

SYSTEMATIC SURVEYING OF INFORMAL SETTLEMENTS IN MOZAMBIQUE

Unconventional Development of a Cadastre

In the city of Manica, a planning exercise based on the principles of participatory community planning is currently taking place in the Josina Machel neighbourhood. The city is one of the municipalities of the country with its own administrative autonomy, with limited financial resources. One of the objectives is a systematic survey of informal settlements surrounding the centre of the city. Compared to normal cadastral surveys, the approach presented here can be qualified as unconventional.

A legal title of effective land tenure for inhabitants will encourage them to improve their dwellings. Minimum access requirements have to be assured, by constructing either pedestrian ways or compacted soil roads. Roads are essential for vehicular traffic in case of emergency and to facilitate the future construction of other basic infrastructure. The construction of such infrastructure would be undertaken when the inhabitants have the means and willingness to share the construction expenses and sustain the maintenance costs. Urban planning, in the case of informal settlements, does not involve large development projects, but aims to improve living conditions in these settlements with minimum intervention.

Participatory Planning

The planning objective is to ensure a sustainable growth related to the limited resources that the inhabitants are ready to mobilise and those that are available in the municipality. It is a didactical approach aimed at demanding responsibility from administrators for a sustainable development strategy and, in the meantime, enabling local technicians to use simple control tools (for example, the management of a simple register). At the operational level, it aims for the definition of priority actions based on a simple plan, which can also be used to facilitate the process of land tenure titling. If such a plan is prepared exclusively by foreign advisers or by bureaucracy without the active participation of beneficiary inhabitants, it will be implemented with difficulties. An almost general absence of intervention or control by municipal authorities can be observed in the process of growth of informal settlements. The implementation of regulatory provisions of a plan should always be followed by concrete action – signifying a new willingness in urban development with public intervention – such as providing infrastructure with minimum cost and/or the contextual launch of a process of effective titling for the inhabitants.

Land Administration

In Mozambique, land is government property and it cannot be sold or, in any other way, acquired by the user, mortgaged or used as lien, but the 'Right of Land Use and Exploitation' can be transmitted by inheritance. This right can be acquired through occupation by persons and by local communities, according to the norms and customary practices, or by persons with good faith who have been using the land for at least ten years.

The constitution, modification, transmission and extinction of the right of land use and exploitation are liable to registration. However, the absence of registration does not affect the right of land use and exploitation acquired by occupation. The title has to be given by the Cadastre Public Services, general or urban. At some stage in the process, the Cadastral Services will notify the applicant of the necessity to perform a demarcation.

The data collected during the mapping process are name, location of the plot, the surrounding elements of the plot, type of exploitation, members of the family, construction descriptions, living conditions, topographic scheme, names of witnesses and also the technician who is responsible for the registration. This registration contributes to better management of the city:

- it documents the physical situation of the urban occupation, facilitating in this way the planning of actions that aim for the improvement and expansion of basic services, such as roads, drainage or piped water
- it permits regulation of the actual occupation, and the institutions recognise the existence of the occupation
- it supports taxation, providing the budget for further improvements.

Cadastral Mapping

As a start, a low-cost survey of the area has been made. A cartographic base for this was an aerial photograph dated 1985. With this map, an initial register of land tenure was prepared. A training session in mapping for technicians and volunteers was organised. Next, the technicians, working with the large-scale map of the area, mapped the existing plots and registered the names of the current occupiers. At

this stage, the map was not up to date, because the existing photograph had been taken in 1985. Quick survey data of about 800 plots were collected, representing 16% of the 5,000 plots in the whole Municipality of Manica (considering that Manica has 25,000 urban inhabitants with an average of 5 people per plot/family). The survey was performed by a group of 15 local volunteers, two technical staff from the Ministry of the Environment and two others from the Manica Municipality. The data and produced maps have a sufficient definition level for their purpose. These cannot be compared with a conventional registration system; the costs of such a system would be too high. Any geometric approximation can be acceptable as long as it is complemented by precise registration of land tenure rights. Moreover, this first attempt led to the improvement of intervention capacities of local technicians.

Further Updating

Subsequently, the acquisition of a satellite image and computer-based data processing have facilitated the improvement of available documentation. This image enabled us – in a very short time and with limited costs – to get a credible cartographic base in order to prepare a simplified register of informal occupation.

The use of satellite images is more convenient and provides wider flexibility to manipulate the scales. The image has been used without any geometric correction. Initially, the image was treated using basic software, such as Adobe PhotoShop and, subsequently, the software Autodesk-MAP was used with the purpose of producing an approximate cartographic restitution, which would enable us to compare and correct the 'rustic mapping' based on the 1985 aerial photograph. The result was printed as a map; when enlarged to an adequate size (e.g. 1:500) it could be used for fieldwork. This enlarged map allows optimum recognition of the constructions and gives references for the correct delimitation of plot boundaries. The fact that it has been acquired in a digital manner, so that it can be printed at any required scale, proved to be a fundamental tool, quick and cheaper compared to the aerial photographs. The printing of the image of the whole city, at a scale of 1:5,000, was considered by the municipality as a sign of high social and symbolic value. In fact, the printed image enabled the municipality and its inhabitants, for the first time, to evaluate the city growth phenomena and recognise the factors of growth, the understanding of which had not been possible before due to the absence of updated cartography.

Street Network

One action falls to the densely populated area of the above-mentioned neighbourhood and it comprises the opening of the main access street. The inhabitants themselves, men and women, participated in the works, getting incentives and learning, in the meantime, basic construction techniques. This capability will enable them, in the future, to carry out the maintenance of the street at reasonable costs. The street was previously identified in the priority action scheme, improved according to the options of the inhabitants themselves and designed directly in the field, with the help of the work map obtained by the satellite image. While the street opening work is in progress, the plots along the street are newly mapped but this time with greater precision.

Concluding Remarks

In the future, the mapping process may be extended to other neighbourhoods of Manica City; this task will now be easier using the satellite image. In the meantime, the interventions in the Josina Machel neighbourhood will be complemented by opening the remaining streets and pedestrian ways, according to the priority actions previously identified on the map, and adapted to the reality and options of the inhabitants. Parallel to this process, more plots will be precisely mapped, aiming at securing effective land tenure rights for the inhabitants. Of course, the areas to be kept for public use and those unusable for environmental or security reasons will be identified. The Faculty of Architecture and Physical Planning of Eduardo Mondlane University and German Technical Co-operation (GTZ) will work together to propose a methodology for managing urban growth and transformation processes that will link the plan to its implementation. In this way, it is also reasonable to hope to ensure acceptable housing for all citizens, including the poorer ones, enabling in the future the progressive improvement of social and sanitation conditions.

Further Reading

- Trindade, C.T.G., 'Upgrading and land titling in informal settlements - Manica City, The great importance of the PSM true colour quickbird satellite image as a cartographic document, Manica Province, Central Region – Mozambique', see also: www.fig.net.