

## **Outline of Intent to form a consortium between IAI, and the ICSU and UNESCO regional offices in support of Future Earth activities**

The Latin America and Caribbean Regional Office of the International Council for Science (ICSU-ROLAC) has a key role in the Future Earth (FE) initiative with regard to Latin American and the Caribbean region (LAC). ICSU-ROLAC will work towards FE science and capacity building goals in LAC within a new consortium that includes the Inter-American Institute for Global Change Research (IAI) and the UNESCO regional office.

The initial goal of the consortium is to develop and implement a program of research, assessment, capacity building and outreach on the Future Earth themes of sustainable energy and of risk prevention and management. The focus of the collaboration of ICSU-ROLAC with IAI and UNESCO will be on strengthening interdisciplinary programs with social, applied and natural science components. ICSU-ROLAC will provide the regional coordination and link to Future Earth and ICSU activities, UNESCO will provide links with regional member states, and IAI will contribute research and capacity building through its continent-wide networks.

The consortium will engage the scientific community to frame research questions from different disciplines and co-design interdisciplinary research involving stake-holders and end-users, and to track and analyze research outcomes in order to generate relevant, policy-oriented research outcomes.

This focused, interdisciplinary approach will inform ICSU's Global Change activities, especially those that are also FE priorities, relate them to social and environmental concerns in LAC, and provide a global forum for regional research activities that contribute to the wider sustainable development agenda.

Sustainable energy is an important topic for LAC which is already a major source region for bio-energy, and still has substantial agricultural expansion potential. Much of the region's electricity is derived from hydro-power which competes with other ecosystem services, irrigation and fisheries. A comprehensive approach is required to weigh relative benefits of different energy sources, integrating national potentials and diverse priorities for technologies such as advanced bio-fuels, wind turbines, geothermal and hydro-power, and hydrogen production for fuel cells. Their development, management and dissemination would greatly benefit from regional cooperation. The design of the next-generation energy matrix will require improved planning, regulation and technological control, as any failure here could have a serious impact on

human wellbeing, especially since over 70% of Latin America's population is urbanized.

LAC has several regions of elevated risk. The Andes are particularly sensitive to climate change, while the ocean-climate systems of El Niño–Southern Oscillation (ENSO) and the Pacific decadal oscillation (PDO) cause major climate shifts with direct impacts on regional hydrologies, ecosystems and human wellbeing. Hurricane activity in the Caribbean and Central America is modulated by the Atlantic Multidecadal Oscillation (AMO) and the intra-Americas sea low level jet. Risk management and mitigation require improved understanding of such connections. Land-use and land cover changes have reached a scale that is modifying regional hydrology and climate, and this too needs to be better understood if the associated risks and opportunities are to be adequately managed. LAC is likely to play an increasing role in global food security, but this potential needs to be understood in terms of regional production constraints and resource management.

Future Earth will bring together most of the global programs concerning the science of earth systems. It will integrate the contributions of natural, applied and social scientists. It will focus on policy-relevant questions. It will identify potential threats, explore mitigation options and identify opportunities. One goal of this consortium is to support the LAC nations in developing secure, low-carbon energy systems, while safeguarding the sustainability of ecosystem services and resources, and assuring that each country has adequate energy supplies. The second goal is to integrate the prevention and management of risk, to mitigate the impact of natural disasters, and reduce negative impacts on humans and ecosystems. In this new collaborative partnership, the LAC nations can work together in the context of the global Future Earth initiative towards developing and disseminating solutions to global change, environmental challenges and opportunities and sustainable social-ecological systems to enhance human well-being.