siwar, "Socioeconomic Research and Poverty: The Need for Action Research" (in Malay), *Ilmu Masyarakat*, 1994.
9. Chamhuri Siwar and Mohd Yusof Kasim. "Urban Development and Urban Poverty in Malaysia" *International J. of Social Economics*, Vol. 24, no. 12, 1997, pp. 1178-1189.
10. Ab. Rahim Shamsuddin, Chamhuri Siwar et. Al. "Thermal Spring of Malaysia and Their Potential Development", *Journal of Asian Earth Science*. Vol. 15, no. 2-3, p.p. 275-284, 1997.
11. Hasnah Ali, Chamhuri Siwar & Abdul Rashid Ahmad, " Minimising Household Solid Waste in Malaysia: A Case Study," *Asia-Pacific Development Monitor* (Journal of the Asian and Pacific Development Centre, Vol.2,No.1, January, 2000, pp.251-271.
12. Chamhuri Siwar. " Poverty Focused Development Programs: Reaping the Benefits of Globalization?, " *Borneo Review*, Vol 11, No.1, Institute for Development Studies (Sabah), Kota Kinabalu, June, 2000. pp.44-59. (ISSN 0128-7397)

13. Chamhuri Siwar and Mohd Fauzi Mohd Jani, 2000. "Pola Pekerjaan, Pendapatan, Kemiskinan dan Penggunaan di Kalangan Penghuni Rumah Kos Rendah DBKL, Kuala Lumpur," *Malaysian Journal of Consumer and Family Economics*, Jurnal Persatuan Ekonomi Pengguna dan Keluarga Malaysia, Vol.3.
14. Chamhuri Siwar & Basri Abd. Talib. 2001. "Microfinance Capacity Assessment for Poverty Alleviation: Outreach, Viability and Sustainability," *Humanomics*, Vol. 17 (1 and 2). Pp. 116-133.
15. Chamhuri Siwar & Mariani Abdul Majid. 2002. "Pembasmian Kemiskinan dan Institusi Islam di Malaysia," (*Poverty Eradication and Islamic Institutions in Malaysia*), *Jurnal IKIM*, Vol. 10, No.1, Institut Kefahaman Islam Malaysia (IKIM), pp. 73-96.
16. Ahmad Fariz Mohamad, Siti Sarah Aziz, Chamhuri Siwar & Mazlin Mokhtar. 2003. "Manufacturing Industrial Waste: Malaysia," *Environmental Policy and Law*, Vol 33, no. 5.
17. Ahmad Fariz & Chamhuri Siwar. 2003. Industrial development and Environmental Degradation within Langat Drainage Basin, Malaysia, *Malaysian Journal of Environmental Management*, Vol 4: 113-131.
18. M.Islam & Chamhuri Siwar .2005, "Impact of the Financial Crisis on Expenditure Pattern in Malaysia: Special Reference on Low-income Households", *Journal of Economic Research*, Vol. 10, No.1, May.pp.145-174 (ISSN 1226-4261)
19. Madeline Berma & Chamhuri Siwar. 2005. Weathering the Storm: Financial Crisis, Social Capital and Micro-Level Coping Strategies amongst Low-Income Households in Malaysia, *International Journal of Human Development*, Vol 3, No.1, June, Special Issue on Globalisation, pp.77-114.
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23. Md Wahid Murad & Chamhuri Siwar.2006. Waste Management and Recycling practices of the Urban Poor; a case study in Kuala Lumpur city, Malaysia. *Journal of Waste Management and Research*. Vol 24:1-11 (ISSN 0734-242X).
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29. Basri Abdul Talib, Abdul Hamid Jaafar & Chamhuri Siwar. 2007. Penangkapan Ikan oleh Nelayan Negeri Sembilan; Satu Kajian Empirikal. *International Journal of Management Studies*. Vol 14, no.1, June. Universiti Utara Malaysia Press. Pp.218-230. (ISSN 0127-8983).
30. Al-Amin, Chamhuri Siwar, Nurul Huda & Abdul Hamid. 2008. Electricity & Pollution: An Input-Output Analysis of Air Emissions in Malaysia. *Social Science Review*, Vol. 25(1), p.151-162. (ISSN: 1562-269X).
31. Abdul Hamid, Al-Amin & Chamhuri Siwar. 2008. Environmental Impact of Alternative Fuel Mix in Electricity Generation in Malaysia. *Renewable Energy*. Vol. 33, p2229-2235. (ISSN: 0960-1481).
32. Md Wahid Murad & Chamhuri Siwar. 2008. Factors Influencing Environmental Behavior of the Urban Poor Concerning Solid Waste Management. *Journal of Environmental Systems*, 31(3):257-277. ISSN 0047-2433.
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48. Rabiul Islam, Chamhuri Siwar, Shaharuddin Mohamad Ismail, Abdul Hamid Jaafar, Nurul Hidayah Chamhuri, Kamal Uddin and A.S. Santhapparaj 2010. Economic Impacts of Tropical Timber Sector in Malaysia. *Australian Journal of Basic and Applied Sciences*. (Accepted).
49. Rabiul Islam, Chamhuri Siwar & Shahrudin Mohamad Ismail. 2010. Impacts of Trade and Environment on Sustainable Development. *American Journal of Environmental Science*, 6(1): 11-19. (ISSN 1553-345X) Science Publications.
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F.2 Books

1. Chamhuri Siwar, *The Need for Land Reform in Malaysia* (in Malay), Dewan Bahasa dan Pustaka, Kuala Lumpur, 1976, 207 pp.
2. Md. Zahir Kechot, Nik Hashim Mustapha, Chamhuri Siwar and Nasaruddin Arshad. *Microcomics: Principles and Analysis* (in Malay), Nurin Enterprise, Kuala Lumpur, 1985.
3. Chamhuri Siwar & Surtahman Kastin Hasan, *Ekonomi Malaysia (Malaysian Economics)* Longman (M) Bhd. Petaling Jaya, First Edition (1985), Second Edition (1988), Third Edition (1994), Fourth Edition (1999), Fifth Edition (2002).

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5. Chamhuri Siwar, *Economic Issues*, Dewan Bahasa dan Pustaka, Kuala Lumpur, 1988, 290 pp. (in Malay).
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11. Mohd. Zyadi Md. Tahir, Mansor Jusoh, Chamhuri Siwar, and Mohd Zainuddin Salleh, *"The Dictionary of Economics"*, (in Malay) Dewan Bahasa dan Pustaka, Kuala Lumpur, 1993, pp. 324.
12. Chamhuri Siwar, Redzuan Othman, Nik Hashim Mustapha, *Ekonomi Malaysia Asas* (Basic Malaysian Economics), Utusan Melayu Press, Kuala Lumpur, 1994, 196 pp.
13. Chamhuri Siwar, Ahmad Md. Zin and Abdul Hamid Jaafar, "Rural Industries: Problems and Prospects" (in Malay) UKM Press, Bangi, 1995.
14. Chamhuri Siwar and Nor Aini Idris (Eds.) *Poverty Amidst Economic Development in Malaysia* (in Malay), UKM University Press, Bangi, 1996.
15. Chamhuri Siwar, Abd. Malik Ismail and Abd. Hamid Jaafar (eds). "Malaysian Agricultural Reform - Towards Vision 2020" (in Malay) UKM Press. Bangi, 1998. 467 pp.
16. Chamhuri Siwar. 2001. *Pembangunan Mapan: Strategi 'Menang-menang' untuk Pembasmian Kemiskinan dan Pemuliharaan Alam Sekitar, (Sustainable Development: Win-win Strategy for Poverty Alleviation and Environmental Conservation)*, Syarahan Perdana jawatan Profesor, 31 Oktober. Bangi: Penerbit Universiti Kebangsaan Malaysia. Pp. 81
17. Chamhuri Siwar, Hasnah Ali, Abdul Rashid Ahmad, Mohd Zahir Abdul Hamid .2001.(eds.), *Dasar Memperbaiki Pengurusan Sisa Pepejal Perbandaran,(Policies for Improving Municipal Solid waste Management)*. Bangi: Institut Alam Sekitar dan Pembangnan (LESTARI), UKM, 199 pp.
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19. Chamhuri Siwar, Surtahman Kastin, Norshamliza Chamhuri. 2005.*Ekonomi Malaysia*. Pearson-Longman, Petaling Jaya, Sixth Edition, pp. 574.
20. Ibrahim Komoo, Tjia Hong Djin, Abdul Latif Mohamad, Tajul Anuar Jamaludin, Mohd Shefa Leman, Chamhuri Siwar, Mohd. Raihan Taha. 2005. *Bencana Tsunami 26.12.04 di Malaysia: Kajian Impak Alam Sekitar, Sosioekonomi dan Kesejahteraan Masyarakat*. Akademi Sains Malaysia & LESTARI. Universiti Kebangsaan Malaysia. Pp.168.

21. Chamhuri Siwar, J.J. Pereira & Siti Haslina Md Harizan (eds.). 2007. CSR for Sustainable Development. Roundtable Dialogue no 14. Institute for Environment and Development. UKM.
22. Chamhuri Siwar, Rospidah Ghazali, Md. Elias Hossain and Abdulai A.Mumin .2008. (Editors). *Linking Rural Poverty and Environment: Governance and Sustainable Development Policies*. Institute for Environment and Development (LESTARI): Universiti Kebangsaan Malaysia. ISBN 978-967-5227-05-9 (Pp: 620)
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F.3 Monograph/ Occasional Papers

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3. Chamhuri Siwar et.al. *After 1990: Economy and Nation Building* (in Malay) Dewan Bahasa dan Pustaka, Kuala Lumpur, 1990, 69 pp.
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5. Chamhuri Siwar and Mohammad Hj. Alias, "The Multiple Cropping Model: A Case for West Malaysia Paddy-rice Sector", *Occasional paper*, No. 3, Faculty of Economics,Universiti Kebangsaan Malaysia, 1978.
6. Chamhuri Siwar, "Land Tenure and Land Reform in Malaysia" (in Malay) *Occasional paper*, No. 7, Faculty of Economics, Universiti Kebangsaan Malaysia, 1978.
7. Chamhuri Siwar and Mohd. Anuar Amin, "Poverty Among Paddy Farmers: Case Study in Besut, Kemubu, Seberang Prai, Tanjung Karang and Jasin" (in Malay) *Occasional paper*, No. 38, Faculty of Economics, UKM, March 1989.

F.4 Chapters in Books

1. Chamhuri Siwar and Rogayah Ngah, "Some Socio-Economic Aspects of Fishermen in the East Coast of Peninsular Malaysia with Particular Reference of the Fishing Community of Seberang Takir, Kuala Trengganun, in A. Librero and B. Collier feds.), *Economics of Aquaculture, Sea-Fishing and Coastal Resource Use in Asia*, Agriculture Economics Society of South-East Asia, Philippines, November 1977.

2. Chamhuri Siwar and Nik Hashim Mustapha, "Problem of Adoption of New Farm Technology: A Case of Adoption of New Farm Technology in the Paddy Farming Areas of Kelamtam, West Malaysia", in R. Radhakrishna and M. Mohinder Singh (eds.) *Technology for Rural Development*, Committee on Science and Technology in Developing Countries, Bangalore, India, 1978:pp:172-194.
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6. Chamhuri Siwar, "Restructuring of Society Via Land Reform" in *Economic, Social, and Political Issues: Malaysia* (in Malay) Dewan Bahasa dan Pustaka, Kuala Lumpur, 1983.
7. Chamhuri Siwar, "The Need and Problems of Rural Credit" in *Economic, Social and Political Issues: Malaysia* (in Malay), Dewan Bahasa dan Pustaka, Kuala Lumpur, 1983.
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ATTACHMENT 3

IRDR Constitution

Constitution of the Integrated Research on Disaster Risk (IRDR) programme

The Programme

The Integrated Research on Disaster Risk (IRDR) programme (hereafter referred to as IRDR) is an international and interdisciplinary research programme of ten years' duration, created to address the major challenges of natural and human-induced environmental hazards. Its objectives are the scientific characterization of natural and human-induced environmental hazards, vulnerability and risk; the understanding of decision-making in complex and changing risk contexts; and the reduction of risk and curbing losses through knowledge-based actions. The programme is founded on the recognition that disaster risk management is a critical component of the global poverty reduction agenda and efforts to adapt to climate change, and should be an integral part of all international and national development drives.

Sponsors

IRDR is jointly sponsored by International Council for Science (ICSU), the International Social Science Council (ISSC) and the United Nations International Strategy for Disaster Reduction (UN-ISDR), hereafter referred to as 'the Sponsors'. The Sponsors acting jointly shall establish the governance arrangements for the IRDR, appoint the Chair and Members of the IRDR Scientific Committee and the Executive Director of the International Programme Office, receive and approve reports from these officers, and assist in promoting the programme and mobilizing resources for it.

The Scientific Committee

The IRDR Scientific Committee (IRDR-SC) is the principal governing body of IRDR set up by, and acting for, the Sponsors of the programme. Its responsibilities are to define, develop and prioritize plans for IRDR, to guide its programming, budgeting and implementation, to establish a mechanism for oversight of programme activities, and to disseminate and publicize its results. The Scientific Committee shall approve plans for the inclusion of projects and initiatives under the IRDR umbrella, and assure liaison and facilitate co-operation with relevant national, regional and international programmes, organizations and institutions actively involved in natural hazards

and disaster risk management. It shall adopt and apply guidelines for the establishment of IRDR-designated International Centres of Excellence and IRDR National Committees (see below). The IRDR-SC shall strive to mobilize funds for the implementation of IRDR and the activities related to the Committee and its working groups.

In performing its various functions, the IRDR-SC shall be supported by the International Programme Office for IRDR (see below).

The IRDR-SC shall solicit nominations for the position of Chair of the IRDR-SC from the international scientific community, review the nominations, which may include current Members of the IRDR-SC, and make a recommendation on not less than three names for consideration by the Sponsors. The term of office of the Chair shall normally be three years, renewable once.

In addition, up to fourteen Members of the Committee, serving in their personal capacity, shall be jointly appointed by the Sponsors, upon advice from the Chair of the IRDR-SC, and selected on the basis of their standing in the international scientific research or disaster risk expertise communities and their commitment to the strategic objectives of the programme, with due regard being given to regional experience, gender and wide disciplinary balance. The term for Members of the IRDR-SC shall normally be three years, renewable once. Terms may be varied by the Sponsors from time to time to achieve overlap and continuity of Committee functions.

Designated representatives of each Sponsor and the Director-General of the host institution shall serve as *ex officio* members of the IRDR-SC.

The IRDR Executive Director shall act as Secretary to the IRDR-SC and will participate in all IRDR-SC meetings except with respect to matters pertaining to his or her performance.

The Chair may invite observers to attend meetings of the IRDR-SC.

The IRDR-SC shall meet normally twice a year, but with a frequency determined by the Committee itself. Supplementary meetings may be held through electronic means.

The IRDR-SC shall review and as appropriate approve annual budgets and financial reports provided by the IRDR Executive Director in accordance with normal financial practices.

The IRDR-SC shall prepare reports of its meetings and activities and communicate these to the

Sponsors. It shall prepare an annual report for consideration by the Sponsors.

The Officers

The Officers of the IRDR-SC shall be the Chair and three Vice-Chairs. Officers other than the Chair shall be elected by the IRDR-SC itself.

The Officers shall be jointly responsible for the implementation of decisions and policies of the IRDR-SC between its meetings, assisted by the IRDR Executive Director. They shall also discuss, and prepare directions on, matters to be acted on by the IRDR Secretariat.

The Chair, in consultation with the other Officers, may make temporary appointments to fill vacancies in the group of Officers. Such appointments shall extend until the time of the next IRDR-SC meeting.

In the event of a vacancy in the Chair, one of the Vice-Chairs shall be designated by the Sponsors to succeed to this office until a new Chair is formally appointed.

International Programme Office

The execution of programme promotion and coordination and related functions is undertaken by the IRDR International Programme Office (IPO), whose Secretariat is composed of an Executive Director and a number of supporting scientific and administrative personnel, all of whom shall be formally employed by the IPO's host institution (see below).

The Executive Director shall be appointed by consensus among the Sponsors, shall be formally employed by the host institution, and shall report to the Chair of the IRDR-SC.

The Executive Director, under the overall direction of, and in co-operation with, the IRDR-SC, shall facilitate the expeditious and orderly development, implementation and evaluation of the IRDR Programme, including the preparation of meetings of the IRDR-SC and its Officers and the preparation of annual and other reports.

The Executive Director shall select the scientific and administrative personnel of the IPO in consultation with the Chair of the IRDR-SC and the Director-General of the host institution, and shall direct and supervise such personnel.

A detailed programme of work for the Executive Director, including performance expectations, will be negotiated annually between the Chair of the IRDR-SC and the Executive Director.

Host institution

The host institution of the IRDR IPO is the Center for Earth Observation and Digital Earth (CEODE) of the Chinese Academy of Sciences, at its premises in Beijing, People's Republic of China, as established by the Letter of Cooperation signed between the Sponsors, the China Association for Science and Technology (CAST), the Chinese Academy of Sciences (CAS) and CEODE in Beijing on 22 February 2010. A Memorandum of Understanding on the establishment, administration and management of the Office, signed between CEODE and ICSU (acting on behalf of all the Sponsors), came into force on 28 May 2010.

Consultation Forum

An IRDR Consultation Forum shall be convened under the authority of the IRDR-SC, normally once per year, at which representatives of partner programmes and collaborating organizations, as well as National Committees, will be encouraged to provide input to IRDR. The Forum shall serve as a platform for expressions of views on programme development, as a forum for dialogue among the various stakeholders and funding organizations, as a venue for exchange of information on programme implementation and as a vehicle for developing supporting coalitions and greater commitment to the programme.

IRDR-designated International Centres of Excellence

A limited number of IRDR-designated International Centres of Excellence (ICoE) may be established in different parts of the world to support well-defined subject areas of IRDR and contribute to the mission of the programme. Such centres shall be created within guidelines set down by the IRDR-SC. Each shall be located in, and financed by, (a) suitably qualified national host organization(s), and shall be overseen by an individual international advisory board appointed by the IRDR-SC in full consultation with the respective host institution(s).

IRDR National Committees

The establishment of National Committees for IRDR shall be encouraged as a mechanism to promote and support IRDR-related research initiatives of the countries and to enhance the links

between national and international disaster risk research programmes and activities. Each National Committee is expected to include, in its make-up, researchers from the natural, social, health and engineering sciences, along with policy makers and practitioners concerned with the reduction and management of disaster risks, and to maintain a close relationship with the national platform for disaster risk reduction where such a body exists.

Finances

The administrative and financial arrangements for the operation of the IPO and its programme of work are set out in a Memorandum of Understanding signed on 1 June 2010 between ICSU, acting on behalf of the Sponsors, and CEODE, as host institution.

The running costs of the IPO shall be met by an annual contribution from CAST. The costs of other IRDR activities shall be met from a variety of sources, including international and national funding agencies, and other governmental and non-governmental funding sources.

The Executive Director shall make decisions on expenditures in line with an annual budget approved by the IRDR-SC.

CEODE will be responsible for administering the finances of IRDR on behalf of the Sponsors in accordance with its normal practices and procedures, as well as auditing all accounts and financial reports.

Amendments to the Constitution

Amendments to this Constitution may be submitted by the IRDR-SC, after adoption by two-thirds of its members, to the IRDR Sponsors for their consideration. This Constitution may also be amended by agreement among the Sponsors, after consultation with the IRDR-SC.

This Constitution was approved by ICSU, ISSC and UNISDR on .

For ICSU:

For ISSC:

For UN-ISDR:

ATTACHMENT 4

“Visioning”

Presentation by Deliang Chen

ICSU-ISSC Visioning Process and Institutional Challenges

Deliang Chen

Acknowledgement: **Johan Rockström, Walter Reid**, Elinor Oström
Kari Raivio, Anne Whyte, Hans Joachim Schellnhuber
Heide Hackmann, Khotso Mokhele, Gernot Klepper

Belmont Forum meeting in Cape Town, 26-27 October, 2010

Global Environmental Change (GEC) Research

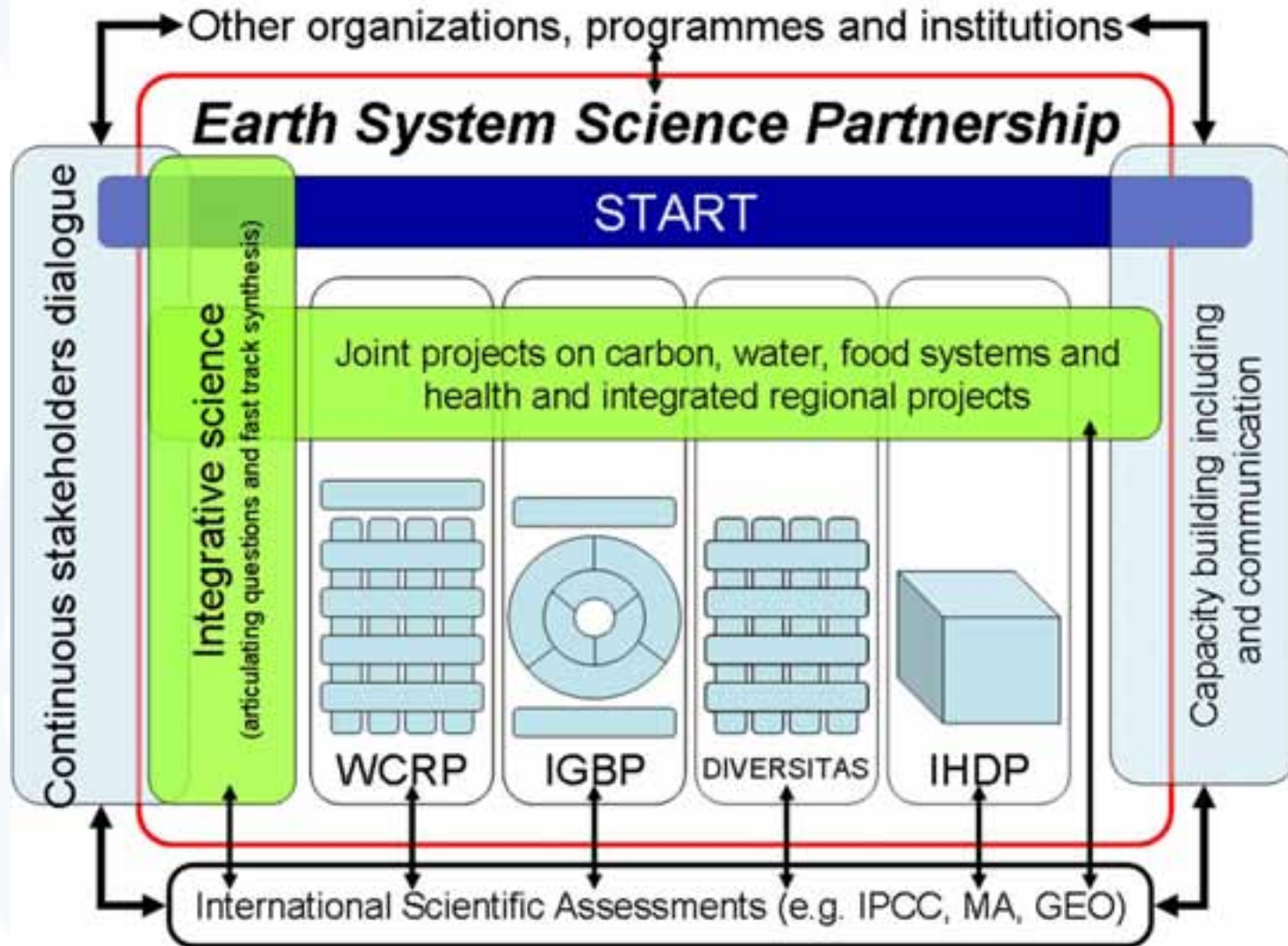


- 1980: World Climate Research Programme (WCRP)
- 1987: International Geosphere-Biosphere Programme (IGBP)
- 1996: International Human Dimensions Programme on Global Environmental Change (IHDP)
- 2002: DIVERSITAS – An International Programme of Biodiversity Science



Earth System Science Partnership (2001)

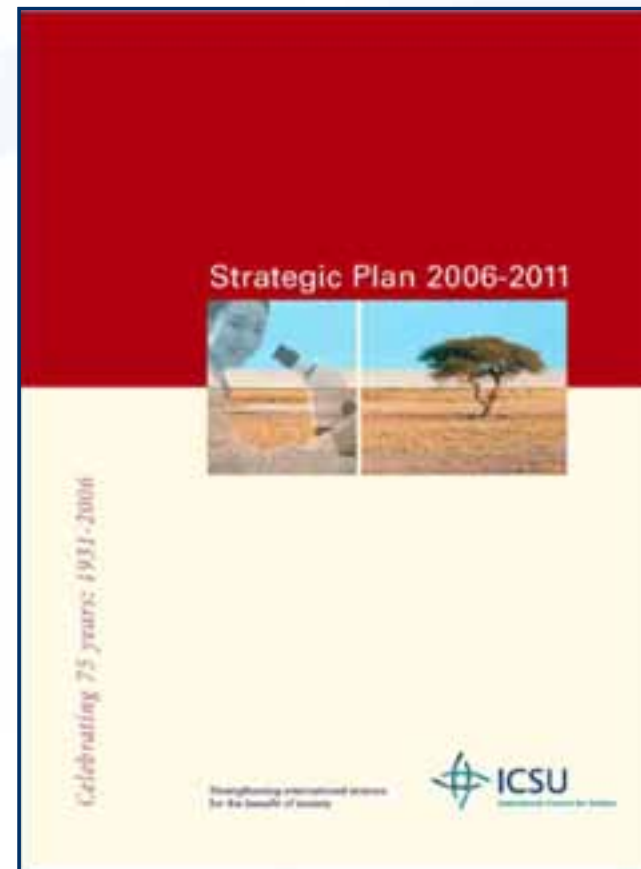
Earth System Science Partnership: Towards transdisciplinary integrative science



ICSU Strategic Plan 2006-2011



“ICSU will conduct individual reviews of its global environmental change research programmes. Special attention will be given to the development of the Earth System Science Partnership, which brings together the four programmes to address issues that are integral to sustainable development.”



GEC Programme Reviews

Reviews

- IHDP: 2006
- ESSP: 2008
- IGBP: 2009
- WCRP: 2009
- DIVERSITAS: tba

Common recommendations

- Priority setting
- Effectiveness
- Integrated research framework

ICSU General Assembly Decision

Decision of the 29th ICSU General Assembly

(Maputo, October 2008)

“to note that CSPR is planning to organize 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, once the reviews of IGBP and WCRP are completed.”

Visioning Process

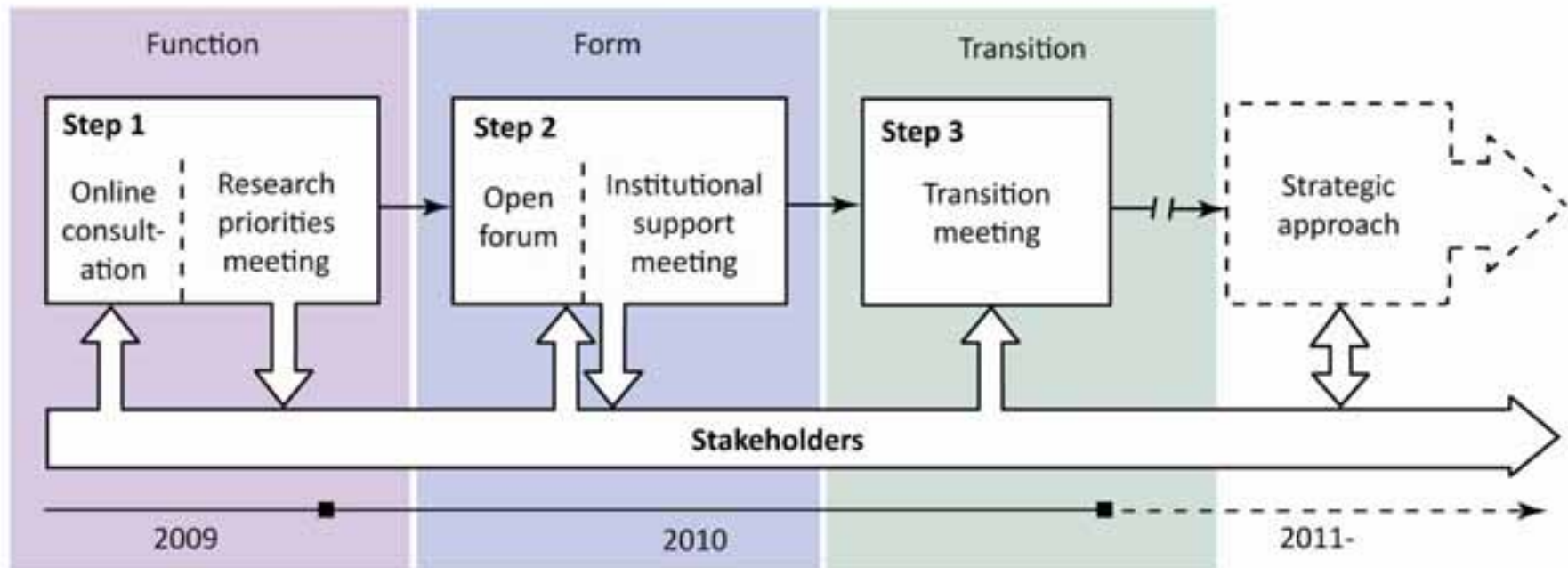
Goal:

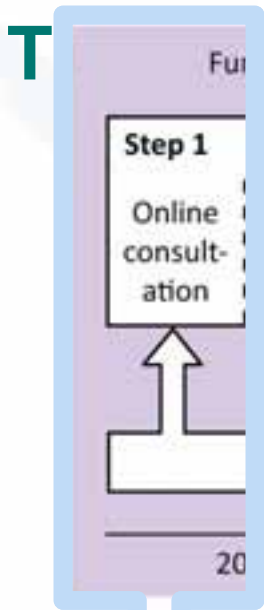
To engage the scientific community to explore options and propose steps to implement a holistic strategy for Earth system research. This strategy will both encourage scientific innovation and address policy needs



The screenshot shows the 'EARTH SYSTEM VISIONING' website. The header includes the title 'EARTH SYSTEM VISIONING' and the subtitle 'DEVELOPING A NEW VISION AND STRATEGIC FRAMEWORK FOR EARTH SYSTEM RESEARCH'. A navigation menu contains links for 'Home', 'Visioning Open Forum', 'The Visioning Process', 'FAQs about Grand Challenges', and 'Pre-final consultation'. The main content area features a 'Grand Challenges in Global Sustainability Research (Pre-publication Version) now available!' announcement, followed by an 'Open Forum on Institutional Support for the Grand Challenges' announcement. A prominent blue button labeled 'Submit Comments to the Open Forum' is centered on the page. Below this, there is a list of topics to be discussed at the forum, including 'Grand Challenges in global sustainability research', 'Possible institutional frameworks to support the Grand Challenges research', 'Funding perspectives', 'Policy relevant communication', and 'Regional perspectives'. A sidebar on the right shows 'Users Online' with a count of 'Users: 2 Guests, 180'.

Earth System Visioning Process

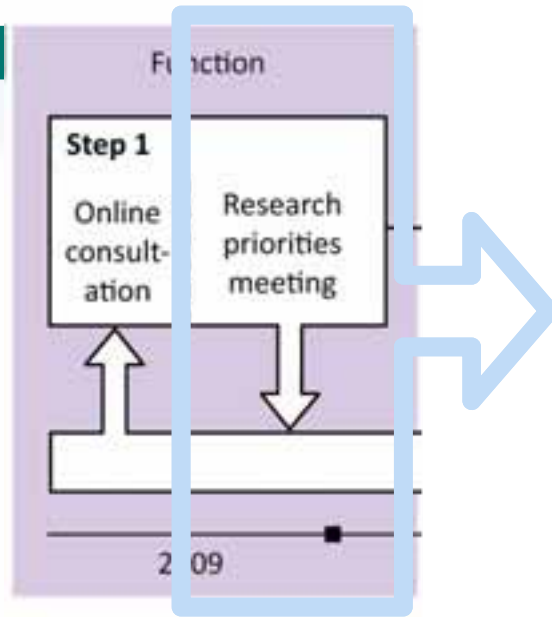




Online Consultation (Aug 2009)

- 1,016 registered users from 85 countries
- 323 research questions posted

TI

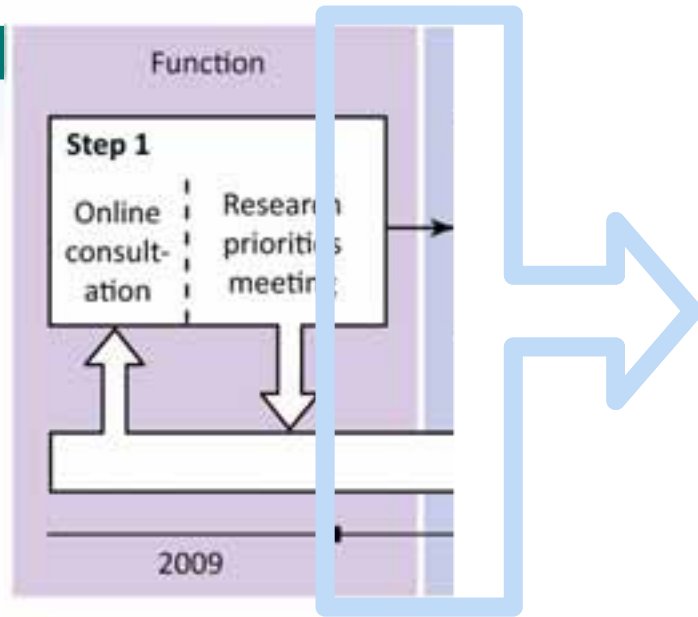


Science

Visioning Earth System research meeting (Sept 2009)

- Early career & senior scientists
- Science-policy experts
- Funders
- GEC programs
- ICSU and ISSC

TI



Grand Challenges in Global Sustainability Research:

A Systems Approach to Research Priorities for the Decade

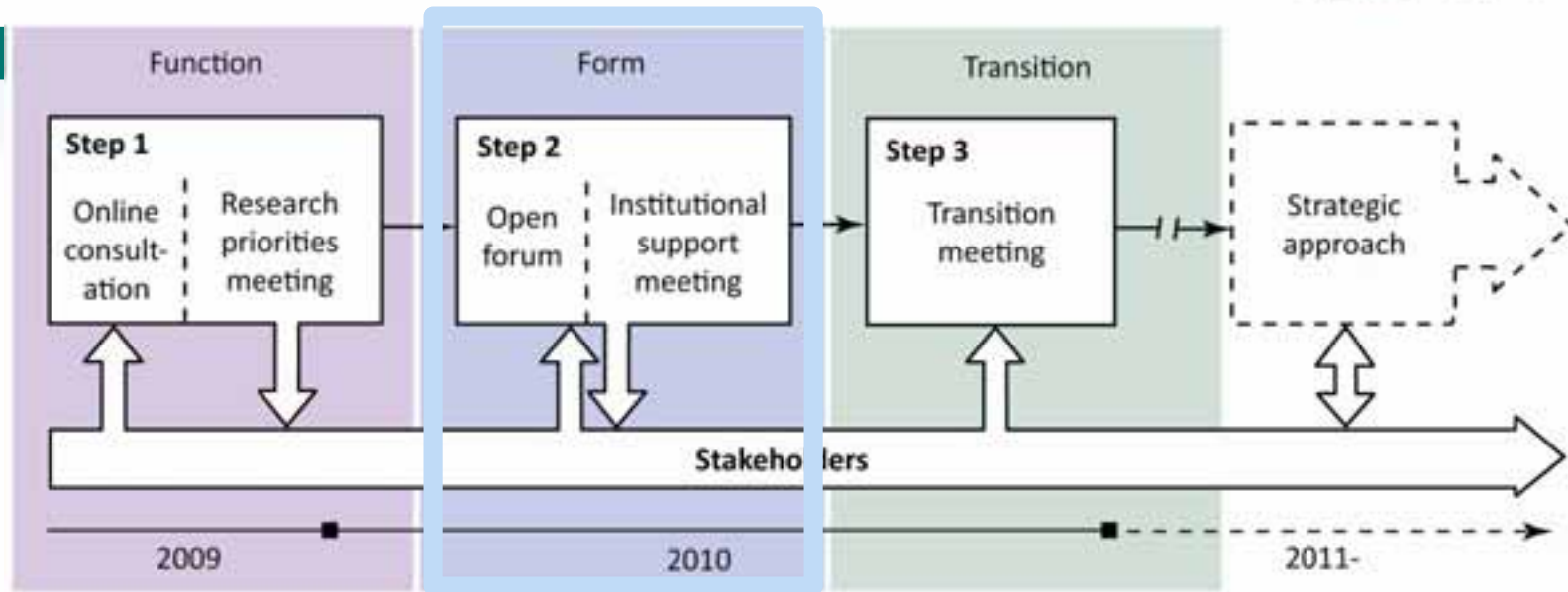


Review Draft

Dec 2009 to Mar 2010

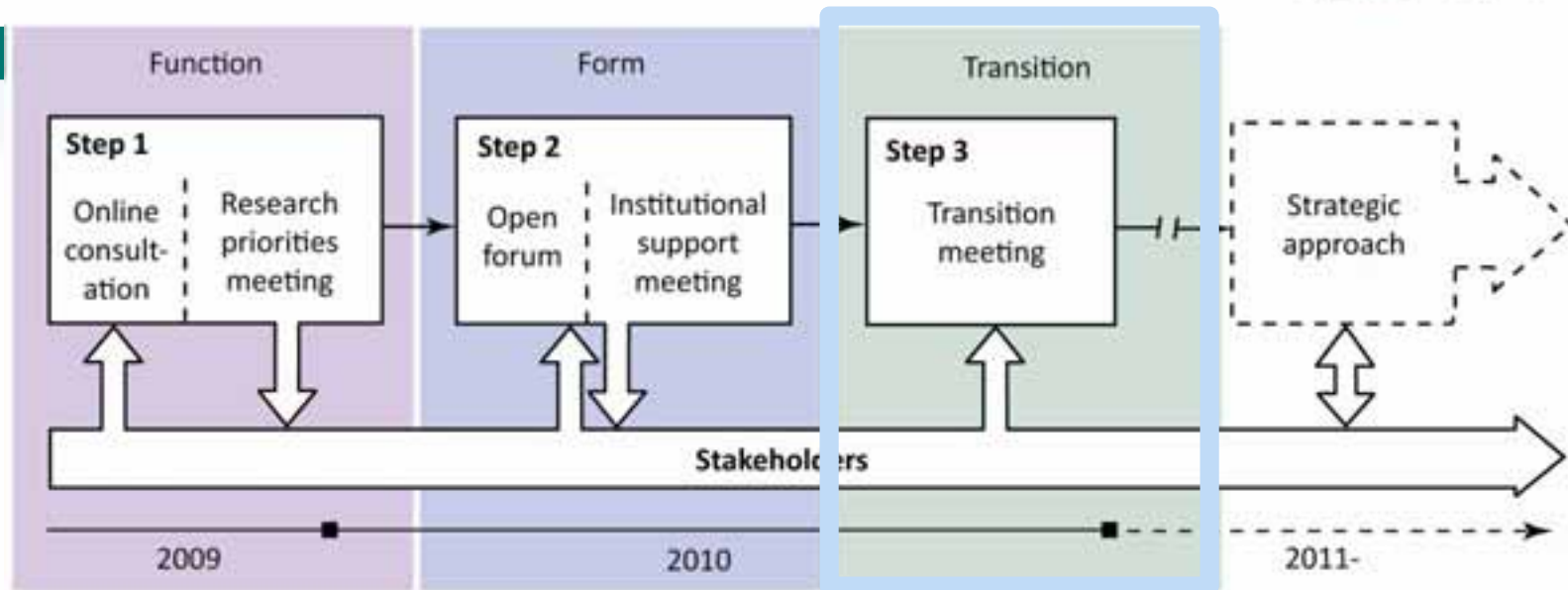
- 46 Institutions
- 202 Individuals

TI



Open Forum
Institutional Support Meeting

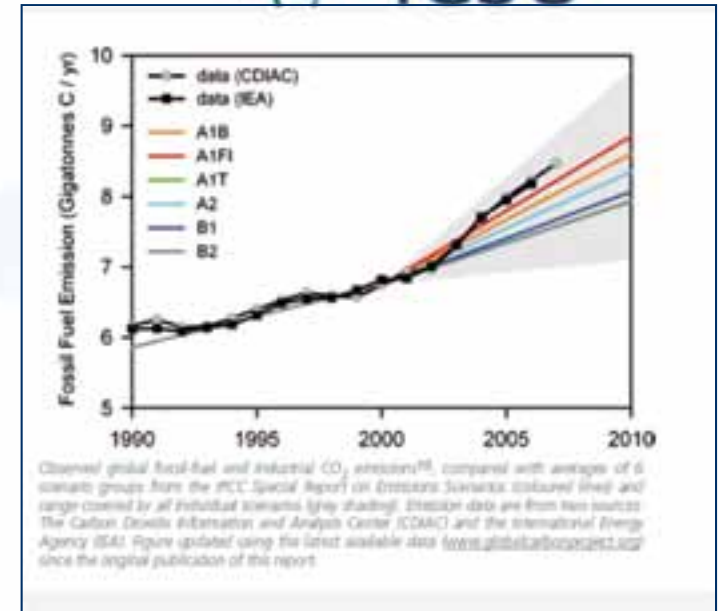
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Transition Meeting

Three Decades of Global Change Research

- Extraordinary progress in understanding the Earth System and consequences of human action
- Global environmental change outpacing response
- Current path is unsustainable
- Sound basis for actions to mitigate and adapt to global change



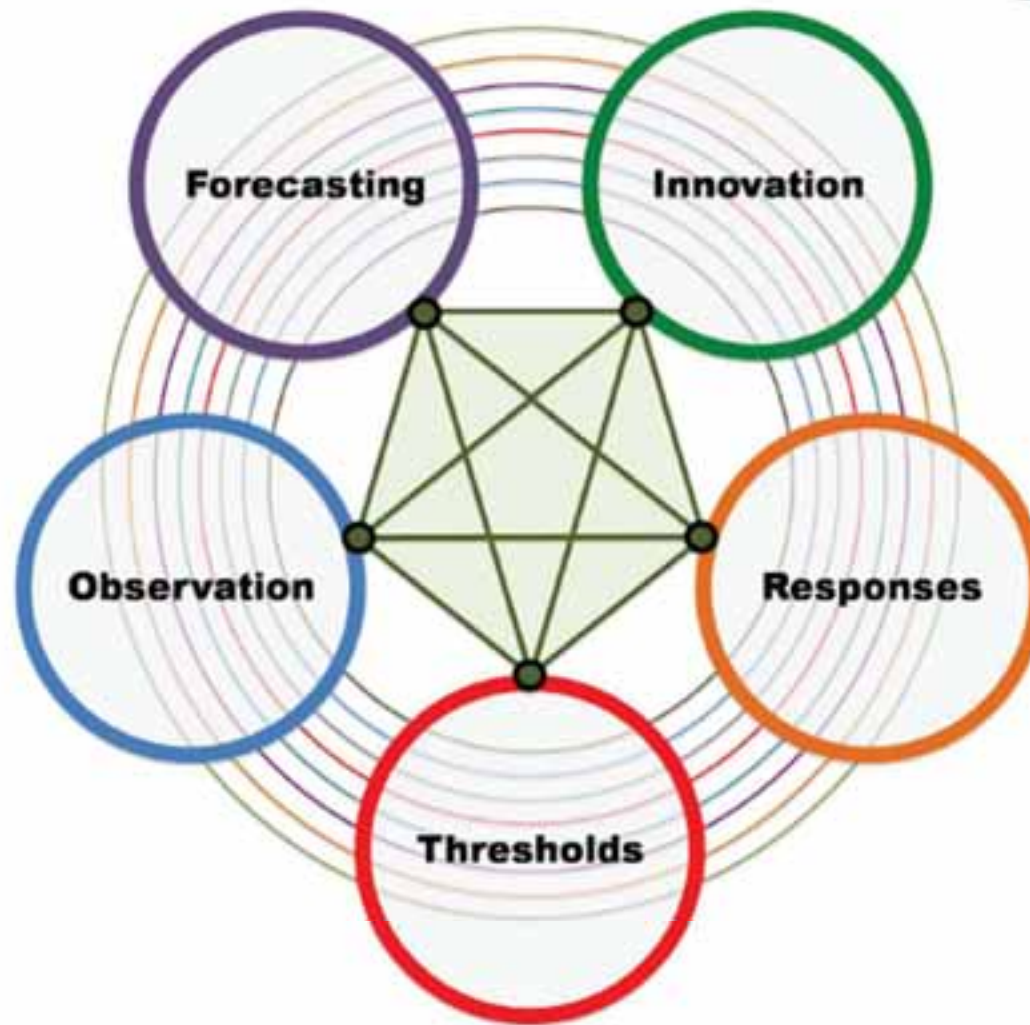
Need far more information and understanding to solve the problem that global environmental change poses for our societies

Mobilize international global change scientific community around an unprecedented decade of focused and intensive research



Transition

From:	To:
Disciplinary Research	Disciplinary, Interdisciplinary & Transdisciplinary
Strongest Emphasis on Natural Sciences	Full Range of Sciences and Humanities



Grand Challenges in Global Sustainability Research

The Grand Challenges

1. **Forecasting:** Improve the usefulness of forecasts of future environmental conditions and their consequences for people.
2. **Observing:** Develop, enhance and integrate the observations systems needed to manage global and regional environmental change.
3. **Confining:** Determine how to anticipate, avoid and manage disruptive global environmental change.
4. **Responding:** Determine what institutional, economic and behavioural changes can enable effective steps toward global sustainability.
5. **Innovating:** Encourage innovation in developing technological, policy, and social responses to achieve global sustainability.

Grand Challenge: A call for scientific innovation or understanding that would remove critical barriers to deciding how to manage global change and its impacts

Criteria	Grand Challenges
Scientific Importance	✓
Global Coordination	✓
Relevance to Decision-makers	✓
Leverage	✓
Broad Support	✓

Institutional Challenges

Scientific evolution of onvergence towards integrated Earth system science



GLOBAL
I G B P
CHANGE



WCRP
World Climate Research Programme

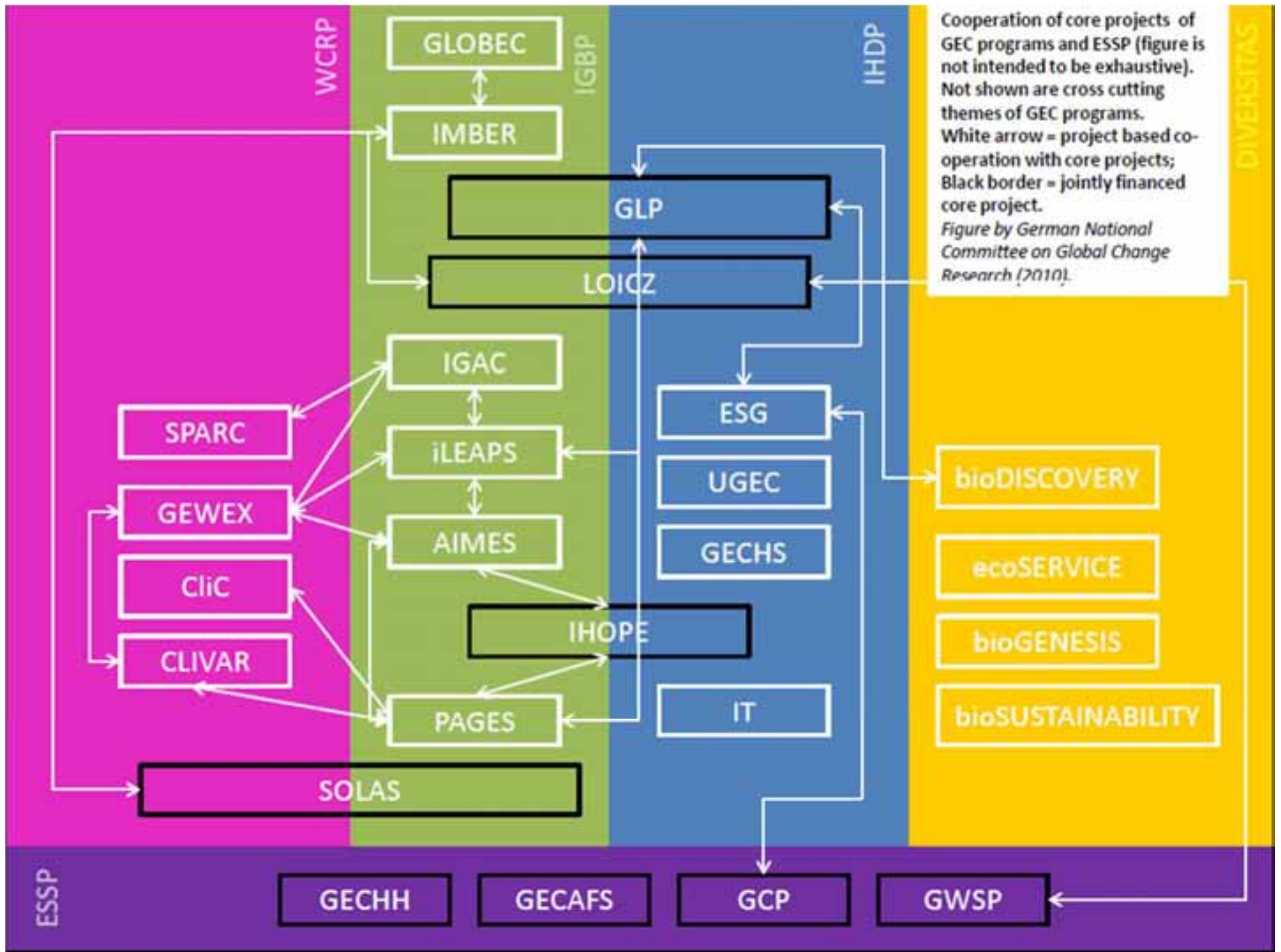


Integrated
Earth
System
Science

(growing capability
of predicting the
Earth system
implications of
anthropenic change)

Institutional evolution





2nd Web consultation



Question on Institutional Framework:

To implement the “Grand Challenges in Sustainability Research”, an organizational structure is needed. What are the three most important elements this organizational structure should have?

Responses to the Institutional Frameworks Question

Strong involvement and close collaboration with different groups and actors

- **All disciplines:** natural sciences, social sciences, humanities
- **Worldwide:** all regions, nations, cultures; developing world
- **Policy:** decision-makers, politicians, funding agencies
- **The public:** citizens and constituencies
- **“Stakeholders”:** not clearly defined

Responses to the Institutional Frameworks Question

Characteristics most frequently mentioned that the organizational structure should display:

- **Scientific excellence:** highest scientific quality
- **Flexibility:** minimal bureaucracy; adaptive
- **More funding:** sufficient funding; self-sufficient
- **Transparent:** and democratic
- **Leadership:** strong, visionary and wise
- **Simple, clear structure:** no alphabet-soup of acronyms
- **Open-ended:** and open-minded

International Capability to Address the Belmont Challenge

Presentation by Deliang Chen

International Capability to Address the Belmont Challenge

Deliang Chen
Executive Director of ICSU

Belmont Forum meeting in Cape Town, 26-27 October, 2010

Outline

- A study of the international research capability to meet the Belmont Challenge: background
- Working procedure of the study
- The Panel and contributors
- A summary of the report

The Belmont Challenge

- Regional Environmental Change: Human Action and Adaptation
 - The following require **regional and decadal prediction, advanced observing systems**, and inclusion of **social sciences**. They involve synergy of multiple stressors, including extreme events.
 - Coastal zone
 - Water cycle & resources
 - Carbon cycle
 - Ecosystem services – food security
 - Most vulnerable societies (geographic areas), with low capacity and high societal impact

Belmont project



ICSU was commissioned to conduct analysis of international research capability to respond to the Belmont Challenge. The analysis should focus on

- Solvability of problems
- Infrastructure and personnel

The panel members

Guy P. Brasseur (Chair) Melvyn Shapiro (advisor)
Philippe Bougeault Gilbert Brunet
Antonio Busalacchi Opha Pauline Dube
Congbin Fu Sandro Fuzzi
Anne Marie Izac Pavel Kabat
Jack Kaye Gernot Klepper
Gordon McBean Carlos Nobre
Adrian Simmons Julia Slingo
Martin Visbeck Deliang Chen (*Ex officio*)
Gina Adams (observer)

The contributors

Paulo Artaxo

Heide Hackmann

Rik Leemans

Hassan Virji

Robert Bishop

Jill Jaeger

Alexia C. Massacand

Oran Young

Procedures



- The panel was appointed in last December and its first meeting conducted on 4/12/09 in Paris, focusing on the working procedure and structure of the report.
- Some key international initiatives/programmes and individuals were contacted for input.
- The input outside the panel has been worked out by the panel members working in pairs.
- The second panel meeting held on 8-10 March outside Paris & the first draft report was ready on 8 April
- The draft report was be reviewed twice by a group of invited scientists (30+) in April-June
- Final report was approved by the ICSU EB in July and submitted to the BF in August.

Structure of the discussion and to some extent the report



- Global environmental observational system including socio-economic information. Access to data
- Multi-disciplinary research program on environmental changes including the need for supercomputing resources
- Environmental Service in support of mitigation and adaptation
- Environmental user interface mechanisms
- Capacity building

The Report

“Regional Environmental Change: Human action and adaptation – what does it take to meet the Belmont Challenge?”

- Readiness of the community
- Impediments
- Road Map to address the Belmont Challenge
- Instruments and Initiatives
- Conclusions

Readiness of the Community

The academic community is aware of the challenges, however

- The selection of research topics is often dominated by academic curiosity and disciplinary challenges, and much less so by societal needs
- Impressive disciplinary knowledge has been accumulated (data & models) but is not brought to full use for Belmont Challenge type questions
- The institutional structure and the incentives for integrated analyses of the Belmont Challenge are not sufficiently developed

Impediments



- **Funding Structure**
 - Academic funding often organized along disciplinary lines
 - Difficulties in coordinating international funding schemes
 - Lack of funding for local academics in the most vulnerable regions
- **Educational Systems**
 - The academic reward system does not support integrated research activities
 - At least Postdoctoral programs should emphasize interdisciplinary expertise
- **Infrastructure and Facilities**
 - Infrastructure for regional environmental issues has been developed along disciplinary lines – integration is necessary
 - Even more powerful machines are needed for “Earth System Prediction Models”

Road Map

- Key issues
 - Coastal zones in the 21st century
 - Water quality and water resources
 - Sustainable carbon based economy
 - Most vulnerable societies
 - Human behavior
- Some requirements

Understand the roots of human behaviour



- Top-down approaches featuring public policy making and implementation;
- Bottom-up approaches featuring the role of social movements;
- The role of institutions and, more specifically, governance systems;
- Decision-making under uncertainty
- The role of local or traditional knowledge, as well as religious or spiritual beliefs; and human security

Requirements



Addressing the issues requires

- enhanced understanding of multiple stressors and their impacts, and vulnerability of ecosystems and society
- better quantification of the rates of change, the controlling factors and feedbacks at relevant spatial and temporal scales;
- thorough assessment of the environmental and societal consequences of mitigation and adaptation strategies

Requirements

These in turn require more effective use and further development of four elements

- **Observation and monitoring (Socio-economic data)**
- **Analysis and prediction (Integrated Earth system analysis and prediction systems)**
- **Information and communication (Environment Service)**
- **Capacity building**

Instruments and Suggested Initiatives

- International Research and Educational Network for Earth System Science (IRNESS)
- Pilot Studies
 -
 -

Main conclusions

- To integrate and coordinate our efforts in a single framework (Establish an international research and educational network for Earth system science)
- Science needs to provide answers that are pertinent to the questions posed by society
- Encourage natural and social scientists to work together (Conduct a study focusing on issues associated with the integration)
- Nurture the new generation of experts
- Encourage diverse approaches

Thanks to NSF
for support!



COST Action Proposal

COST Action proposal

'Reducing the Impacts of Geohazards-Induced Disasters through Improved Risk Management informed by Global Earth Observations?'

Abstract (150 words):

Geohazards are a growing cause of disasters. Population growth, concentrated in hazardous areas, is increasing exposure and multiplying the loss of life, livelihoods and property. Mitigation and preparedness are urgent and need accessible, actionable geohazards information. Whilst national and international programs are improving disaster and risk management, links to end users are weak, particularly in developing countries. This COST Action will create a platform for: analysing information flows to users; standardizing observations, products, and services; developing new services for scientists and civil protection authorities; and implementing end-to-end pilot projects that transfer methodologies from advanced to undeveloped regions. The goal is to support efficient geohazard risk management across the risk management cycle with actionable information derived from earth observations. For that, we will assemble the building blocks required to bring the Global Earth Observing System of Systems' full benefits to end users, increase resilience and reduce disaster impact.

Key Words (50 words):

Geohazards, Risk Management Cycle, Disaster Management, Resilience, Hyogo 2005 Framework, Earth Observation, Group on Earth Observations (GEO), Community of Practice (CoP), Global Earth Observing System of Systems (GEOSS).

Preferred COST Domain:

Earth System Science and Environmental Management

BACKGROUND, PROBLEMS

Natural hazards are a growing societal challenge. Many disasters originate from geohazards, such as earthquakes, volcanic eruptions, landslides, and tsunamis (e.g., Marsh et al., 2004). Trends towards sprawl of large urban settlements and infrastructure into hazardous areas show no sign of abating, thus increasing the likelihood of extreme disasters occurring that could inflict extensive damage and even disrupt whole economies.

Geohazards are increasingly well known, many of the driving processes are understood, and in many areas comprehensive descriptions of the characteristics of geohazards are available, e.g., in the form of hazard, risk, and vulnerability maps. Increasingly, early detection of hazardous events is technically feasible, a key element in disaster reduction. Nevertheless, disasters have a growing impact. In many cases, decision and policy making does not utilize all available information, e.g., for zoning and building codes, particularly in developing regions. Timely detection of hazardous events is often impossible due to a lack of operational detection systems, and early warnings are not issued due to a lack of infrastructure and implemented

decision processes, or are ineffective due to limited preparedness. Prior to disasters, public awareness of the risk is often limited, and information on geohazards and associated risks is not an integral part of public environmental information. As a consequence mitigation and adaptation measures are insufficient, and preparedness is low.

Over the last few decades several international programs have reacted to the increasing losses caused by natural disasters and focused on disaster reduction. Developed by these programs, the concept of the risk management cycle with the four phases of mitigation and preparedness, early warning, response, and recovery captures elegantly the necessary steps to reduce the number and scale of disasters (UNISDR, 2005). The essential building blocks for efficient risk management include improved data access, better availability and use of information and improved understanding of hazards, their causes and their potential impacts. The *Group on Earth Observations'* (GEO) goal for its "Disasters" Societal Benefit Area (SBA) is "*reducing loss of life and property from natural and human-induced disasters*" (GEO, 2005). GEO's Strategic Target for the "Disasters" SBA then recognizes the importance of observations and focuses GEO and the *Global Earth Observation System of Systems* (GEOSS) on improved coordination of observing and information systems.

In Europe, the Community mechanism for civil protection aims to facilitate co-operation in civil protection assistance interventions in the event of major emergencies. This mechanism uses a Modules concept, where Modules are tasks and needs driven pre-defined arrangements of resources. Information on geohazards is crucial for developing these modules. The European Directive on public access to environmental information helps to prepare awareness. However, integrating information on geohazards into the available environmental information is still in its infancy. At national and local levels, authorities involved in risk and disaster management have developed approaches to specific geohazards. Thus, even in most advance geographical regions, there are many individual pieces, but the full picture is missing. In particular, the extraction of actionable information from Earth observations is to a large extent still in a research state. Moreover, there is no European-wide harmonization of the assessment, preparedness, detection, and early warning for geohazards. Best practices are not commonly shared and the European risk management community is fractionated on both the provider and end-user sides. Thus, risk management for geohazards is not based on scalable end-to-end solutions as a basis for European-wide best practices.

Within this COST Action, we aim to enable European geohazard risk management by bridging the gap between the available observations and scientific knowledge on the one side and the decision makers and general public on the other. We will further develop the methodologies to derive actionable information required for efficient risk management from Earth observations. We aim to bring together representatives of expert groups in geohazards with end users in order to develop the building blocks for an end-to-end approach to the risk management cycle. By doing so, we aim to facilitate harmonization and development of a template for risk management

in Europe that can be applied to other natural hazards (as well as other geographical regions), and that will fully utilize the benefits of GEOSS for disaster reduction.

BENEFITS

The key benefit of the proposed COST Action will be the development and demonstration of scalable methodologies to bring the wealth of information available on geohazards to those involved in risk management, be it within government organizations as a spatial planner, policy maker, or civil protection officer, or citizens making decisions affecting their exposure to geohazard-related risks. The approach will support civil protection at European, national and local levels, and it will be made available for other regions.

A longer term benefit of the COST Action will be the technology transfer from areas with leading-edge approaches to risk management into those where risk management is not yet informed by geohazard information and knowledge, thereby delivering a significant reduction in the scale of geohazards-induced disasters. Our approach will provide a template for the injection of Earth observations and derived information into risk management for all natural hazards.

For Europe, the direct added value of the COST Action will be a reduction of the impacts of environmental disasters through better informed preparedness, early warning and response. The high-level of interconnectivity illustrated by the economic and societal impact of the recent Eyjafjallajökull eruption revealed the large potential for added value from improved information. Indirectly, the Action will reduce the needs for responses in other parts of the world, increase stability, and reduce pressure from refugees.

OBJECTIVES, DELIVERABLES AND EXPECTED SCIENTIFIC IMPACT

The objective of this COST Action is to facilitate the growth of standardized, accessible, high quality information pertaining to geohazards derived from Earth observations and to develop best practices that utilize this information in support of policy and decision makers and the general public in a responsible implementation of the risk management cycle.

Deliverables of the COST Action include an overview of the current status of the use of Earth observations for risk management in terms of best practices, knowledge gaps, and infrastructural requirements and gaps; recommendations and steps for improvements; best practices and agreed-upon protocols, standards and common ontology increasing interoperability along the chain from observations to end users and across the risk management cycle; new services identified by the Geohazards CoP as urgently needed; and demonstrated efficient links between those providing Earth observations and services and those making planning decisions at all levels from international down to local community that improve risk management.

The COST Action will build upon European strength in some areas of geohazards and, in a cross fertilization, utilize the strength of others in other areas. Scientifically, through linking globally distributed core sites with multi-hazards challenges, the COST Action will improve our understanding and methodology of how best to exploit Earth observations for geohazards-related research and applications elsewhere.

SCIENTIFIC PROGRAMME AND INNOVATION

The main scientific aspect addressed by the proposed COST Action is how to extract actionable geohazards-related information from Earth observations in support of the four phases of the risk management cycle. The COST Action will:

- survey the requirements, current capabilities, obstacles, and gaps;
- develop steps for improvements;
- increase interoperability and accessibility through agreed-upon protocols, standards and common language/ontology;
- develop and demonstrate scalable end-to-end links that ensure access to available information by those who need it, when and where needed.

The COST Action will provide a research and coordination platform for the fertilization of risk management in Europe with actionable geohazards-related information and services. An end-to-end demonstration will utilize the concept of tandem core centres. Core centres are potentially virtual, high-level centres of expertise that can serve a continent with pilots building leading-edge links between observations, monitoring, knowledge, decision making and capacity building addressing all aspects of operational risk management. Tandem core centres are pairs with one centre in a highly developed area with considerable infrastructure, best practices implemented, and knowledge-based decision making, and the other centre in a developing region with different levels of knowledge, infrastructure, and links to decision makings. The high-level risk management methodology developed and demonstrated at the developed centres, particularly the European one, will be transferred to the centres in developing countries with a lack of relevant information reaching end users. The information collected by space-borne, airborne and ground-based infrastructure, will be processed by research institutes and agencies in order to derive, and make available in an end-to-end chain, actionable information of value to end users in hazardous areas.

To achieve these goals, the Action will establish five Working Groups (WGs), of which two will focus on research (WG3 and WG5), while the three others will consider aspects of the operationalization of the research results:

WG1: Capabilities, gaps, and coordination

Analyse the current situation concerning geohazards based on strategy and program documents, including Hyogo, ICSU, UN and ISDR. Based on EU-funded and other projects and international activities, identify best practices, regional centres of excellence, and knowledge and technology gaps. Provide a synthesis of all currently available documents addressing capabilities, gaps and capacity building and retention. Ensure dissemination of the results and

their integration into the broader framework of GEOSS utilizing GMES links to GEOSS.

WG2: Standards, protocols, data exchange, and services

Develop a common lexicon, ontology, and taxonomy for geohazards consistent with the GEOSS ontology for disasters as well as ongoing activities in relevant European and global programs. Foster agreements for data exchange (linking to the procedures set up for OneGeology). Consider the generic information flow from observations to end users, including the general public, and reach agreements on standards and protocols as well as information products.

WG3: End-to-end approach to risk management

In cooperation with other relevant activities, including complementary COST Actions, research the approach to risk management informed by Earth observations, including the derivation of actionable information. Utilize the supersite initiative implemented by GEO. Supersites are locations where populations are at risk due to geohazards that are designated for long-term observations in support of disaster reduction research, where available observations are made freely available. Develop data access services compliant with standards and protocols agreed in WG2; and support research relevant for preparedness, early warning, response, and recovery.

WG4: Disaster clearinghouse in support of response to major disasters

In coordination with the European Civil Protection Mechanism (see http://ec.europa.eu/echo/civil_protection/civil/prote/mechanism.htm and also <http://ochaonline.un.org/>) develop a concept for a clearinghouse for major international disasters that considers all the civil protection requirements and involves relevant national and regional initiatives; identify the data and information needs for disaster response (linked to WP1); develop operational tools for rapid access to relevant data (coordinated with WP3); production of information products; and provision of information to decision makers, including both observation-based and other information. Develop a web interface for the clearinghouse (in coordination with the GEO-Portal) compliant with agreed-upon standards and protocols. A strong focus will be on making production of information for response operational, with low latency.

WG5: Demonstration pilots: Implementing Tandem Core Centres

Implement pilot projects demonstrating the end-to-end concept for at least one tandem core centre. Candidates are tandems in Europe-East Africa (key for preparedness and early warning), SW U.S. and Haiti (response), Japan and Samoa (early warning). Use these pilots to implement end-to-end links and to work out operational agreements for the implementation of these links into the administrative structures relevant to geohazards in these areas. Demonstrate the pilot's impact on decision making. The proposed tandem concept will ensure significant technology and capacity transfer. The COST Action will facilitate cross-fertilization between the three tandems.

ORGANISATION

The COST Action will be carried out in parallel with the final four years of the GEOSS 10 Year Implementation Plan. The work will be conducted in three main phases:

Phase 1: Planning, organizational arrangements, establishment of the WGs, and inventories (year 1).

Phase 2: Scientific and applied work conducted in the WGs and training (years 2 and 3).

Phase 3: Review of the work, preparation of final conclusions and recommendation, finalizing operational agreements; preparation of reports and final publications; and dissemination of results particularly to GEO and end users (year 4).

A Management Committee (MC) will include the overall coordinators and the chairs of each WG, who will coordinate the WG work and report to the MC. The MC will coordinate, guide, and supervise the progress of the work in the WGs, will discuss and synthesise the results, and will ensure the dissemination of the results to a wider scientific audience and in particular the relevant end users. The MC will also ensure that the activities of the Action are coordinated with and complimentary to those of other organizations and projects, especially on-going EU research projects, relevant COST Actions, and relevant international activities at various points of the end-to-end chain, including GEO at the provider end, ICSU and UN-agencies at the program-related and implementation level, and the relevant end-users.

The MC and the WGs will generally meet twice a year. As far as practical, these meetings will be organized back-to-back. The first meetings in the second year and the first meetings in the last year will be co-located with international workshops on geohazards and risk management. Short Term Scientific Missions will be used to facilitate exchange of especially young scientists and female participants between the more developed and the developing locations to support knowledge and experience transfer. Extended training courses will be organized in the second and third year to bring together providers, in particular, young career scientists and end users to improve the providers' understanding of the end users' needs and to train end users in services and data usage for risk management. Particular focus will be on enabling the dialogue between scientists/providers and end users.

An interactive website will be established at start of the Action and used as the main means for communication between participants and also the outside world. A COST brochure will be prepared and updated when needed and made available for outreach. The web page will include newsletters and news items as well as meeting announcements and work documentation. The COST Action will make use of newly developing media including documentation of the work in form of videos and interactive, query-enabled web-based documentations. The supersite and clearinghouse pages will be developed consistent with GEO standards to ensure their interoperability with the GEO Portal.

PARTICIPANTS INTERESTED IN NETWORK:

COST Countries:

BRGM and CNES, France
BRG and GFZ, Germany
..., Ireland
ISPRA/APAT, EUCENTRE, and University of Pavia, Italy
NGI, Norway
PGI, Poland
University of Göteborg, Sweden
ETHZ, Switzerland
TUBITAK, Turkey
BGS, U.K.

Other Countries:

Natural Resources Canada, Canada
University of Nevada, Reno University Purdue, and University of Miami, USA
Universite d'Etat d'Haiti, Haiti
Addis Ababa University, Ethiopia

International organizations:

GEO Secretariat
Supersite Initiative of GEO
UNESCO
UN-Spider
ICSU
GEM
ESA

ATTACHMENT 7

IRDR 2-year Plan

		2010						2011												2012													
	Persons	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	
IPO																																	
Staff	JER	IPO Opens																															
Admin		Adver. position		Hire Admin																													
Science		Adver. position				Hire Science																											
Secondment - Science Officer																																	
Secondment - Communication Officer																																	
Annual Report	JER								DUE												DUE												
Budget	JER								DUE												DUE												
Website	LL/CO																																
Grants	JER																																
ICSU								Due 12/1																									
UNISDR	IPO/ICSU																																
Co-Sponsors																																	
ICSU					CV's			Grant due									Report DUE @ GA																
ISSC																																	
UNISDR																																	
Key Conferences (this is not totally inclusive of all to be attended but more the ones that IPO/SC have responsibilities)																																	
								ISSC GA						UNISDR Global Platform			ICSU GA																
Scientific Committee																																	
Meeting						MTG Beijing				MTG Paris							MTG Beijing						MTG TBD										
SC Conference Sub-Committee																	IRDR 1st Conf																
Members					Names due																												
Cardona																																	
Chan																																	
Cutter																																	
Eiser												NR																					
Johnston																																	
Lavell																																	
McBean												NR																					
Modaressi																																	
Patek																																	
Renn																																	
Takeuchi																																	
Vogel																																	
Wirtz																																	
TBN																																	
TBN																																	
Working Groups																																	
FORIN - Forensic Investigations	Ian Burton					WG Geneva																											
RIA - Risk Intepration and Action	RE								WG																								
Data	SC																																
Activity																																	
IRDR National Committees																																	

ATTACHMENT 8

IRDR National Committee ToR



Terms of Reference of National or Regional Committees

1. Background

The Integrated Research on Disaster Risk programme (hereafter referred to as IRDR) is an international and interdisciplinary research initiative created to address the major challenges of natural and human-induced environmental hazards. The IRDR programme is co-sponsored by the International Council for Science, the International Social Science Council, and the United Nations International Strategy for Disaster Reduction and is directed by the Science Committee of the IRDR (SC-IRDR).

2. Purpose

The establishment of National or Regional Committees for IRDR is encouraged as a mechanism to promote and support IRDR-related research initiatives of relevant countries, and to enhance the links between national and international disaster risk research programmes and activities. Each National or Regional Committee is expected to include, in its make-up, researchers from the natural, social, health and engineering sciences, along with policy makers and practitioners concerned with the reduction and management of disaster risks, and to maintain a close relationship with the National Platform(s) for Disaster Risk Reduction where such a body (bodies) exist(s).

Regional Committee is defined for the purposes of IRDR as a grouping of spatially contiguous countries which search to promote common and complementary advance in the disaster risk reduction research field.

3. Governance

Each IRDR National Committee will be governed in accordance with their respective national laws. IRDR Regional Committee will be governed in accordance with the laws of the countries involved or as defined in their individual organization documents.

4. Tasks and Activities

In support of the IRDR Science Plan and the IRDR Scientific Committee, IRDR National and Regional Committee will undertake the following activities:

- Foster and support participation in IRDR on the part of institutions and individual scientists.
- Serve as the national or regional focal point for IRDR.
- Foster networking and collaboration among domestic, regional and international disaster risk reduction science and technology activities.
- Improve science and technology knowledge and considerations of disaster risk reduction science technology in planning, policies and programmes domestically, regionally and internationally.

- Support efforts to update and report on national and international disaster risk reduction activities aligned with the Hyogo Framework of Action's strategic priorities, with emphasis on the science and technology activities.
- Provide science and technology advice to policy-makers, taking into consideration national, regional and international disaster risk reduction initiatives.
- Assist in fundraising for IRDR activities and projects.

5. Reporting

The National or Regional Committee will provide regular, quarterly reports to the SC-IRDR and its supporting International Programme Office. At a minimum the National or Regional Committee will submit to the IRDR International Programme Office an Annual Report. This Report will include a summary of activities, partners, governance, funding, future plans and other appropriate information.

ATTACHMENT 9

ICSU ROAP

Presentation by Nordin Hasan

ICSU ROAP ON HAZARDS AND DISASTERS

Nordin Hasan

Director

**ICSU Regional Office for Asia
and the Pacific (ROAP)**

Science plan on H & D



- A priority area
- Established group to explore current issues and research gaps
- Science plan proposed priority activities for international research collaboration
- Two clusters:
 - Earthquakes landslides and floods
 - Small islands of Asia and the Pacific
- To help National Members/other ICSU Bodies develop their own strategic activities

Members in A-P



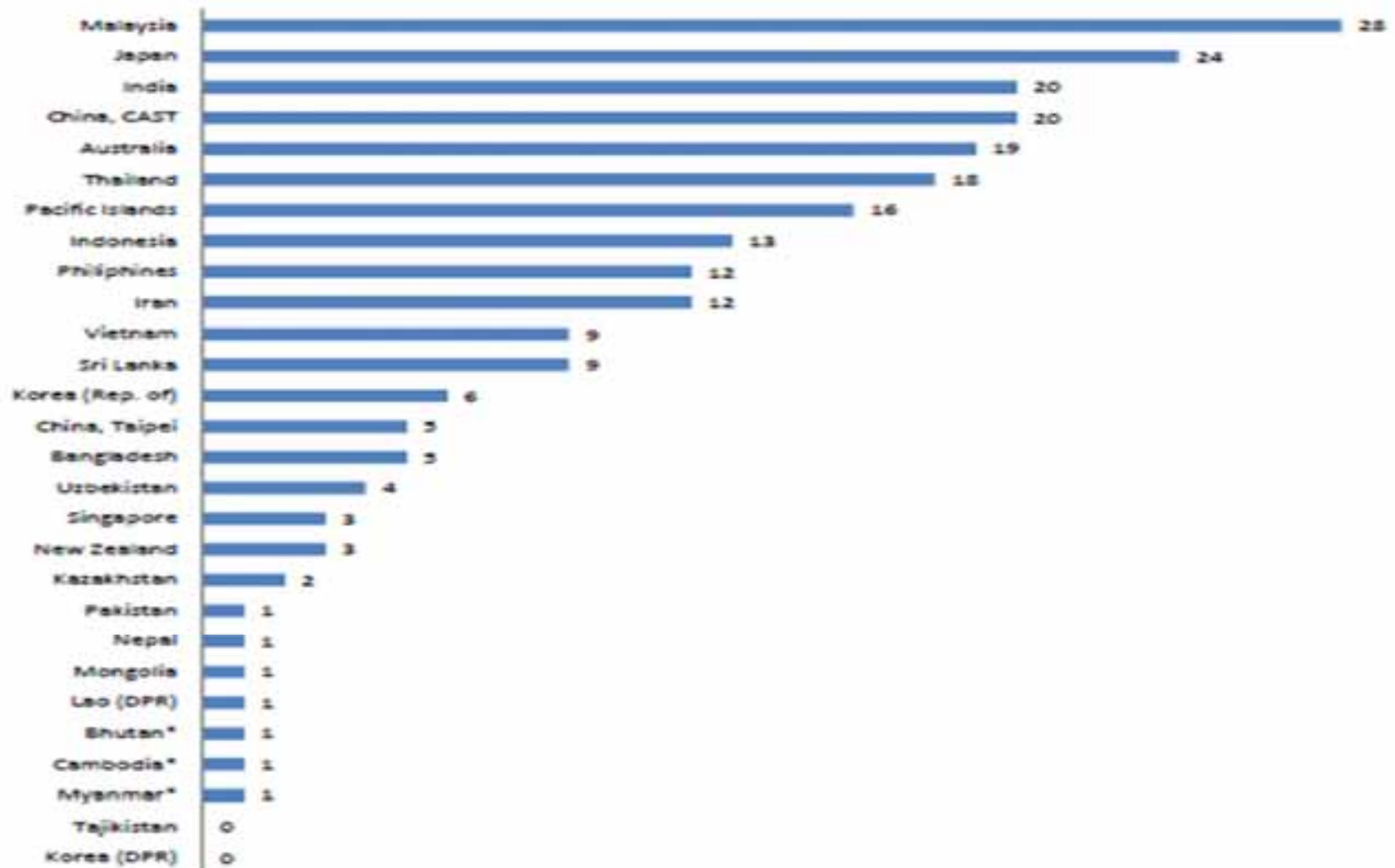
Country	ICSU membership	Country	ICSU membership
1 Australia	Full member (1919)	14 Nepal	Full Member (1976)
2 Bangladesh	Full member (1986)	15 New Zealand	Full Member (1919)
3 China: CAST	Full Member (1937)	16 Pakistan	Full member (1950)
4 China: Taipei	Full Member (1937)	17 Philippines	Full Member (1933)
5 Democratic People's Republic of Korea	Member (1961)*	18 Republic of Korea	Full Member (1961)
6 India	Full Member (1931)	19 Singapore	Full Member (1971)
7 Indonesia	Full Member (1931)	20 South Pacific	Full Member (2007)
8 Iran, Islamic Republic of	Full Member (1963)	21 Sri Lanka	Full Member (1961)
9 Japan	Full Member (1919)	22 Tajikistan	Observer (2002)
10 Kazakhstan	Scientific Associate (1995)	23 Thailand	Full Member (1931)
11 Lao People's Democratic Republic	Full Member (2008)	24 Uzbekistan	Member (1992)**
12 Malaysia	Full Member (1977)	25 Viet Nam	Member (1963)***
13 Mongolia	Full Member (1981)		

*Observer since 1990

** Observer since 2008

*** Observer since 1997

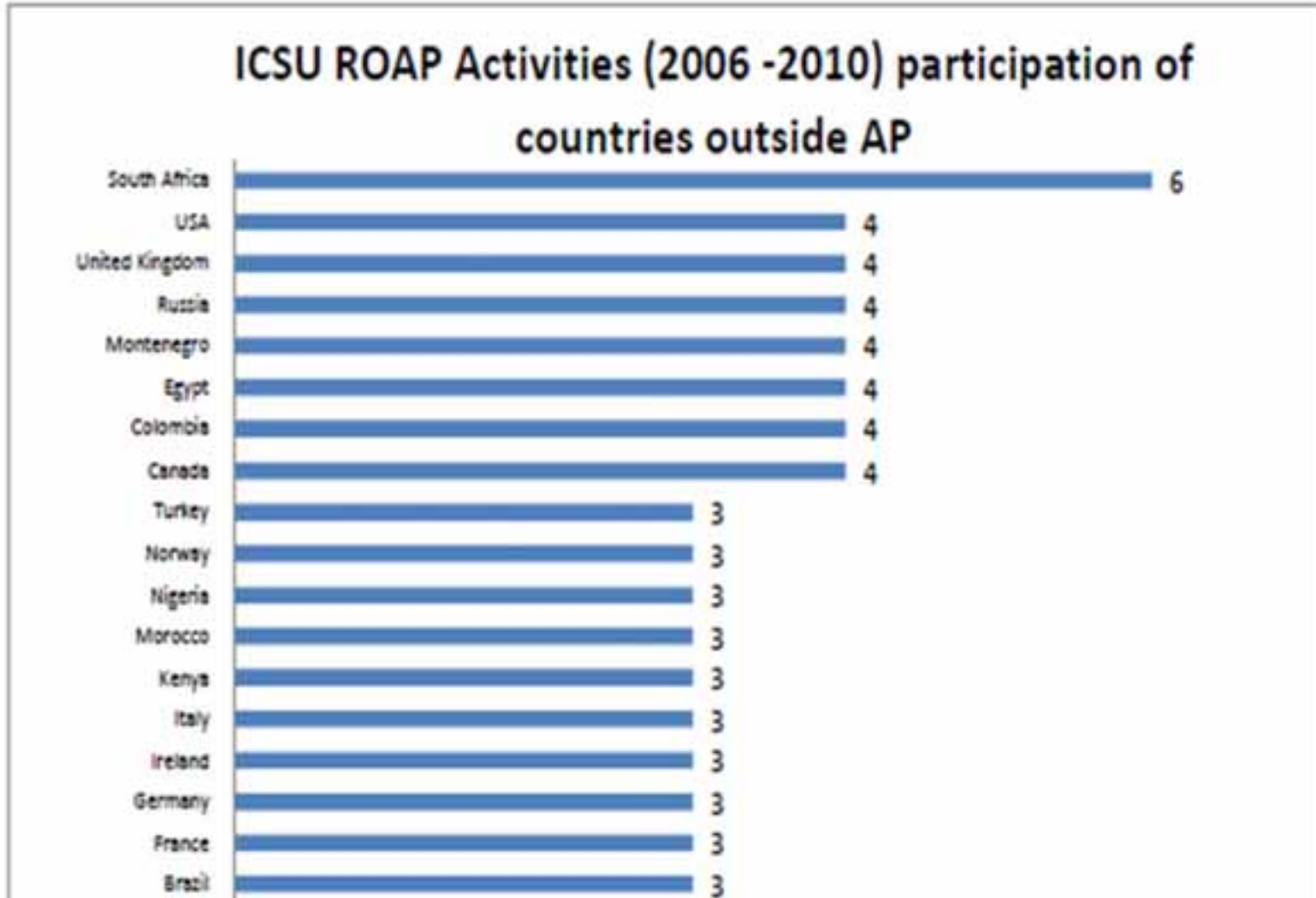
Members' participation



* Non ICSU Member
Total Activities: 33

■ Number of Activities

Members' participation



Interactions with Unions etc



ICSU

International Council for Science ^{ience}

- **IGBP**
- **IGU**
- **INQUA**
- **ISRI/URSI**
- **IUBMB**
- **IUBS**
- **IUFOST**
- **IUFRO**
- **IUGG**
- **IUGS**
- **IUMS**
- **IUNS**
- **IUPAC**
- **IUPAP**
- **IUPHAR**
- **IUPS**
- **IUPsyS**
- **IUTAM**
- **IUTOX**
- **LOICZ**
- **START**
- **MAIRS**
- **PECS**
- **SCAR**
- **SCOPE**
- **SCOR**
- **WCRP**



Asian Association of Social Science Research Councils AASSREC

22nd Pacific Science Congress First Announcement

Asia Pacific Science in the 21st Century:
Meeting the Challenges of Global Change

14 - 18 June 2011
 Kuala Lumpur, Malaysia

Organized by:

Supported by:



Science Plan on Hazards and Disasters

Earthquakes, Floods and Landslides



ICSU

International Council for Science science

Science Plan on Hazards and Disasters

Special Vulnerability of Islands



ICSU

International Council for Science
Regional Office for Asia and the Pacific
Strengthening International Science for the Benefit of Society

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04

The Plan for Asia and The Pacific

The preceding sections of this document summarized the severities and extents of hazards and disasters in the Asia Pacific region. The issue is very complex and the spectrum of conditions from one subregion to another and from one hazard to another is very wide. In the following a basket of doables is presented.



Earthquakes

1. Several countries in the Asia Pacific region do not have adequate earthquake recording and GPS monitoring of crustal deformation. Such countries need to be identified and a suitable mechanism to instrument them needs to be developed.
2. Develop scenarios of present day losses (social and economic) if earlier disastrous earthquakes recur. Also develop building codes for earthquake-prone countries where necessary.
3. Global Seismic Hazard Assessment Programme (GSHAP) was a flagship programme of IDNDR. Information on anticipated accelerations due to earthquakes at the bedrock for all the major cities in earthquake-prone areas is available. A major effort is required to estimate the accelerations at the surface taking into consideration the local ground conditions and use them for micro-zonation of major cities.
4. A large percentage of the populations in the Asia Pacific region live in self-designed non-engineered homes, which are very vulnerable to horizontal accelerations experienced during the earthquakes. This can be improved enormously by simple inexpensive retrofitting. This should be taken up as a major initiative with collaboration with UNESCO and other possible partners.
5. It is important to learn to live with earthquakes in earthquake prone areas. Several countries have developed and implemented earthquake drills. A lot of information is available as what to do before, during and after an earthquake. This needs to be appropriately spread to the public.
6. Artificial water reservoirs can trigger earthquakes. Ways and means are now available to find safer sites. Whenever a large artificial water reservoir is being proposed, necessary surveys should be conducted to find a suitable site.

Recording crustal deformations

7. Tsunami forecasts are now available for most Asia Pacific region countries. However, countries need to develop facilities to make use of these advisories.
8. A few (four to five) case studies of earthquakes would be very helpful.

Scenarios and codes

Surface accelerations & ground conditions

Retrofits

Floods

1. An effort is required to set up sophisticated flood prediction and warning systems in the Asia Pacific region as has been done in many developed countries. This needs to be done in two steps: first, develop a big river basin flood warning system and second, transfer the big river basin flood warning system to a regional flood prediction and warning system.
2. It is crucial to communicate information related to flood prevention and mitigation to communities for their use. Equally important is to train the people to use this information.
3. It would be important to identify the vulnerability of countries to flooding, develop suitable building codes and construction regulations and develop a robust methodology to implement the same.
4. A few demonstration projects need to be selected. Two potential candidates are the Mumbai, India, flooding of 26-27 July 2005, and the flooding of Bangladesh during 1991.
5. The proposed flood-related work should be coordinated with other existing national and international programmes.

Warning systems

Community awareness systems

Zonation technology

Early warning technologies

Prevention technologies

Landslides

1. Application of reliable landslide hazard and vulnerability zonation technology to identify landslide risk is necessary at country-to-community scales in the Asia Pacific region. Adequate land-use planning to avoid landslide disasters should be promoted by this technology.
2. Cooperate with the existing landslide related efforts of several national and international agencies such as ICL, UNESCO, ICSU, IUGS, WMO, IFI, IGCP, IOGS and IYPE.
3. The most cost-effective measure to mitigate landslide disasters is early warning and evacuation. Timely prediction and early warning technology suitable for natural and social conditions of the Asia Pacific region should be developed.
4. Suitable methods to reduce landslide causes or a landslide prevention technology is needed in areas such as cultural heritage sites and other locations of high-societal values where relocation and early warning are not possible or very difficult.
5. A few case studies of landslides would be very helpful.

Disaster Management and Capacity Building

It has been recognized that the available scientific knowledge is not being fully utilized in forecasting the hazards, estimating the risks, and getting the necessary outreach for the benefit of the public, particularly in a large part of the area covered by Asia and the Pacific. It is important to stress:

1. disaster risk reduction and management;
2. the role of social sciences in understanding hazards and their mitigation;
3. the role of the private sector and civil societies;
4. building and enhancing regional capacity for disaster reduction;
5. building self-sustaining capacity at various levels for different hazards;
6. establishing continuity in capacity building.



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05

Priorities for Asia and The Pacific



Priorities For Asia And The Pacific

Reduce vulnerability

Based on the above summary discussion of work that is necessary to reduce the vulnerability of Asia-Pacific islands to natural hazards and disasters, the following is a list of priorities for future scientific activity.

1. Analysis of El Nino influences on cyclone longevity, intensity and rainfall delivery, plus a focus on climate change/variability links with tropical cyclone behaviour and associated meteorological conditions. This must include assessment of storm surge generation, influences, and effects on coastal flooding of low-lying islands.
2. Development of a modern, accurate and freely-available archive of historical tropical cyclone records, with tracks and intensity characteristics stored in a GIS database. Using this, investigation of cyclone track patterns (shapes, lengths, sinuosities, regional geographical variations) and documenting changes observed over the period of reliable record (1970 to present) should be undertaken to assess future risks to islands.
3. Increased understanding of the flow characteristics in island rivers with limited or no gauging instrumentation, and improving the established network of river hydrometric stations.
4. Establishing statistical links between the SOI (and other climatic indices) and maximum river discharges, and examining the effects of current climate change and variability on river flows, to avoid future flood risks.
5. Improving our knowledge of different types of landslide processes and their influencing factors, including the response of landslide activity on islands to climate change and increasing climatic variability.
6. Determining the thresholds (climatic, seismic, volcanic, geomorphic, etc.) triggering hill slopes failure on islands.
7. Studies of relationships between landslide occurrence on steep valley-side slopes and the resulting behaviour of peak river flows, leading to unpredictable flood hydrographs and flood events.
8. Investigating the links between submarine landslides and local tsunami generation.
9. Development and implementation of appropriate and culturally-sensitive (i.e. 'no regrets') adaptation options to natural hazards that will yield maximum benefit to all sectors of developing island economies.

El Nino & cyclone longevity

Records, records, records.....

Flood risks

Island river hydrometry

Landslides processes - climate

Interlinkages

Submarine tsunamis

Adaptation



ICSU

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ATTACHMENT 10

CODATA

Presentation by GUO Huadong

CODATA and IRDR

CODATA, Committee on Data for
Science and Technology : An
Interdisciplinary Body of the
International Council for Science
[ICSU]



ICSU Committee on Data for Science and Technology – CODATA *General Information*

- An independent legal organization, which works in close collaboration with ICSU and the ICSU family
- Established in 1966 – *Was born at Bombay (Mumbai) India*
- Moved to France 1975
- First General Assembly was held in 1968



CODATA's Mission

*To strengthen international science
for the benefit of society by
promoting improved scientific and
technical data management and use*
www.codata.org



ICSU Committee on Data for Science and Technology – CODATA *General Information*

- Headquarters at 5 rue Auguste Vacquerie 5016 Paris, France; shifted from 51, Blvd de Montmorency, 75016 Paris;
Executive Director- Kathleen Cass
- Web site: <http://www.codata.org>
- Data Science Journal
<http://dsj.codataweb.org>



ICSU Committee on Data for Science and Technology – CODATA *General Information*

CODATA is a non governmental organization

25 Member Countries

16 International Scientific Unions as Members

4 Co-opted Scientific Organizations

13 Supporting Organizations

(Industry, Government and Academia)



Member Countries

- Australia
- Brazil
- Cameroon
- Canada
- Chinese Academy of Sciences, Beijing
- Chinese Academy of Sciences, Taipei
- Czech Republic
- France*
- Georgia
- Germany*
- India
- Indonesia
- Ireland
- Israel
- Japan
- Korea
- Nigeria
- Poland
- Russia
- Senegal
- South Africa
- Thailand
- Ukraine
- UK
- USA

* Associate Member



Scientific Unions

- International Astronomical Union
- International Union of Pure and Applied Chemistry
- International Union of Pure and Applied Physics
- International Union of Biological Sciences
- International Geographical Union
- International Union of Crystallography
- International Union of Biochemistry and Molecular Biology
- International Union of Geological Sciences
- International Union of Psychological Science
- International Union of Pure and Applied Biophysics
- International Union of Nutritional Sciences
- International Union of Pharmacology
- International Union of Immunological Societies
- International Union of Microbiological Societies
- International Union of Soil Scientists
- **IUGG**



Co-opted Organizations

- ICSU Panel on World Data Centers
- Federation of Astronomical and Geophysical Services
- International Council for Scientific and Technical Information
- World Federation for Culture Collections



Supporting Organizations

- Defense Technical Information
- Springer-Verlag
- All Russian Institute of Scientific and Technical Information
- Chemical Abstracts Services
- Fachinformationszentrum Chemie, GmbH
- Japan association for International Chemical Information
- National Library of Medicine
- Design Institute for Physical Property Data (DIPPR)
- American Institute for Chemical Engineers
- Japan Society of Information and Knowledge
- Protein Data Bank
- Protein Information Resources
- Russian Research Centre for Standardization, Information and Certification of Materials (VNITS SMV)
- Stroyteks



CODATA Achieves its Mission through:

- **Task Groups**
- **National Member Activities**
- **Participation in Important International Initiatives, e.g. WSIS**
- **Organizes Biennial International Conferences**
- **CODATA Electronic Data Science Journal**
- **Publications**
- **Workshops**
- **Studies and Reports**
- **Co-operation and Liaison with Other Scientific Organizations**



Publications

- A large number of Monographs and other documents have been published (*Springer*).
- Currently the Data Science Journal is being published electronically, courtesy Japanese e-platform.



CODATA Task Groups

- Anthropometric Data and Engineering
- Biodiversity, Observation and Specimen Records
- Data Sources for Sustainable Development in SADC Countries
- e-Gy Earth and Space Science Data Interoperability
- Exchangeable Materials Data Representation to Support Scientific Research and Education
- Fundamental Constants
- Gas Hydrates
- Global Information Commons for Science Initiative-EU Activities
- Polar Year Data Policy and Management
- Preservation of and Access to S&T Data in Developing Countries



CODATA Data Science Journal

- A peer-reviewed electronic journal
- Publishing papers on the management of data and databases in Science and Technology
- The scope of the journal includes descriptions of data systems, their publication on the internet, applications and legal issues
- All of the Sciences are covered, including the Physical Sciences, Engineering, the Geosciences and the Biosciences, along with Agriculture and the Medical Science.

<http://dsj.codataweb.org/>

Collaboration with International Organizations: *A Sample*

- **International Council for Science (ICSU)**
IPYproject
- **UNESCO**
- **Org. of Economic Cooperation & Development (OECD)**
- **Global Biodiversity Information Framework (GBIF)**
- **Global Earth Observation Systems of Systems (GEOSS)**
- **International Association of Networking Publications (INASP)**
- **International Council for Scientific and Technical Information (ICSTI)**
- **Science Commons**
- **EU bodies**



CODATA and Task DA-06-01 of GEOSS

Lead Author:

Paul F. Uhler

Core Authors:

Robert Chen

Charles Barton

Joanne Irene Gabrynowicz

Katleen Janssen

*A white paper on guidelines for data sharing
for GEOSS*



Final Steps

2008: *Bucharest Plenary (in place of Beijing)*

2009: *Presentation to GEO Plenary in Washington*

2010: *Ministériel Meeting*

The Hand-in-Hand Program



Together with CODATA National Members, Union Members, etc...

International Centres of Excellence ToR



Integrated Research on Disaster Risk International Centres of Excellence

Terms of Reference (TOR)

1. Background

The Integrated Research on Disaster Risk programme (hereafter referred to as IRDR) is an international and interdisciplinary research programme created to address the major challenges of natural and human-induced environmental hazards. The IRDR Programme is co-sponsored by the International Council for Science, International Social Science Council, and United Nations International Strategy for Disaster Reduction and is directed by the Science Committee of the IRDR (SC-IRDR).

2. IRDR International Centres of Excellence

A limited number of International Centres of Excellence (ICoE) will be established, through the SC-IRDR and the relevant national IRDR committees, to provide regional and research foci for the IRDR. Each ICoE research programme will embody an integrated approach to disaster risk reduction that directly contributes to the IRDR Science Plan and its objectives: the scientific characterization of natural and human-induced environmental hazards, vulnerability and risk; the understanding of decision-making in complex and changing risk contexts; and the reduction of risk and curbing losses through knowledge-based actions. The ICoE will also contribute to the cross-cutting themes of: capacity building; case studies and demonstration projects; and assessment, data management and monitoring. The ICoE and the IRDR projects will collaborate to provide global contributions towards achieving the IRDR legacy. The ICoE will, in particular, enable regional scientific activities through geographically-focussed contributions based on more localized inputs and by being visible centres of research motivate participation in the IRDR.

The ICoE will vary in their structure and include the possible establishment of a Centre shared between two or three locations in different countries or within one country. The Host Institution will be agreed between the participating organizations and the SC-IRDR.

Each ICoE will have both local and international components. The local component will consist of a strong cadre of disaster risk reduction academics and researchers from universities, academies of science, institutes and centres within the host country (or countries). The international component will consist of short- and longer-term (6-12 month) visiting scientists from developed and developing countries and support to host workshops, colloquia and scientific

meetings that bring together scientists on, for example, case studies or forensic investigations. These could then be extended to other countries in longer-term cooperative studies.

As a contribution to international science and the IRDR Programme, the ICoE is expected to provide for openness of data, information and outputs for all to use. The ICoE is expected to be sustained for at least 5 years.

3. Designation of IRDR International Centres of Excellence

The ICoE will be sited in various locations around the world chosen by SC-IRDR to provide broad geographic distribution and a mix of disciplinary and hazard foci. The Centres will be designated based on the following criteria:

- Proven multi-national experience in research excellence related to disaster risk reduction;
- Internal capabilities to manage multi-national research teams;
- Commitments to provide appropriate funding for the national and international components consistent with IRDR objectives;
- Provision of fully equipped office space and supporting services;
- A good track record in, or commitment to, interdisciplinary research ; and
- Provision of unhindered access to researchers from participating countries and international visitors.

4. Organization of IRDR International Centres of Excellence

Each ICoE will be overseen by an international advisory board (IAB) of 7-9 members appointed jointly by the SC-IRDR and the Host Institution. At least one member of the IAB shall be a serving member of the IRDR-SC. The ICoE shall be headed by a Director, who shall be responsible for the administration and operation of the Centre and appointed by the Host Institution in consultation with the IAB and SC-IRDR. The ICoE will provide regular, quarterly reports to the SC-IRDR and its supporting International Program Office. At a minimum the ICoE will submit to the IRDR International Programme Office an Annual Report.

5. Funding

The funding for each ICoE will be provided by the Host Agencies/Organizations for the duration of the Centre's life. The Host Institution will be expected to provide funding for all day-to-day operations as well as for projects and visiting scientists.

ATTACHMENT 12

RIA Working Group

Presentation by Richard Eiser

*Research priority:
Risk Interpretation and Action*

Research objectives - 2

- **Understanding decision-making in complex and changing risk contexts**
- This objective is focussed on understanding effective decision making in the context of risk management – what is it and how it can be improved. In linking with the other objectives, the emphasis is on how human decisions and the pragmatic factors that constrain or facilitate such decisions can contribute to hazards becoming disasters and/or may mitigate their effects. There are three sub-objectives:
 - 2.1 identifying relevant decision-making systems and their interactions
 - 2.2: understanding decision-making in the context of environmental hazards
 - 2.3: improving the quality of decision-making practice.

Shift of conceptual emphasis

- Emphasis in much natural science work is on (probabilistic) *assessment* of risk.
- In work on *interpretation* of risk, the focus shifts from
- “What’s likely to happen?” to
- “What do people (especially those at risk) *think* is likely to happen?”
- “And what will they do about it?”
- “And what do they expect will *then* happen as a consequence of their actions?”
- “How do people learn from experience?”
- Uncertainty at least as important as calculated probability.

“Rational choice”

- Rational choice models of decision making (e.g. classical economic theory) assume people prefer *and hence choose* options with highest expected utility (= estimated probability X evaluation of outcomes).
- Experimental research shows that people have difficulty processing probabilistic information and that...
- this assumption is often incorrect *even when people are told the probabilities* of different outcomes.
- In real life, people aren't always told probabilities in advance but have to infer these from own/others' experience (“Decisions from description” vs. “Decisions from experience”).

Risk communication

- Nonetheless, a common assumption is that, if only the public could be told “the facts”, they’d behave more “rationally”.
- Improved scientific forecasting isn’t the whole story.
- People interpret new (scientific) information in the light of prior beliefs and experience.
- Acceptance of new information depends on trust in (expertise *and* motives of) communicators.
- Even if information is accepted, different actors may take different sets of anticipated outcomes into account and evaluate them differently.

Interpretation-Action Gap

- Even if people interpret risks “correctly” (i.e. how communicators want them to) they may not base their behaviour solely on this interpretation.
- There may be many practical, physical and economic constraints that restrict the options available.
- They may persist with habits that they find difficult to change.
- They may imitate others and/or base their behaviour on cultural norms.

Issues for research (NOT exhaustive)

- How scientific information relates to prior beliefs and experience (both of community members and decision-makers).
- How well different information sources are trusted.
- How people evaluate and prioritize possible outcomes.
- How difficult/expensive/dangerous/counternormative different action options are considered to be.
- How much people (at any level) are prepared to even consider different risk scenarios and/or action options.

Methodology

- For primary research, multimethod approaches likely to be needed including both quantitative surveys (where practicable), interviews with stakeholders, decision-makers and observations.
- Could be integrated with Forensic Investigation studies to contrast cases where risk information is communicated and acted upon appropriately and when not.
- Examination of what information decision-makers and/or communities actually use could highlight areas of need for more focussed scientific data (Research Objective 1) and/or translational work to link available data to policy (Research Objective 2).

Short (ish)-term objectives

- To formulate a template in good time for October 2011 meeting.
- To identify a small core group of researchers ready to help with this.
- Following preliminary email communication, to have probably 2 meetings with overlapping but not necessarily identical attendance in the new year/Northern spring (maybe NZ in early March, Paris in late April).
- Use this core group to draw in other researchers, e.g. in risk analysis and judgement and decision-making, who have relevant interests and expertise but haven't necessarily yet applied them to natural hazards.
- To identify ongoing research programmes consistent with the general aims of RIA and try to draw these into the IRDR network.

ATTACHMENT 13

Disaster Loss Data Working Group

Presentation by Susan Cutter



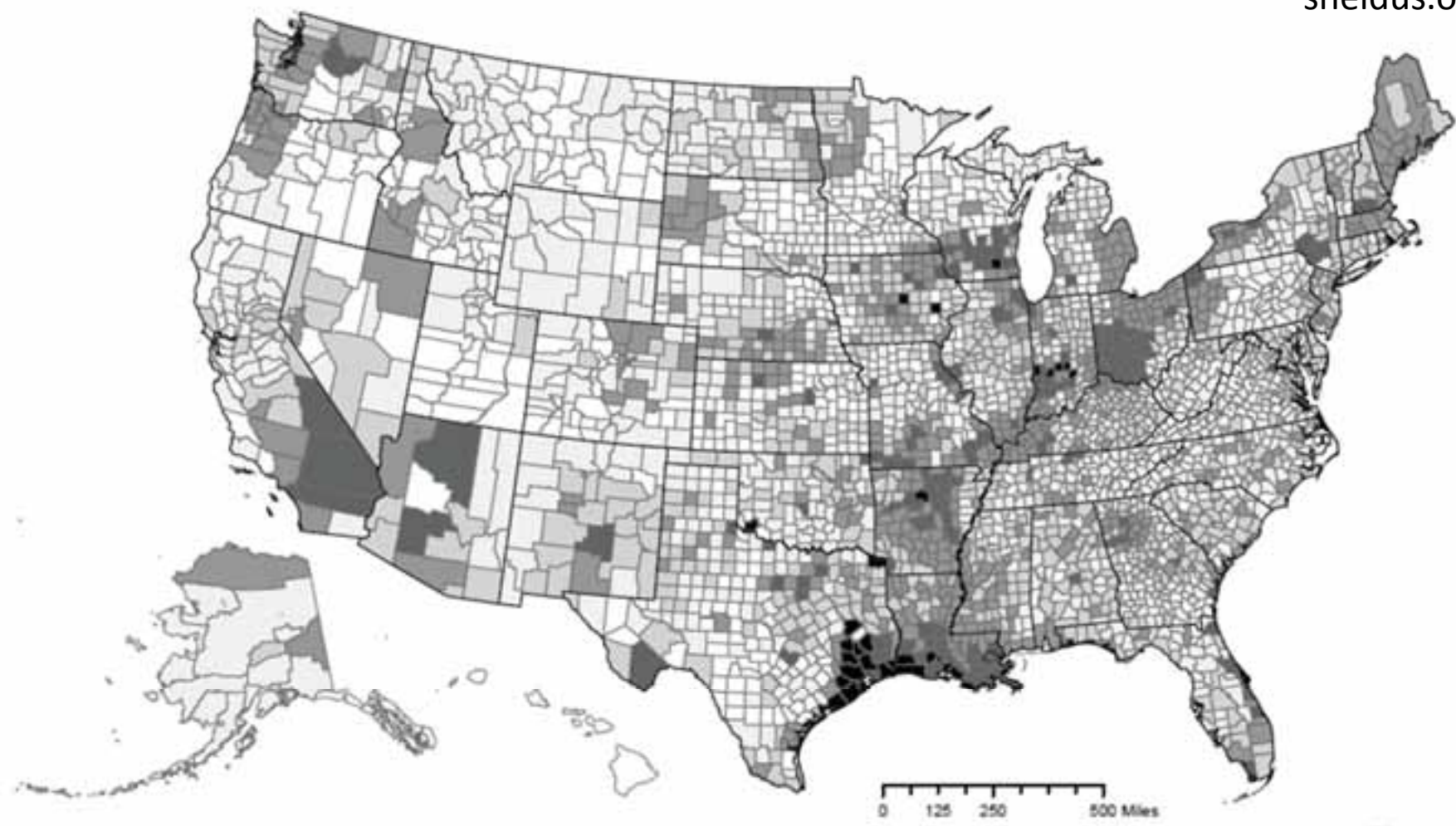
Disaster Loss Data

Susan L. Cutter and Angelika Wirtz
IRDR Science Committee

November 16, 2010
Beijing

Where we are

- Meetings between UNDP Desenventar, MunichRe, SwissRe, CRED, Asian Disaster Reduction Center (Glide) on regional and global databases
- Geocoding, technical standards, terminology, and hierarchy established
- Limited downscaling to sub-national level



Combined Crop and Property Losses (adj. \$2009)



SHELDUS VERSION 8.0



Biases in Loss Databases Remain

1. **Hazard bias**—every hazard type is represented
2. **Temporal bias**—losses are comparable over time
3. **Threshold bias**—all losses regardless of size are counted
4. **Accounting bias**— all types of losses included (monetary, human, direct, insured, uninsured)
5. **Geographic bias**—hazard losses are comparable across geographic units, boundaries not change
6. **Systemic bias**—losses recorded are the same regardless of source

M. Gall, K.A. Borden, S. L. Cutter, 2009. When do losses count? Six fallacies of natural hazard loss data. *BAMS* 90 (6): 799-809.

What is needed

- Education of users regarding data biases and issues of social loss data
- Comparable, and accessible human disaster loss data to support research and policy
- Identify existing databases (from national to regional to global) existing project
- Increased downscaling of loss data to sub-national geographies for policy makers
- What is a loss and how to assess it--methodology

How do we get there??

- Establish an overall framework for disaster loss data for all providers
- Establish nodes and networks for data bases
- Sensitivity testing among existing databases
- Mechanisms for archiving loss data, perhaps a Central data repository

Questions

- Is this a “research” program or infrastructure to support research?
- What about other data besides losses?
- How articulate with FORIN case study databases?

ATTACHMENT 14

Forensic Investigations

Presentation by Ian Burton

FORENSIC INVESTIGATIONS

FORIN.

Report of Geneva meeting
October 22-23 and proposals.

Participants.

- Allan Lavell, *
 - Gillian Fortune,
 - Gordon McBean,*
 - Haruo Hayashi
 - Howard Moore, *
 - Ian Burton (chair)*
 - Ian Davis.
 - Jane Rovins *
- John Harding ISDR
Kenneth Hewitt.
Kuniyoshi Takeuchi*
Maureen Brennan
Susan Cutter*
Tarik Islam
Terry Jeggle

CONCEPT.

- Analogy with air transport accident investigations. (Bill Hooke).
- Probing, integrated, forensic style investigations.
- Template design. (methodology)
- Pilot studies. Reports and synthesis.
- Invitation for major proposals.
- Taking the “natural” out of natural disasters.

Objectives.....

- To move towards “official” disaster investigations following the FORIN model.
- To support and strengthen the creation of a disaster prevention culture, that can function on a level comparable with the natural sciences and humanitarian response.
- Integrate, integrate, integrate.
- Identification of responsibilities.
- TBD.

Development of template.

- Initial list of 20 questions. (Toronto, Feb 2010 meeting)
- Identify a set of core (mandatory questions). Susan Cutter in the lead. March 2011?)
- Complete development of template. June 2011.
- Identify up to 8 pilot studies for proof of concept and testing of template. Several possibilities.
- Complete pilot studies. Synthesize in report. 2012
- Revise template, invite major proposals.

FORIN PILOT STUDIES

Specific
Event.

Recurrent.
Event.

Thematic
Issues.

Risk
Drivers

Meta
Analysis.

Causal
Analysis.

Longitudinal

Disaster scenario

WORK PLAN.

- Template preparation meeting: Columbia, South Carolina. February 1-2 2011 (group of 5).
- Presentation of template to IPCC SREX disaster community. Gold Coast Australia. May 13-14 2011.
- Initiation of pilot studies . ASAP.
- Completion of pilot studies. Synthesis.
- Invitation of proposals for major FORIN studies.
- Review of proposals and endorsement with the IRDR badge.....
- . Future steps..... A FORIN generic proposal?

Potential Pilot Studies

- 1. New Zealand earthquake. David Johnston.
- 2. Hanshin earthquake, Japan. Kuniyoshi Takeuchi, Haruo Hayashi.
- 3. Caribbean, Central America?
- 4. Mozambique?
- 5. UK floods, Ian Davis?
- 6.

Recommendations and Questions.

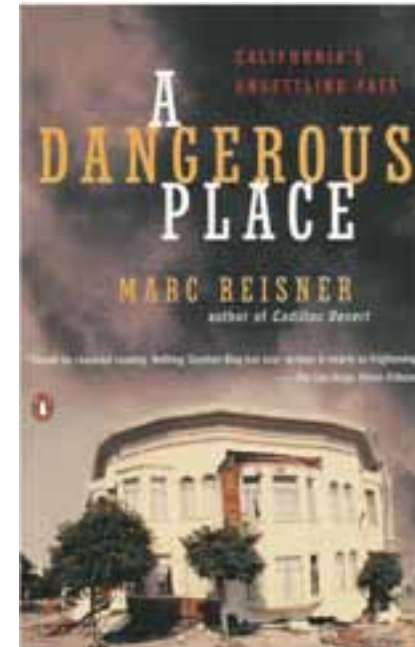
- 1. Establishment of a formal working Group of 8 to 10 members? Or a continuation of the ad hoc informal process currently working?
- 2. Initiate a data and catalogue of “FORIN – like” case studies at the IPO and on the web site.
- Support / endorse the work plan, template development and pilot studies.
- Funding?
- Common power point presentation for FORIN.
- Contribution to the IRDR Symposium 2011.
- Other partnering and cooperation including with WG 1 Risk interpretation and WG 2. Data

ATTACHMENT 15

Disaster Assessment

Presentation by Susan Cutter

Integrated Research on Disaster Risk



A proposal to assess the research
in support of policy and practice

The Need

- Does the IRDR science plan reflect the current state of knowledge or science needs?
- To measure the effectiveness of IRDR and its science plan, we need to establish baseline knowledge of the “state-of-the-art” in the field with full engagement of the research community.

Previous Efforts

Assessment of Research on Natural Hazards Hazards

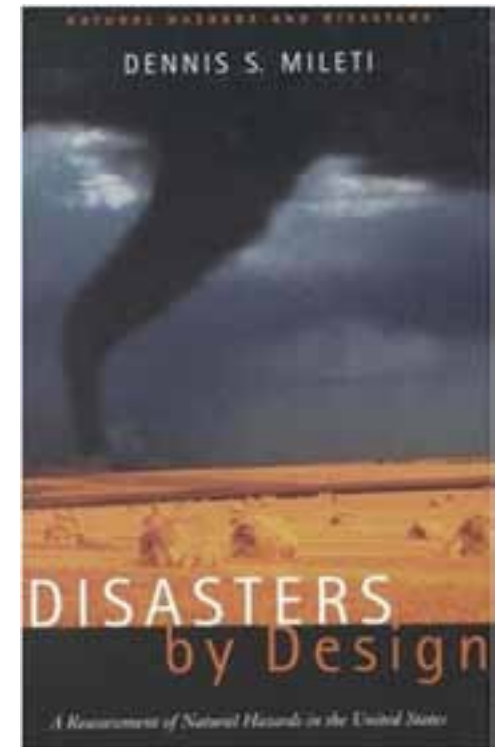
GF White and JE Haas, 1975

- Led to establishment of Natural Hazards Center
- Development of NSF Natural Hazards Research program (multidisciplinary)

Disasters by Design: A Reassessment of Natural Hazards in the United States

Dennis Mileti, 1999

- Refocus US research from risk-hazard to sustainable hazards mitigation
- Fostering hazards resilience



Facing Hazards and Disasters

US National Research Council, 2006

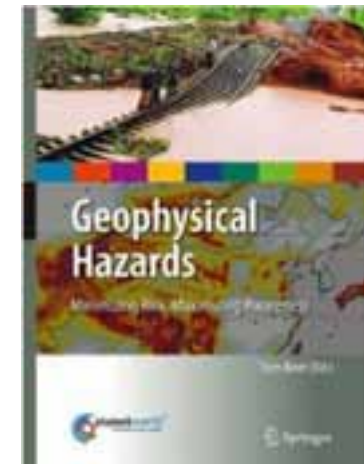
- Review of social science contributions to research
- Evaluation of the NHERP in fostering research
- Addressed knowledge dissemination and research workforce



Geohazards: Minimizing Risk, Maximizing Awareness

T. Beer (ed.), 2009

- Intl. Year Planet Earth
- Impact ????



A Bold Vision

Undertake the first systematic global assessment of **research** on disaster risk under the direction of IRDR

What we know,

What we don't know,

**What we NEED to know to support
disaster risk policy and practice**

Strategy

- Scientific steering team 2-3 people (editors)
- 9-10 panels of experts working in multi-disciplinary, multinational teams on individual chapters
- 2 year process with 4-5 authoring team meetings for integrative purposes
- Content and structure determined by consensus (not top down)

Deliverables

1. Published synthesis monograph
2. Smaller regional or topically focused reports on the state of the science

By-products and Value Added

- Forum for engagement with the international scientific research community
- Stimulate research at local to global scales
- Provide baseline and potential roadmap for future science investments
- Educate and engage the next generation of researchers and practitioners

How do we get there?

Commitment from IRDR Science Committee to undertake such an effort

Resources to support the activity (\$3-4 million)

Timeframe: 2 years once funding secured to completed monograph

Feedback

- Focus on *integrated research* not stove-piped research; including practice and policy (evidence-based research)
- Reflect on state of the knowledge and co-production of knowledge
- Forum for engagement of decision makers
- Continuity in problems with original science plan [existing research in disciplinary or hazard specific silos]

- Series of hypotheses
- Funding sources—formulate outcomes; World Social Sciences report—science capacity development
- Promote integrated research (use other IRDR CofE); examine barriers to integrated research
- HFA as the content and subheadings as chapters
- How to use it to promote science at region
- Need an outreach plan beyond the publication, sell the product

Types of International Programme Activities

Presentation by Heide Hackmann

TYPES OF INTERNATIONAL PROGRAMME ACTIVITIES

AGENDA-SETTING

*For strategic planning purposes;
prioritization of activities;
also promotes networking and
raises programme visibility*

INTERNATIONAL COLLABORATIVE RESEARCH PROJECTS

e.g. RIA or FORIN?

Typically funded on an a la carte basis by national funding agencies, with one “champion” agency providing core costs and sponsoring project secretariats; other funding modalities – e.g. EU Framework Programme to be explored

Then we need to ask:

Who initiates project proposals?

How and by whom are proposals selected?

On the basis of which criteria?

Who takes responsibility for fundraising: the project initiator(s) and/or the IRDR IPO?

What timeframes are appropriate?

INTERNATIONAL COMMUNITY BUILDING AND NETWORKING

e.g. ENHANS?

Mechanisms?

-Start with a scoping exercise?

-Appoint IRDR Fellows/Champions?

What thematic foci, if any?

DATA AND INFORMATION SYSTEMS

Mapping, inventORIZATION;

Determination of needs and priorities

*Creation of a new system or
collaboration with existing systems?*

EVENTS

Workshops; Conferences (Open Science Meetings); Symposia; Seminars; Lecture Series

For what purpose:

Networking;

Showcasing IRDR research;

Agenda Setting, etc

PATHWAYS TO POLICY

*Creating demand for IRDR knowledge
and*

*Making such knowledge work: dissemination,
mediation, advocacy*

- Policy briefs*
- Policy dialogues*
- Assessments*
- Services*
- Co-production ...*

TRAINING AND CAPACITY BUILDING

Individual, organisational or systemic levels?

International or regional focus?

Thematic or methodological? (Integrated approaches)

Creating dedicated schemes or linking with existing ones?

ASSOCIATED INITIATIVES

Lending the IRDR badge ...

What kinds of activities?

-Centres of Excellence

-Events

-Etc.

Criteria?

Timeframes?

What's in it for the IRDR?

OTHER

RESEARCH SERVICES, INCL:

- Events Calender
- Directory of research funding opportunities

CAMPAIGNS

.....

REMEMBER THE OVERALL GOAL

... enhanced capacity around the world to address hazards and make informed decisions on actions to reduce their impacts, such that in ten years, when comparable events occur, there would be a reduction in loss of life, fewer people adversely impacted, and wiser investments and choices made by governments, the private sector and civil society.

PER ACTIVITY:

Objective: What situation we want to observe at the end of a specific period of time that will effectuate a change in an identified problem

Outcome: Impact or the achievement of an objective; the likely or achieved short-term and medium effects of an intervention's outputs

Outputs : the products or services – deliverables – provided/produced as an immediate result of programme activities

And for implementation purposes:

Who takes the lead?

What are possible sources of funding?

What is the role/responsibility of the IRDR IPO?

And of SC members?

How is progress monitored?

What happens between SC meetings?

ATTACHMENT 17

IRDR Objectives and Strategy

Presentation by Gordon McBean



IRDR

Integrated Research on Disaster Risk Objectives and Strategy



**Professor Gordon McBean, CM, FRSC
Chair, Science Committee, Integrated Research
on Disaster Risk (IRDR)**

2:00 hours after earthquake

World Conference on Disaster Reduction, Kobe, January 2005

Hyogo Declaration and Hyogo Framework for Action (HFA)

- “The starting point for reducing disaster risk and for promoting a culture of disaster resilience lies in the **knowledge of the hazards and the physical, social, economic and environmental vulnerabilities to disasters that most societies face, and of the ways in which hazards and vulnerabilities are changing in the short and long term....**”

HFA Priorities for Action

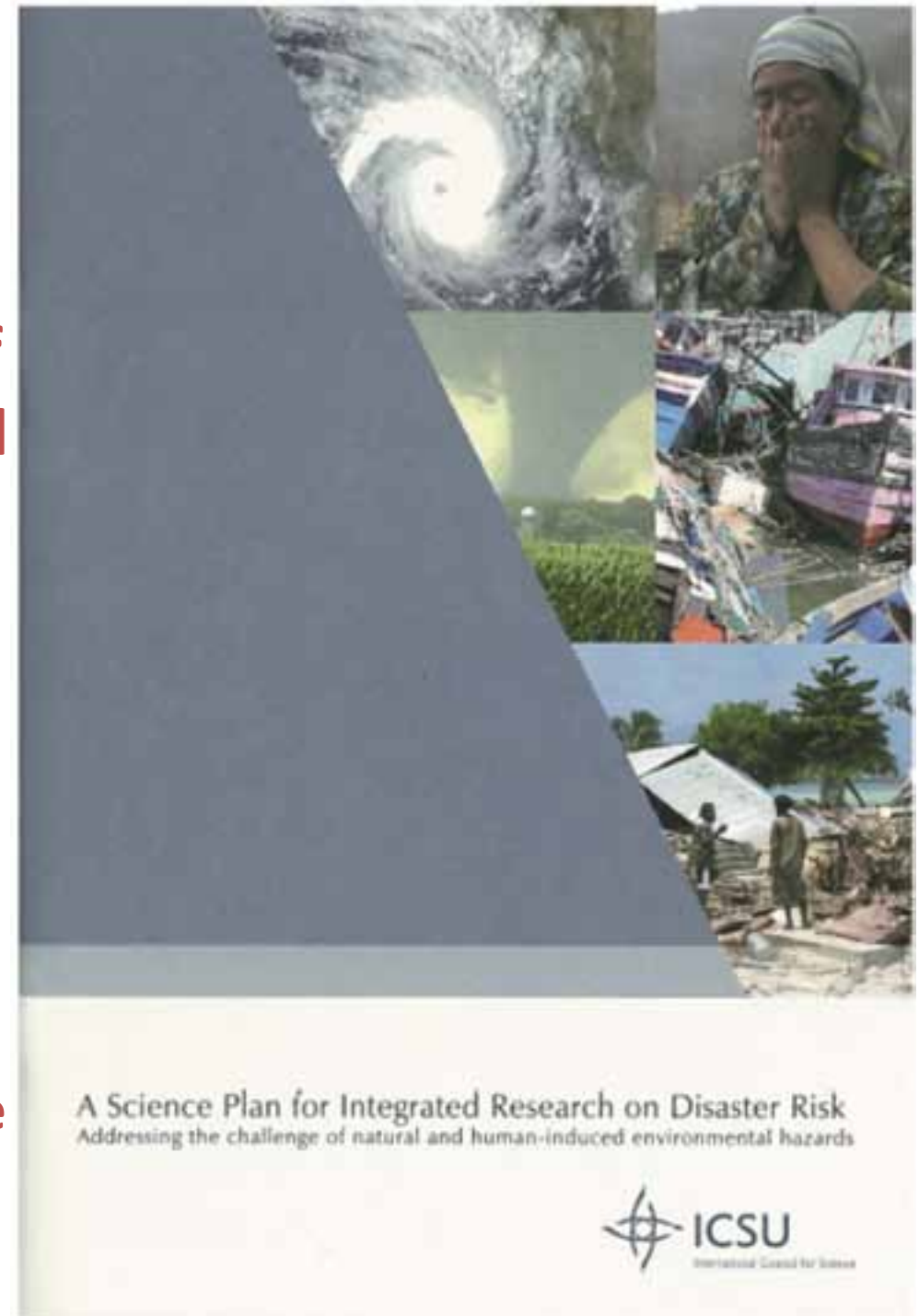
1. Ensure that **disaster risk reduction** is a national and a local priority with a strong institutional basis for implementation.
2. **Identify, assess and monitor disaster risks and enhance early warning.**
3. **Use knowledge, innovation and education to build a culture of safety and resilience at all levels.**
4. **Reduce the underlying risk factors.**
5. **Strengthen disaster preparedness for effective response at all levels.**

Integrated Research on Disaster Risk

Addressing the challenge of
natural and human-induced
environmental hazards
(IRDR)

An integrated approach to
research on disaster risk
through: an international,
multidisciplinary (natural,
health, engineering and social
sciences, including socio-
economic analysis) collaborative
research programme. -

Sept/2008



Integrated Research on Disaster Risk

- Scope

- **Geophysical** - Earthquakes – tsunamis – volcanoes –
- **Climate and weather-related trigger events** - floods – storms (hurricanes, cyclones, typhoons) – heat waves – droughts – wild-fires – landslides – coastal erosion – climate change (increases of extreme events)
- **Effects of human activities** on creating or enhancing disasters, including land-use practices
- Space weather and impact by near-Earth objects
- **NOT** technological disasters, warfare
- **Scientific Objectives** → → → → → → →

Objectives:



1. Characterization of hazards, vulnerability and risk

- 1.1: identifying hazards and vulnerabilities leading to risks;
- 1.2: forecasting hazards and assessing risks; and
- 1.3: dynamic modelling of risk.

2. Effective decision making in complex and changing risk contexts

- 2.1: Identifying relevant decision-making systems and their interactions
- 2.2: Understanding decision making in the context of environmental hazards; and
- 2.3: Improving the quality of decision-making practice.

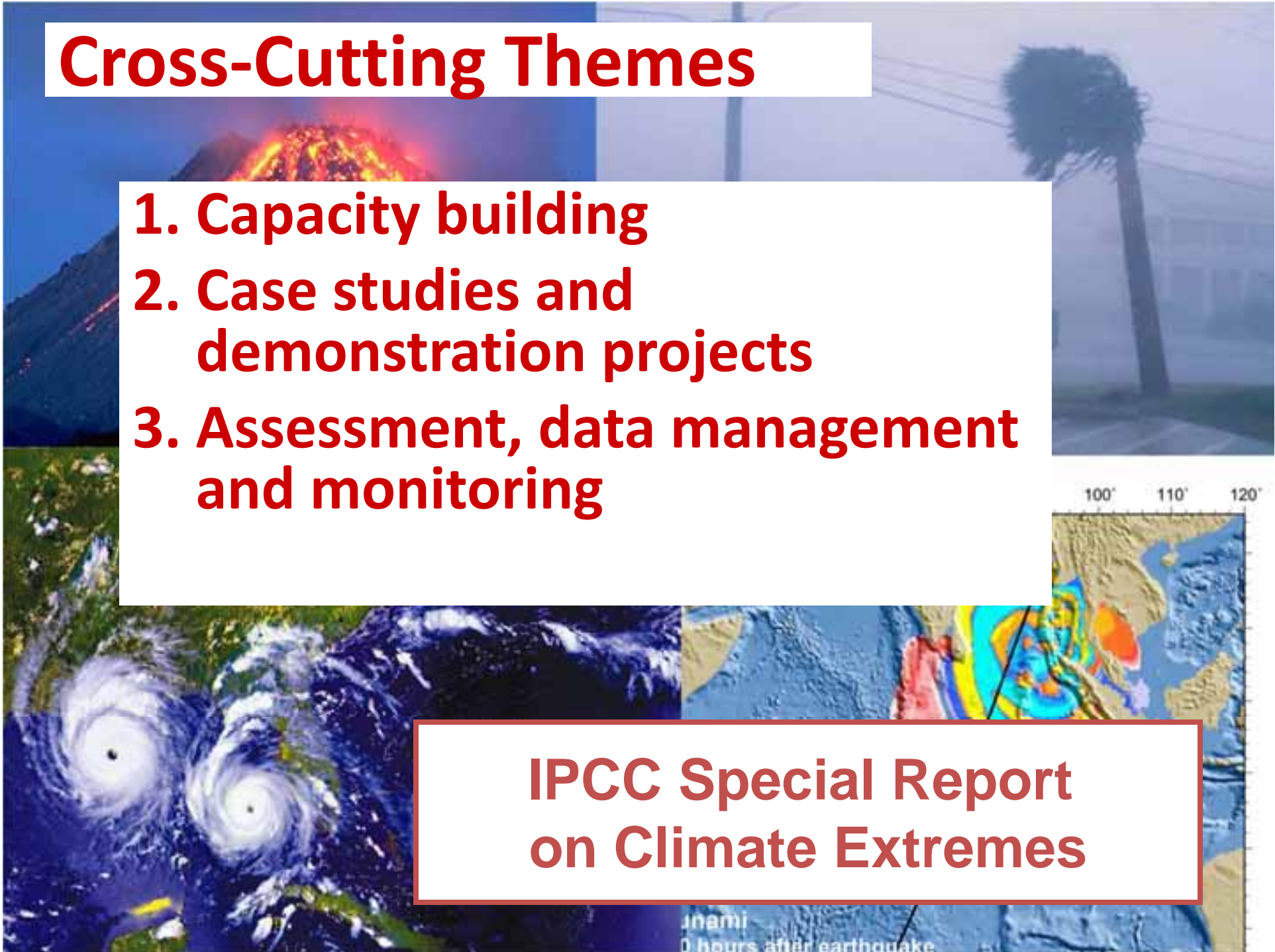
3. Reducing risk and curbing losses through knowledge-based actions

- 3.1: Vulnerability assessments;
- 3.2: Effective approaches to risk reduction

Cross-Cutting Themes

1. Capacity building
2. Case studies and demonstration projects
3. Assessment, data management and monitoring

IPCC Special Report
on Climate Extremes





Sponsors: ICSU, ISSC, UN-ISDR

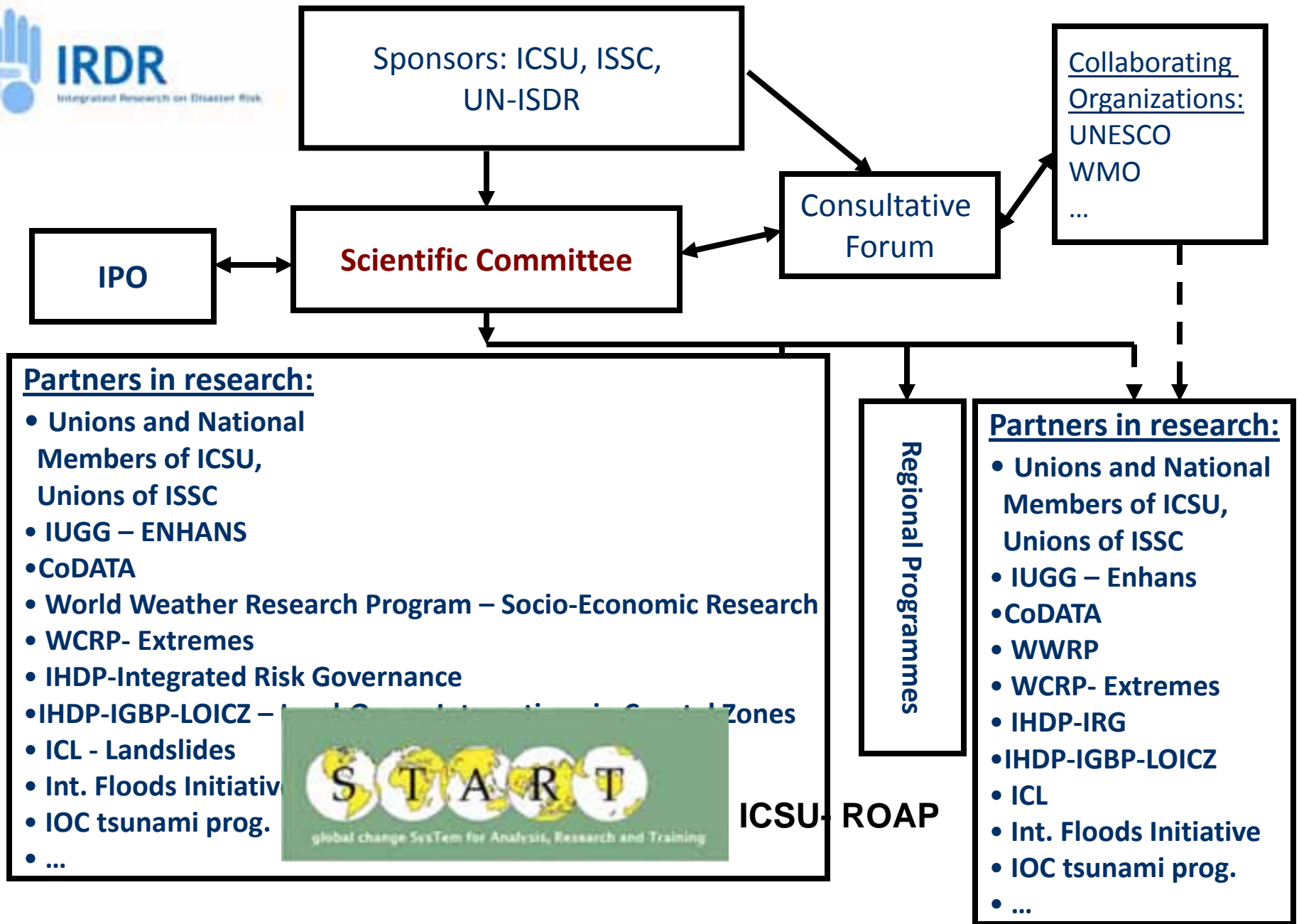
Collaborating Organizations:
UNESCO
WMO
...

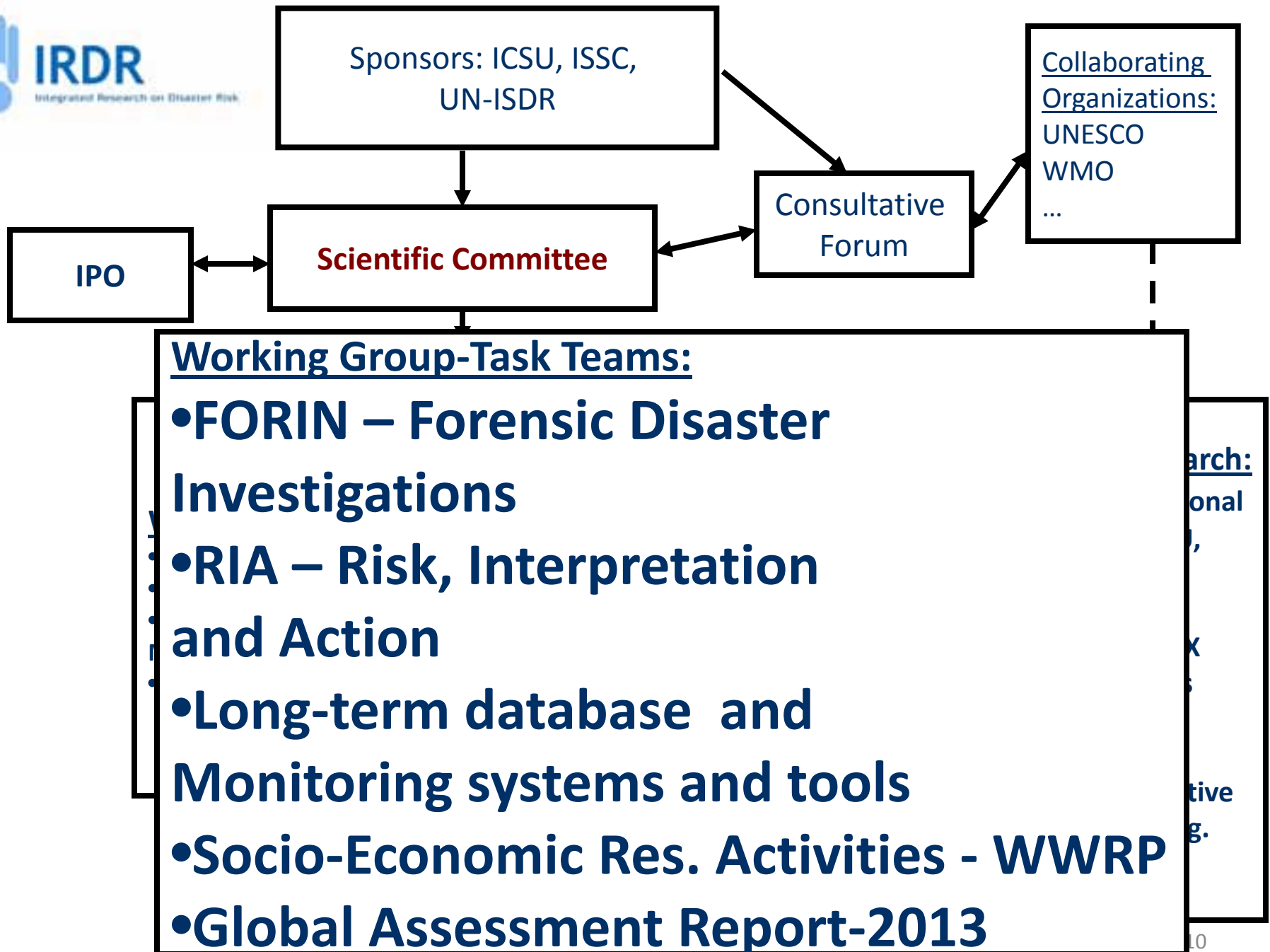
IPO
Scientific Committee

Consultative Forum

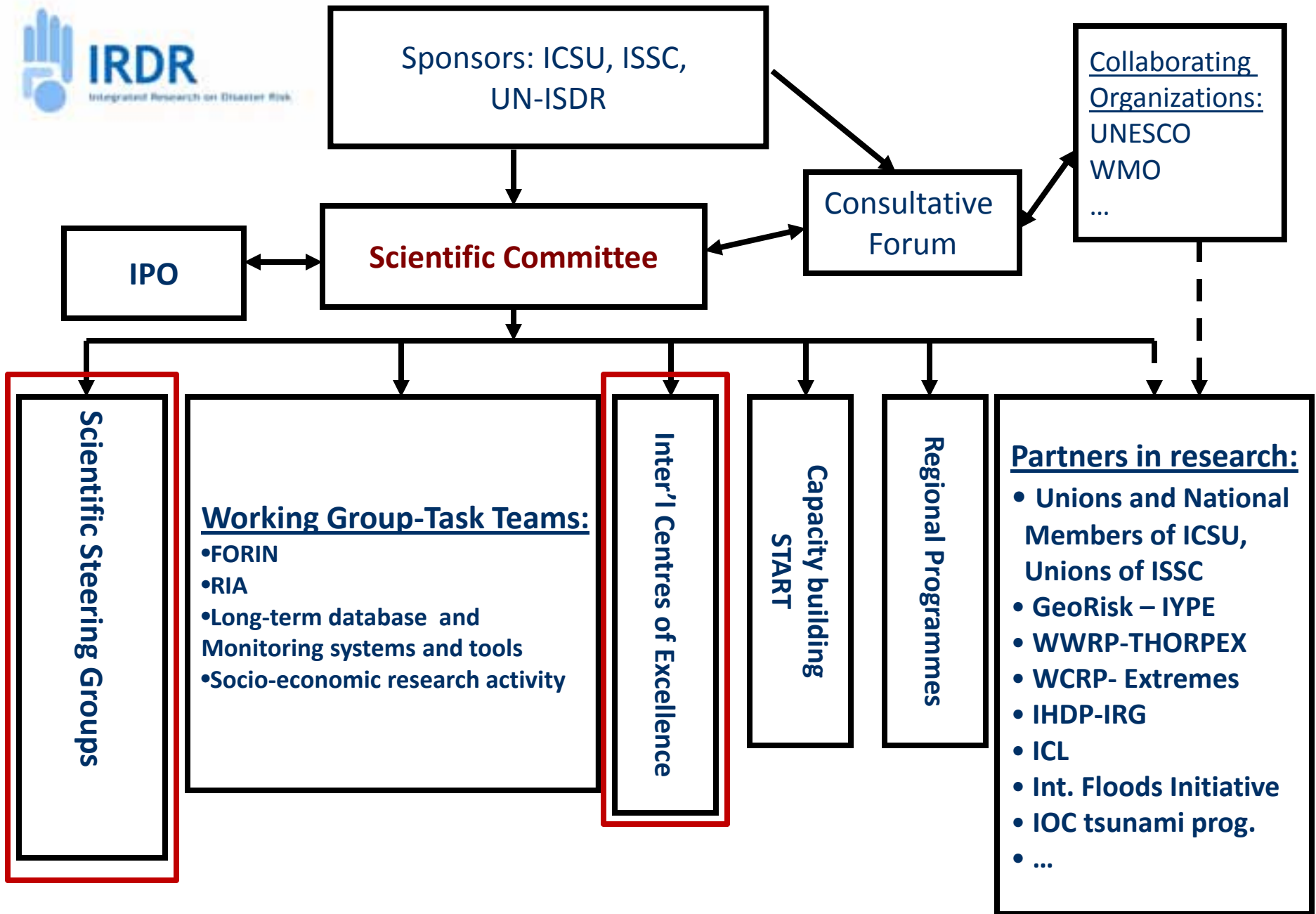
- ISSC GA and Conference Nagoya, December 2010
- UN ISDR Global Platform Science C Geneva, June 2011 (2013, 2015, ...)
- Pacific Science Congress - Kuala Lumpur, June 2011
- ICSU GA, Rome, September, 2011
- IRDR Conference Beijing, October 2011
- ...

- JEAN, Gordon, Inst. for Catastrophic Loss Reduction, University of Western Ontario, Canada – CHAIR
- DARESSI, Hormoz, BRGM, Orléans, France – geohazards, remote sensing
- EK, Maria, Vienna, Austria – Austrian Service of Torrents and Avalanche Control
- IN, Ortwin, University of Stuttgart, Germany – environmental sociology
- EUCHI, Kuniyoshi, ICHARM, Japan – hydrology, civil engineering
- IEL, Coleen, University of the Witswatersrand, South Africa – geography, environmental studies
- ITZ, Angelika, Geo Risks Research, Munich Re, Germany – economic data on disasters
- SU, ISSC, UN-ISDR, CEODE ex officio





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Actions

- Complete MOUs – WWRP, START, CoDATA, IHDP-IRG, IHDP/IGBP-LOICZ, ROAP, JRC, ...
- Nominations for new members and chair – all nominations in by end of Feb – to CSPR by March
- 2011 Conference Cttee – planning-action –
 - 5 themes, 300-500 people,
- ISSC, PSC, GP, IUGG, ICSU-GA, ESSP conference -2012
- ...
- Annual reports

- WGs – FORIN, RIA, Data
- GAIRDR – Global Assessment IRDR
- GAR 2013, SERA, ...
- Funding – WG mtgs, project offices, Conference ...

Proposal

- Assess the research on DRR
- Baseline of knowledge – state of art – reference point
- Bold Vision – systematic assessment of research
 - What we know
 - What we do not know
 - What we need to know
- Strategy
- Scientific steering team, panels, 2-y, 4-5 author meetings, \$2-4M

RIA

- Template for October 2011
- Core group
- 2 meetings
- Core group
- Relevant research
- Research plan – RIA Network within IRDR

Data

- Research project versus infrastructure

IRDR Legacy

- An enhanced capacity around the world to address hazards and make informed decisions on actions to reduce their impacts.
 - Societies to shift focus from response-recovery towards prevention-mitigation, building resilience and reducing risks, learning from experience and avoiding past mistakes.

Integrated Research on Disaster Risk

Thank you

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