Members of Mahayag, Philippines, participate in the mapping activity. Source: Environmental Science for Social Change Institute (ESSC), Malaybalay, 1998

Community Resources Management

in Central Mindanao (Philippines)

The City of Malaybalay in Bukidnon Province in the Southern Philippines has areas lying within the Pantaron – a very critical mountain range for securing water resources for Mindanao Island. Belgian and Philippine research institutes have joined continuing efforts to facilitate the official recognition, by local government units and national line agencies, of the inherent capability of indigenous communities to ensure a sustainable environment using a GIS methodology. A pilot area has been set up in the city for promoting participatory environmental management with a solid scientific basis.

The forest uplands of tropical Southeast Asia are progressively degrading into unproductive grasslands due to various destructive forces.

Much of the destruction can be traced to unsustainable land-use practices in and around the forest such as mining and logging that turn to extensive farming after the extraction activities. Efforts must be concentrated on redirecting these destructive activities to protect the remaining forest as a primary step in environmental rehabilitation. Due to deforestation, less land and fewer forest resources are now available for subsistence livelihoods. Another problem is the influx of migrants who do not follow the traditional, sustainable practices. Deforestation has further caused the fragmentation of the forest blocks and the traditional cultures, both of which are inextricably linked. As this cycle of fragmentation continues, the resulting degradation affects communities both in the uplands and the lowlands. Efforts at quelling this tide of destabilisation need to focus not only on the biophysical, but also, and more importantly, on responding to the growing demand from communities for land tenure and management of their resources.

Through an on-going dialogue with the local people, problems have been identified in terms of land tenure, resource management, watershed stability, disaster management, natural regeneration, livelihood and ecology. The communities are now aware of the present environmental degradation and its close link to their subsistence and eventual survival, and they have asked for assistance.

R. Esquillo-Ignacio *and* **A. Ignacio**
ESSC, Malaybalay, Philippines
✉ *ignacio@mlbly.philcom.com.ph*
Françoise Orban-Ferauge
FUNDP University, Namur, Belgium
✉ *francoise.orban@fundp.ac.be*

COMMUNITY PARTICIPATION IN LAND-USE PLANNING: AN INTEGRATED GIS FOR A CITY

A local, integrated project has been developed with the aim of presenting to the indigenous communities a solid scientific basis for their environmental knowledge, and to give them a stronger voice in the management of the land and its resources, particularly in the eyes of government. Although Philippine law theoretically does not discriminate against indigenous peoples, they are in fact marginalised compared to migrants. This project supports past efforts that have laid the ground for a further stage in the process of empowerment.

Community and governmental mapping

A cartographic database has been achieved using the mental maps, called "community maps", drawn by the local communities themselves. These plain sketch maps are then digitised for documentation and for greater ease in reproduction. During the process of validation and finalisation, the verification of the exact position of key reference features by Global Positioning System (GPS) technology is conducted. At a further stage, the features found on these maps are adjusted in the best possible way to fit into the official large-scale topographic maps of the Philippines and integrated into a cultural and environmental GIS database. These overlays are then integrated with technical information in a GIS, thereby producing maps that reflect not only current land-use patterns but also the complex interaction of people with their environment.

The value of having the community information integrated into the standard government technical database is that there is a common reference point for the community and the government; i.e. the people

can see their information in a technical map, which is the language of government. The final integrated maps can then serve as a starting point by which the community can present to the government their current situation and concerns. This also provides a sound basis for more realistic planning and management wherein the community is the main provider of an important layer of information in the GIS and thus also the key player in the management planning. By replicating this process in other areas, it is hoped that this form of land and resource management might eventually be applied on a national scale.

Community mapping has become such an effective tool that the Department of Environment and Natural Resources (DENR) has identified it as a key component of their community-based forest management programme's rules and regulations. Other non-governmental groups have adopted the methodology in their community-based resource management projects as well. Local government units, from the municipal, city, and provincial levels, have also begun to adopt the approach in their land-use and development planning efforts. The process is more time-consuming compared to traditional "desktop" technical planning, but the final output land-use maps contain much more detail and possess information contributed by the different communities.

Community mapping was started in the community of Bendum in the eastern portion of Malaybalay City in the early 1990s. In the years that followed, these same maps have been the main reference used by the community to communicate their situation with others, particularly the government. Under a national law that recognises indigenous people's rights to lay claim to their ancestral domain, the Bendum community has used their community maps to support and establish their legitimate claim to their ancestral domain, for which they applied in the mid 1990s. Overlaying the community information onto technical map information in a GIS was key to the delineation of their ancestral domain. The community's claim has been granted and its rights to the land affirmed. The community is now in the process of formulating the management plan for their ancestral domain.

As recognition for the effectiveness of the community mapping process, Malaybalay City chose it as one of its primary methods for gathering field data for the formulation of its comprehensive land-use plan in 2000. The adoption of the community mapping process served two major purposes. First, it was not only an activity to gather land-use information from the people, but it also served as a venue for consultation and dialogue with communities regarding issues, concerns, and their preferred management options. Second, the process yielded crucial social information on the socio-economic and political dynamics that affect the use and allocation of the land. Community mapping was particularly helpful in providing detailed information for the remote upland forest areas of the city – the critical areas in watershed stability. Information about these areas are often unreliable, if not totally absent from existing government maps.

Remote Sensing information

In order to achieve a much greater impact, remote sensing is yet another method that can facilitate following up the evolution of land use since this information may be obtained from the classification of images provided by SPOT and LANDSAT technologies. This land use classification can be integrated with the two existing GIS information sets (the community and the topographic maps) so as to obtain permanent and relevant information about the changing conditions of the land cover that influence the local resources and their management. Such a classification is also used to validate the land-use maps designed by the communities (see figure 1, the methodology chart on page 27).

Together with current ground data collected during the community mapping process, satellite imagery can provide up-to-date and verifiable data leading to large area investigation and monitoring. The results can be used to develop detailed site-specific land cover maps that will provide more accurate depictions of watershed conditions, forest conversion patterns and the cultural use of resources. These maps will be fed into the management plans being developed with community participation and will also provide a greater stimulus over a wider area.

Integration

The integration of community mapping and the technical approach based on topographic maps, as well as the classified satellite image in a GIS aims to verify the accuracy of the community information as well as to establish a dialogue with the government. The approach seeks to validate the communities' information in a scientific manner in order to make it credible and acceptable for government. It constitutes a major step in establishing the required dialogue between the communities and the government so that the role of the communities as key resource managers may be recognised and that the government may become involved in setting up, together with the communities, an appropriate plan for sustainable development.

CONCLUSION

GIS can facilitate the integration of the people's view and highlight the leading role of meaningful community participation. One of the key components in providing such integration is community mapping. The use of maps developed through the intensive participation of the communities constitutes an occasion for clarifying, validating, and affirming various concerns and issues. A partnership, with the use of community mapping and other participatory methods, is able to formulate an integrated and holistic comprehensive land-use plan that is based on realistic and more accurate information from the field and that reflects the interests of the various sectors of the population. The challenge is for the government unit to translate the plan into concrete actions, and hopefully to allow the people of the forest to be empowered through the acquisition of their ancestral rights.

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