

# **Biosafety and Biosecurity:** **ICSU ROA Perspective**

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# About ICSU

- International NGO
- Membership organization
- Plan and coordinate **interdisciplinary research** to address major issues of relevance to science and society
- Advocate for freedom in the conduct of science
- Promotes equitable **access to scientific data** and information
- Facilitate science education and **capacity building**
- Create international and **regional networks** of scientists
- Act as a focus for the exchange of ideas, the **communication of scientific information** and the development of scientific standards
- Authoritative voice of the global scientific community

# ICSU Mission: Strengthening International Science for the Benefit of Society



1. Identify and address major issues of importance to science and society,
2. Facilitate **interaction amongst scientists** across all disciplines and from all countries,
3. Promote the **participation of all scientists**, without any segregation, in the international scientific endeavour,
4. Provide independent, authoritative advice to stimulate constructive dialogue between the scientific community and governments, civil society and the private sector.

# ICSU Regional Offices



## Aim:

To ensure that the voice of developing countries influences the international agenda and that **scientists from the South** are fully involved in **international research guided by regional priorities**

- **Africa** (South Africa) inaugurated 1 September 2005
- **Asia and the Pacific** (Malaysia) inaugurated 19 September 2006
- **Latin America and the Caribbean** (Brazil) inaugurated in December 2006
- **Arab Region** (Host to be identified)

# ICSU ROA: Promoting International Research Guided by **Regional Priorities**

- Poverty alleviation
- Food and Nutrition Security
- Healthcare
- Water and sanitation
- Energy
- Security/Safety
- Environmental Degradation

# ICSU ROA Science Plans (2006-09):

1. Sustainable Energy
2. Health and Human Well-being
3. Natural and Human-induced Hazards & Disasters
4. Global Environmental Change

# Health & Human Well-being in sub-Saharan Africa

## Major Challenges:

1. Heavy burden of disease
2. Health systems (controversies, conflicts, inadequacy)
3. Public Health issues
4. Food and Nutrition Insecurity
5. Water and sanitation
6. Hazards & Disasters (Natural & Human-induced)
7. Global Environmental Change → emerging pathogens
8. Institutional and policy frameworks
9. Socio-cultural environment

# Health & Human Well-being: Food and Nutrition Insecurity

## Hidden Challenges:

### 1. Food safety:

- Pesticide residues in food (fruits and vegetables)
- Environmentally induced accumulation of food toxins
- Stability of preservatives in processed food vis a vis storage conditions
- Pathogen transmission from food to man (zoonosis)
- Emergence of new (unknown) plant and animal pathogens → adaptation to CC
- Infestation during food processing/transport/storage

### 2. Quality Nutrition:

- Food degradation during processing (e.g. sun-drying)
- Stability of food supplements during storage



# Health & Human Well-being: Coping with burden of disease

## Some Concerns:

1. Heavy reliance on Traditional Medicine:
  - Toxins in raw preparations
  - Dosage of the active ingredients
  - Hygiene in the process of preparing concoctions
2. Surprises:
  - New human pathogens (adaptation to GEC)
  - Emerging diseases in new ecologies (e.g. highland malaria in east Africa)
  - Epidemic outbreaks after disaster (e.g. cholera after a flood)

# ICSU ROA Projects: Health & Human Well-being

1. Understanding the Scientific Basis of Diseases in Africa
2. Health Promotion and Disease Prevention
3. Health Systems Analysis and Development
4. Traditional/complementary and alternative medicine
5. Promotion of Human Well-Being

# HHWB Project 2: Health Promotion & Disease Prevention

## Quality nutrition

- Healthy balanced diets based on locally available and accessible foods
- Nutrient deficiencies of locally available foods and methods for their fortification

## Food safety (Food pathogens, toxins)

- Cost effective methods for improved food safety (storage and transport)
- Pathogen transmission from food to humans
- Cost effective and user friendly food and quality procedures

# HHWB Project 4: Traditional and Complementary Medicine



## Scientific validation and safety issues

- The pharmacological characterisation, toxicology and efficacy of indigenous remedies

## Drug discovery, development and IPR issues

- Identify pharmacologically active natural compounds and formulate them to prescription drugs
- Standardise the formulation, dosage, stability and storage of indigenous remedies
- Protect indigenous knowledge and encourage trust and information sharing
- Partnerships between traditional practitioners, scientists and medical practitioners for drug development

# Other ICSU ROA Projects: Sustainable Energy

1. Development of Energy Models & Scenarios for sub-Saharan Africa
2. Increase access to high quality, reliable and affordable energy in a sustainable manner in sub-Saharan Africa:-  
Renewable Energies – Biofuels for sub-Saharan Africa
  - i. Electronic Library and Knowledge network in the Biofuels sector
  - ii. Biofuels Technology: Quality, Characterization foot print and Adaptation
  - iii. Energy Efficiency in Transport

# Other ICSU ROA Projects: Natural & Human-induced Hazards and Disasters

1. Geo-hazards in sub-Saharan Africa (linked to IYPE)
2. Hydro-meteorological hazards and disasters in sub-Saharan Africa: Resilience and Vulnerability.
  - i. Hazards and disasters database
  - ii. Vulnerability science (mitigating the risk of floods and droughts)
  - iii. Integrated modelling of multiple disasters
  - iv. Resilience and vulnerability of socio-ecological systems

## Other ICSU ROA Projects: Global Environmental Change.

1. Land degradation and Bio-diversity loss
2. Evolution of rainfall patterns
3. Agricultural Productivity and food security concerns
4. Water Resources
5. Atmospheric pollution
6. Oceanography

# *Thank You*

For more information and up-dates, visit

The ICSU global website: [www.icsu.org](http://www.icsu.org)

And the ICSU ROA website: [www.icsu-africa.org](http://www.icsu-africa.org)