

GIS ON THE MAP IN POST-CONFLICT DEVELOPMENT

Geo-ICT Capacity Building in Rwanda

Capacity building is critical for success in introducing Geo-ICT applications. Governments will use the latest GIS, remote sensing and database technologies to support research, decision making and development. The mother of development is education and teaching. The authors introduce current efforts in Geo-ICT capacity building in post-conflict Rwanda.

Contrary to the popular belief held in many countries, Information and Communication Technology (ICT) is not the only answer to problems faced by certain countries. Appropriate ICT investments and capacity building are necessary conditions for sustainable development, alignment and implementation of the institutional, organisational and technical tools of land administration and geographical core data management. To manage a country well government at all levels requires information on:

- people
- land where people live and work
- location of administrative boundaries and of objects such as buildings and roads, ownership (land tenure, which can have long traditions), value and (possible future) use of the land.

These types of core data/information can help governments to determine how they deal with land in policies designed to combat poverty, to achieve sustainable settlement goals and to manage natural resources.

Education and Research

The Centre for GIS at the National University of Rwanda (CGIS-NUR) has started the development of a Geo-Information Sciences-based Education and Research Program in co-operation with ITC, the International Institute for Geo-Information Science and Earth Observation in The Netherlands. This development project began officially with a workshop in March 2005 in Butare, and will last for four years. The workshop discussed various aspects of the new programmes, including the possible stakeholders, issues that might be addressed in the programmes, possible candidates for fellowships and the establishment of long-term relationships between CGIS and regional partners. The CGIS-NUR was founded in 1999, when a convention was signed between the National University of Rwanda (NUR) and the Dian Fossey Gorilla Fund International (DFGFI). This was aimed at the creation of a Geographic (GIS) and Remote Sensing Research Unit to enhance regional capacity in conservation science and related technologies through the Faculty of Science and Technology of the National University.

Validating GIS and RS

The start of the new millennium saw real recognition of the increasing importance of GIS and Remote Sensing technologies in the environmental sciences. Due to the wide range of fields in which the technology was starting to be used the university decided to create a permanent structure with interfaculty status. This new unit, built under the direct authority of the vice-rector for Academic Affairs, became the "Geographic Information Systems and Remote Sensing Regional Outreach Center". Its establishment is part of the strategy of the university to build ICT capacity and sustainable infrastructure to provide support in teaching, learning, research, management and community development to meet developmental challenges at different levels in society. The idea is that the National University of Rwanda will provide opportunities for IT to be effectively used in teaching, research and community service.

Co-operation

Since 2001 this new centre has co-operated with various partners in meeting specific objectives. Its mission comprises the following elements:

- developing a GIS & RS curriculum for instruction, supporting the university's goal of becoming a university of excellence based on solid IT-supported education to prepare training staff of the future
- assisting (non-)governmental institutions by providing training in the application of GIS & RS tools and thus establishing formal links with other institutions for GIS technology
- assisting in GIS-based conservation research in conjunction with the Dian Fossey Gorilla Fund International
- developing research in various topics of national interest to improve the quality of services rendered to the community by use of ICT and supporting the provision of integrated and co-ordinated community-orientated services that impact positively on socio-economic development
- establishing access management of geo-spatial databases at national and regional level for institutions and decision-makers. Spatial data has to be easily updated within decision-making processes. This objective to create a "Central Clearinghouse" will allow

- the centre to serve the links between universities, research institutes, government and non-government organisations, overseas data-sharing, and co-ordination of activities
- serving as a mapping unit to respond to the needs of the community.

Responding to Plans

The GIS/RS-related project developed out of needs formulated by the Government of Rwanda's Vision 2020 and National Information and Communication Infrastructure Plan, which included:

- improving levels of IT in Rwanda and reaching the national objective to transform Rwanda into an IT-literate nation
- promoting and encouraging deployment and utilisation of ICT within the economy and society
- improving the efficiency of Civil and Public Services
- transforming the educational system using ICT, with the aim of improving accessibility, quality and relevance to development needs
- improving human-resource development capacity to meet the changing needs of the economy.

To foster the use of GIS within various sectors, and considering the possibilities of co-operation, the following objectives for the GIS capacity-building project were formulated:

- staff upgrade within the centre itself
- curriculum development for three new programmes: MSc Environment and sustainable development, BSc Urban Planning and Land Administration and GIS & RS short courses
- upgrade of didactical skills and methodologies
- organisation of physical infrastructure for (GIS) training and education
- promotion of GIS educational and research expertise of the CGIS-Centre within the university at both national and regional level
- improve management capacity of CGIS centre.

These measures may sound trivial to professionals in developed countries; in Rwanda the objectives are really ambitious. It is hoped that most implementation will be carried out by a variety of partners. The CGIS-NUR is one of several partners in the Development Gateway, the knowledge platform for the development community. A consortium of international partners will implement the project.

Concluding Remarks

The CGIS is enhancing its capacity in the country and in the region. Within the institution of NUR it can serve as a regional training and research outreach institution of excellence in the fields of Geo-Information Sciences to address the issue of rural-sector transformation and poverty reduction. Further development of its staff and co-operation with similar institutions in the region will enable the CGIS to put GIS on the map of the Rwandan institutions. As a result, it will move the country forward and put Rwanda positively on the map of the world.