GFDRR
GLOBAL FACILITY FOR DISASTER REDUCTION AND RECOVERY

Reducing Vulnerability to Natural Hazards

A partnership of Australia, Canada, Denmark, European Commission, Finland, France, Germany, Italy, Japan, Luxembourg, Norway, OFDA/USAID, Spain, Sweden, Switzerland, UK, UNISDR and The World Bank

GFDRR Case Study: Central American Probabilistic Risk Assessment (CAPRA)

GFDRR is supporting the countries of Central America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua Panama) to develop a Disaster Risk Information Platform for decision making, using a common methodology and tools for evaluating and expressing disaster risk. Developed by regional experts, CAPRA builds on, and strengthens existing initiatives, with the objective of consolidating methodologies for hazard and risk evaluation, and raising risk management awareness in the region.

WHAT IS CAPRA?

CAPRA consists of a GIS-based platform for risk analysis, where probabilistic techniques are applied to the analysis of earthquakes, tsunamis, hurricanes, floods, landslides and volcanoes. Hazard information is combined with exposure and vulnerability data, allowing the user to determine risk simultaneously on an inter-related multi-hazard basis, distinguishing the platform from previous single hazard analyses.

Central to CAPRA's innovation is the integration of Web 2.0 technologies. CAPRA is fundamentally designed to be modular, extensible and open. This allows for mass collaboration, and enables an ever-evolving and sustainable "living instrument". Built upon the platform, CAPRA applications consist of a risk map tool, a cost-benefit analysis tools for risk prevention or mitigation, and programs that assist in the design of risk financing strategies.

Additionally, to complement the creation of the technical aspects, CAPRA experts will provide training and workshops to support the integration of the risk dimension in the regions' development process. CAPRA has been designed for a diverse community of users, ranging from technical experts, government institutions, academics, emergency response agencies, to risk management consultants and decision makers, throughout Central America.

RATIONALE

The CAPRA initiative is rooted in the expressed interest of Central American countries to address the region's high vulnerability to a variety of natural hazards, which challenge their sustainable development. Funded by the Global Facility for Disaster Reduction and Recovery, under Track II, this initiative is led by the Central American Coordination Centre for Disaster Prevention (CEPREDENAC), in collaboration with Central American governments, the United Nation's International Strategy for Disaster Reduction, the Inter-American Development Bank and the World Bank.

Over the last decades the Central American region has become increasingly vulnerable to natural hazards. Population growth and increased concentration of physical assets in highly exposed areas is resulting in increased vulnerability. Unplanned and unregulated land use, lack of environmental controls, and the poor application of building standards all contribute significantly to potential asset losses. Considering increasing climatic variability and global climate change, this trend is likely to continue.

While ex-post disaster response has improved significantly in Central America, data relating to asset vulnerability is scarce. Few attempts have been made to systematically assess risk in probabilistic and financial terms. There are therefore very few true assessments of risk at appropriate resolution and scale; little attention is paid to vulnerability of assets exposed and risk maps are essentially descriptive. The region thus lacks the ability to provide an adequate frame of reference from which countries can design and adopt standards, and develop suitable risk evaluations for planning. CAPRA provides Central America with a common methodology for assessing disaster risk, by setting standards and providing a quantitative measurement of physical, economic and human risk.

In this way CAPRA hopes to contribute significantly to the disaster risk management and preparedness field in Central America, while also strengthen the region's sustainable economic and social development.

PROGRESS and PROGRAM FEAUTURES

Thus far there have been three CAPRA workshops in 2008: one regional workshop in Nicaragua, and two national technical workshops, in Managua and Costa Rica. The results of the workshop saw the completion of two tasks: (i) the construction of the baseline architecture for the Hazard and Vulnerability modules of CAPRA, and (ii) the Hazard Models for hurricane, flood, wind, storm surge, earthquake, landslide, tsunami and volcanoes were proposed and explained to the country technical counterparts, as were methods and proxies used to build an inventory of country assets.

Additionally, advances in the creation of the Risk Module and the visualization software, which integrates GIS capabilities for analysis with a comprehensive calculation of risk from the Hazard and Vulnerability modules were made, despite the completion of this module not due until March 2009.

Asset data collection remains the central challenge to this initiative. Working with the countries technical experts CAPRA collects data in three ways: (i) the top-down approach, which relies on satellite images and aerial photography of assets; (ii) through a grassroots approach of collecting data through web applications; and (iii) collecting data from country ministries.

The Hazard and Vulnerability modules have been presented as "drafts" for the country technical counterparts to review and complete in collaboration with the consultants. As such the delivery date of the final complete modules has been extended until February

2009 and work on the risk module is advanced. This will allow the consultants to generate examples of risk evaluations from the region using the data gathered, before the whole process of building a complete inventory of assets is completed.

MOVING FORWARD

Construction of the platform is well underway in the pilot countries of Costa Rica and Nicaragua. The remaining countries from Central America have already requested that CAPRA be applied to their territory. The IDB has agreed to finance CAPRA in Guatemala, Belize, El Salvador and Honduras, and – through a Memorandum of Understanding with the World Bank – will use the same Terms of Reference and consortium to perform this work. In the future, Phase Two will see the addition of Panama to the CAPRA initiative, completing the region. Additionally further applications will be developed and improvements will be made to the platform, in terms of both data and applications. Capacity building will also become the focus, as regional experts train CAPRA users in the new applications.