

ACTIVITIES OF ICSU ROA ON NATURAL HAZARDS AND DISASTERS

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I. PUBLICATION OF THE SCIENCE PLAN IN 2006

II. GLOBAL-REGIONAL INTEGRATION WORKSHOP AT KUALA LUMPUR (MALAYSIA) (13-14 September 2012) To harmonize the science plans on hazards and disasters

IRDR Directives: Linking Science to Disaster Risk Management. By Jane E. Rovins and Djillali Benouar

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.

Objective 1: Characterization of hazard, vulnerability and risk; Identifying hazards and vulnerabilities leading to risks; Forecasting hazards and assessing risks; Dynamic modelling of risk

Objective 2: Effective decision-making in complex and changing risk context; Identifying relevant decision-making systems and their interactions; Understanding decision making in the context of environmental hazards; and Improving the quality of decision-making practice.

Objective 3: Reducing risk and curbing losses through knowledge-based actions; Vulnerability assessments; Effective approaches to risk reduction

The **Forensic Investigations of Disasters (FORIN)** approach to be adopted.

III. A FOLLOW UP MEETING IN DAKAR

An outcome was the **Dakar Declaration on Hazards and Disasters:**

Building on the outcomes of the workshop held in Kuala Lumpur

1. *The Science Plan of ICSU ROA together with the IRDR Science Plan provides a new vision to address these issues. In that respect, ICSU ROA should strengthen itself as the leading scientific organisation in sub-Saharan Africa (SSA), in collaboration with other major partners such as UNESCO, World Meteorological Organization (WMO), and United Nations International Strategy for Disaster Reduction (UNISDR).*
2. *The ICSU ROA and IRDR Science Plans are in line with regional initiatives and also in harmony with the strategic plans of AUC/NEPAD and the Regional Economic Commissions (RECs) in the field of disaster risk reduction.*

Plan of action:

Three priority areas were identified as being very important to address policy-oriented research aimed at reducing the risks and vulnerabilities of Sub Saharan Africa and the following working groups were established to develop the proposals:

- a. Reducing risk from geohazards; such as earthquakes, volcanic eruptions, and landslide hazards (Geohazards working group);
- b. Reducing risk from hydro-meteorological hazards, such as floods, droughts, wildland fires (including bushfires), heat waves, cyclones and dust storms (Hydro-meteorological hazards working group); and
- c. An integrated assessment of vulnerabilities to hazards and disasters, including coastal hazards and forensic investigation of disasters (Vulnerability and risk working group-involving both social and natural scientists).
- d. Publication of a book on *The state of natural hazards and disasters in Africa*

IV. PLANNING WORKSHOP IN PRETORIA (September 2013)

1. Based on directives from the Director ICSU ROA - Dr Edith Madela Mntla and Prof Genene Mulugeta

A Consortium building approach to facilitate the implementation of the ICSU-ROA Science Plan below was adopted:

- a. Establish a S-N Research consortium to implement the Science plan
 - b. Facilitate research and capacity-building through a coordinated , interdisciplinary approach
 - c. Facilitate building of integrated research and training programs
 - d. Foster closer ties between researchers and policy makers.
- 2. Research themes identified were as follows::**
- a. HD.1-Reducing risk from geo-hazards; such as seismic (earthquake), volcanic, and landslide hazards.
 - b. HD.2-Reducing risk from hydro-meteorological hazards, such as floods/droughts
 - c. HD.3-Integrated assessment of vulnerabilities to hazards and disasters.
- 3. Working groups:**
- a. **Geohazards working group** (Durrheim, Ayonghe)
 - b. **Hydro-meteorological hazards working group** (Konary, Lalljee)
 - c. **Integrated assessment of vulnerabilities working group** (Van Niekert,
- 4. The following steps were taken to ensure a link with IRDR research approach**
- a. **Characterization of hazards, vulnerability and risk**
 - b. **.Understanding decision making in complex and changing risk settings.**
 - c. **.Reducing risk and curbing losses through knowledge-based actions**

5. Proposed projects

- a. **Working Group-1: HD 01: Geohazards in sub-Saharan Africa**
 - i. Assessing and mitigating Earthquake hazards in Africa
 - ii. Characterisation of Africa's active volcanoes for appropriate hazard
 - iii. Monitoring, using remote sensing and ground-truthing techniques
 - iv. Landslides

- b. **Working Group-2: HD 02: Hydro-meteorological hazards and disasters in sub-Saharan Africa: vulnerability and resilience**
 - i. Drought events in SSA: case study of the Sahel
 - ii. Development of a Decision Support System for Flood Management in SSA: case studies of the Volta and Nile Basins
 - iii. Climate change and socio-economic determinants for anthropogenic fires in African savannahs

6. Envisioned activities:

1-Interdisciplinary consortium (from Africa and abroad)

Research co-designed and implemented by members of an interdisciplinary consortium Inviting partners and organization in the proposed research areas

- i. **Earthquakes:** AfricaArray; Wits; CGS; Addis Ababa; U. Nairobi; USTHB (Algeria); CGS (Algeria); CRAAG (Algeria)

Penn State U; GFZ (Germany); ERI, Tokyo U and other Japanese Institutions; USGS; Museum for Africa.

- ii. **Volcanoes:** U. Buea, U. Addis Ababa, Comoros, Goma Volcanic Observatory, U. Yaounde, Reunion,

Museum for Africa, Belgium; British Geological Survey; Luxembourg; Italians?

- iii. **Landslides:** Mekelle U (Eth); Makerere U. (Ug), U. Nairobi; U. Buea; CGS (RSA); Nigeria; DRC; USTHB (Algeria); CGS (Algeria); Norwegian Inst Tech; Uppsala U; Japanese institutions; Sweden; Graz U of Tech, Austria; Norway

iv. **Floods:** Africa: U. Cocody (Cote d'Ivoire); U. Botswana; U. Mauritius; Mozambique; USTHB & ANRH, Algeria; Uganda; Zambezi River authority; Senegal; CHR, Sudan; ITA, Nigeria

International: World Association of Soil & Land Degradation, Thailand; Dortmund, Germany; ICHARM, Tsokuba, Japan; UNECSO-IHE, Netherlands; USAid;

v. **Drought:** Africa: U. Burkina Faso; Niger; Mali; Senegal; CSTR, Algeria; Nigeria; Mekelle U. & Bahir Dar, Ethiopia; U. Zimbabwe; ACDS and Free State, South Africa; CETRAID, U. Nairobi, Methodist U., Kenya Agriculture Research Institute, Kenya;

International: U. Reading, UK; Ben Gurion U., Israel; Najing U., China; UNDP; WMO; UNEP; IWMI; UNECSO-IHE, Netherlands; USAid; Catholic U., Leuven, Belgium;

vi. **Climate change:** Africa: UKZN-Durban, UCT, Wits, African Centre for Disaster Studies, CSIR, South Africa; U. Mauritius; U. Nairobi, Egerton U. and Methodist U., Kenya; Buea U., Cameroon; U. Zimbabwe; Inst for Climate & Society, Mekelle U., Ethiopia; U. Zambia; U. Cocody, Cote d'Ivoire;

vii. **Bushfires:** Africa: U. Botswana; SAFNET, African Centre for Disaster Studies and Free State U., South Africa; Anta Diop U. and GBU, Senegal; U. Zimbabwe.

International: US Forestry Department; Australia; NASA (Modis), USA

7. The following potential funders of the projects were identified:

- **SIDA** (after 18 month proposal-writing phase), to provide 50,000 – 100,000 Euros per project) through yearly workshops and to share research results, experiences, and develop proposals and facilitate cooperation between universities in North and South.
- **NORAD, DANIDA, GIZ (Germany), DFID, AU, EU FP7, VLIR (Belgium), USAID, Belmont Forum**
- **Future Earth**

8. A Book Project on **The state of natural hazards and disasters in Africa**

Content:

- An assessment of impacts and risks posed by Hazards & Disasters
Genene. Mulugeta
- Drought Hazards *Ellis M.Njoka*
- Cyclone Hazards *Chris Reason* Earthquake Hazards-*Ray Durreheim*
- Mass Movement Hazards -*Kifle Woldearegay*
- Eruptions of Active Volcanoes in Sub-Sahara Africa -*Samuel. N. Ayonghe and Mabel. N. Wantim*
- Volcanic terrains in Africa that release asphyxiating carbon dioxide
Wantim et al
- Climate Change *Ellis M. Njoka*
- Artisanal and small-scale Mining in Africa *Benjamin Mapani*
- Coastal Hazards *Edem Antia (proposed but not submitted)*

THANK YOU