

SCIENCE AND TECHNOLOGY

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The so-called technologically challenged communities in Africa's backwaters are now part and parcel of the information society, thanks to their embracing new forms of technology steeped at helping them redefine their lives, and overnight, the "backward" farmers and nomadic pastoralists have become, "barefoot cartographers", fully equipped with the latest technological know-how.

The latest ICT innovation is attributed to the Geographic Information Systems which has been adapted and structured according to the specific needs of particular communities and incorporating their input and called Participatory Geographic Information Systems (PGIS). The Ogiek and the Maasai are two of Kenya's indigenous communities, who forever have been seen as a people stuck in the past and totally incompatible with the changing fortunes of time, are the first people to reap from the vast benefits of ICTs.

"Participatory GIS is an emergent practice in its own right; developing out of participatory approaches to planning and spatial information and communication management. The practice is the result of a spontaneous merger of participatory learning and action (PLA) methods with geographic information technologies systems (GIT&S).

PGIS combines a range of geo-spatial information management tools and methods such as sketch maps, Participatory 3D Models (P3DM), aerial photographs, satellite imagery, Global Positioning Systems (GPS) and Geographic Information Systems (GIS) to represent peoples' spatial knowledge in the forms of virtual or physical, two or three dimensional maps used as interactive vehicles for spatial learning, discussion, information exchange, analysis, decision-making and advocacy.

Participatory GIS implies making GIT&S available to disadvantaged groups in society in order to enhance their capacity in generating, managing, analysing and communicating spatial information," says Giacomo Rambaldi a regional programme coordinator at the Technical Centre for Agricultural and Rural Co-operation (CTA).

Through GIS marginalised and neglected communities across Kenya are flexing their muscles in natural resources zoning and management of their communal lands. Issues of tillage, soil erosion, better farming practices and livestock keeping are all now better understood, due to GIS. Indeed, a couple of examples exist and are replicated across the country.



GIS has made issues of tillage, soil erosion, better farming practices and livestock keeping to be better understood
File picture

"GIS is one of the tools that is being used to equip communities in the management of their natural resources. In Imbirikani Group Ranch, which borders Amboseli National Park, we are using GIS to assist the local communities understand and appreciate the natural resources available to them and the need for sustainable resource use; Map the location and of these resources; Identify the key threats to these resources and their conservation; Map out their proposed strategy to manage the resources (zoning)," says Lucy Waruingi, a programme officer at the African Conservation Centre (ACC) adds.

The conservation of biological biodiversity, complete with the knowledge of local communities is now being enhanced and harnessed to achieve sustainable livelihoods.

"Conservationists and development partners increasingly recognise that efforts to conserve biological diversity will not succeed unless local people perceive those efforts as serving their economic and cultural interests. Conservation strategies must therefore play a dual role of improving the management of natural resources and the quality of life of people. Unless the people who are most directly impacted by conservation projects perceive that those projects serve their economic and cultural interests, long-term conservation of biodiversity will not be feasible. Innovative approaches must be applied to increase the probability of promoting successful conservation of biodiversity. Local communities need to be enabled and empowered to manage their natural resources on a continuous basis in order to ensure the effective and sustainable conservation of

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otherwise threatened biological resources," says Waruingi.

Giacomo Rambaldi has together with Peter Kwaku Kyem, Peter Mbile, Mike McCall and Daniel Weiner co-authored a paper titled "*Participatory Spatial Information Management and Communication in Developing Countries*" which was presented at the mapping for Change conference held in Nairobi in mid September 2005.

"PGIS practice is geared towards community empowerment through measured, demand-driven, user-friendly and integrated applications of geo-spatial technologies. GIS-based maps and spatial analysis become major conduits in the process. A good PGIS practice is embedded into long-lasting spatial decision-making processes, is flexible, adapts to different socio-cultural and bio-physical environments, depends on multidisciplinary facilitation and skills and builds essentially on visual language. The practice integrates several tools and methods whilst often relying on the combination of 'expert' skills with socially differentiated local knowledge. It promotes interactive participation of stakeholders in generating and managing spatial information and it uses information about specific landscapes to facilitate broadly-based decision-making processes that support effective communication and community advocacy," says Giacomo Rambaldi in his paper.

These giant strides coupled with the Kenya government's commitment to incorporate ICTs in land management are a boom to the ordinary *mwananchi* who is the sole beneficiary of the spillover effect of technology.

Indeed, in a short while Kenyans will no longer need to make long journeys to the capital, Nairobi, to access information on their lands.

An elaborate plan to incorporate the wonders of ICTs will be integrated in the soon to be completed National Land Policy.

"The ecological zones in which biodiversity is often richest are also the areas in which some of the poorest people live. These people depend on the natural resources around them for production and extractive purposes like tilling soils, harvesting forest produce, watering crops and livestock. By using tools that enable participatory development and implementation of natural resource management policies we expect to achieve greater success in the conservation efforts which would respect local institutions, cultures and livelihoods," says Waruingi.

A thematic group in the National Land Policy Formulation Process wholly structured to address the issue of land information which had been a

thorn of contention for years and has been much abused.

The thematic group is Land Information Management Systems (LIMS) which is defined as a "computer-based information system that enables the capture, management and analysis of geo-referenced, land-related data in order to produce land information for decision-making in land management."

This an attempt by the government to facilitate e-government and improve services to the general public, hence the country's land records are now set to be digitised.

These far-reaching changes are among some revolutionary recommendations that are contained in the *Draft Integrated Issues and Recommendations Report of the National Land Policy*, which has already been presented to the government. These came about after yearlong deliberations in the soon to be completed National Land Policy Formulation Process (NLPFP).

Contained in the draft is the setting up of an elaborate Land Information Management System (LIMS). Envisaged in LIMS is the routing out of corruption trails, boosting of efficiency; enhancing productivity; curtailing bureaucracy and general improvement of land administration in the country. At present land information in Kenya is held on paper and manually managed. This state of affairs has enabled corruption and lethargy to sprout not to mention the bureaucracy.

"Kenya today lacks an up-to-date inventory of the amount of land under different uses such as forests, water infrastructure among others. Lack of this vital information complicates effective planning, zoning and overall management of urban and rural land," notes the Draft.

The Land Policy draft recommends:

"Land information to be made available to at least the divisional level. Land information to be made available in a form and language that can be understood by most citizens."

The draft also calls for the implementation of the National Spatial Data Infrastructure (NSDI); review of the Survey Act to pave way for the use of modern technologies such as Global Positioning Systems (GPS) and Geographic Information Systems (GIS).

The marginalised communities are in for a windfall, thanks for the transformation of traditional lifestyles by GIS. GIS is no longer the preserve of the well-to-do, scientifically-oriented city barons, but a tool that is uplifting lifestyles and the quality of pastoral communities, by helping them map out their water points and grazing areas. □