10 Inclusive Cadastre

tool for urban development in Mozambique

uclg peer learning

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01 SUMMARY

On 14, 15 and 16 July, the conference entitled "Inclusive Community Land Registry training, a tool for urban planning in Mozambique" was held in the city of Inhambane, within the context of the "Project for Improving Local Authority Capacities in Brazil and in Mozambique as decentralised cooperation agents."

Technicians and political leaders from the municipalities of Inhambane, Maxixe, Manhiça, Lichinga, Xai Xai and the Brazilian municipality of Maringá, took part in the training sessions, together with representatives from the National Association of Municipalities of Mozambique (ANAMM). Several members of the organisation Arquitectos sin Fronteras (ASF) were also present, who were responsible for organising that meeting in conjunction with the following organisations: Alianza por la Solidaridad (ApS), Bosque y Comunidad, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and representatives from the World Bank "Cities and Climate Change Project". Apart from the foregoing, several agents with experience in the land registry area participated, including members of the National Directorate for Land and Forests (Direcção Nacional de Terras e Florestas - DNTF) of Mozambique, along with researchers from Universidade Eduardo Mondlane (UEM), lecturers and students from Universidade da Coruña and Barcelona Polytechnic University, making a total of approximately 30 persons.

The land registries of different municipalities were analysed during the three-day conference, and a review was made of the legal bases in Mozambique and Brazil. The "inclusive land registry" fundamentals and useful tools such as the Geographic Information System (GIS) were explained for this methodology. As planned, the conference ended with an exercise of reflection and the drafting of conclusions and the next steps for working in the municipalities.

02 OBJECTIVES

The training objectives were:

-to share the challenges, obstacles and lessons learned in relation to the land registries of the different municipalities in Mozambique and in the Brazilian municipality of Maringá.

- to disseminate positive experiences and disclose best practices.

- to clarify doubts regarding the legal framework in Mozambique in connection with land management and compare it to the situation in Brazil.

- to consolidate knowledge on the "inclusive land registry", and Geographic Information System (GIS) tools applied to it.

- to establish priorities and discuss the next steps for improving the land registries in the municipalities.

03 METHODOLOGY

With a view to promoting the exchange of experiences and knowledge among the technicians, the methodology consisted of:

-describing of the real situations of land registries in the different municipalities.

-round tables.

-setting up work groups to analyse and discuss the different topics, in order to promote the direct exchange of opinions among the technicians.

-theoretical presentations.

-development of practical exercises.

04 IMPORTANCE OF THE TRAINING SESSIONS

Work experiences indicates that the different municipalities of Mozambique have widely differing realities with respect to the state and operation of their land registries, since some of them, as is the case of Xai Xai, already have a long way to go while others, such as the municipality of Maxixe, have now started to digitalize their information. Consequently, the training was considered a perfect opportunity for the technicians of the different municipalities to exchange experiences and analyse the different methodologies. The effort was to jointly try and establish a single land registry model and thus promote coordination among the different municipalities, with the objective of using the land registry as a tool for urban planning. The Brazilian municipality of Maringá, a partner in the project, also took part in this task and, through its representative, Mr. Nelson Pereira, helped to clarify doubts regarding the use and benefits of land registries, by presenting the experience of the city of Maringá in this field.

It was also considered important to review the legislation of Mozambique with respect to land and the land registry, since it often raised doubts due to its peculiarities. In this respect, Dr. Teresinha Pascoal, technical consultant of the National Directorate of Land and Forests of Mozambique participated in the conference.

Lastly, it was considered that the training provided the opportunity for the different actors to study the situation of municipal land registries and jointly prepare a series of guidelines to help all the municipalities continue to improve in more efficient and coordinated manners.

05 OPENING CEREMONY

The opening ceremony was attended by different political representatives such as the Councillor for Urban Planning of the municipality of Inhambane, Mr. Eugenio José Casimiro, who acted as host and welcomed everyone to the city. Other dignitaries present at the ceremony were Mr. Adérito Cumbane, representing the National Association of Municipalities of Mozambique (ANAMM), Mrs. Ana Carolina Cortés representing the NGO Arquitectos Sin Fronteras (ASF), Dr. Teresinha Pascoal from the National Directorate of Land and Forests (DNTF) and Mr. Ignacio Martínez, representing the organisation Alianza por la Solidaridad.

06 PROJECT PRESENTATION

The architect **Ana Carolina Cortés** presented the "**Project for Improving the Capacities of Local Authorities in Brazil and in Mozambique as decentralised cooperation agents**" as a framework for the training sessions, and described the different project themes, the actors involved, its objectives and the expected results, and the activities planned during the project's two-year term. She explained that the Inclusive Land Registry was one of the tools for urban development considered in the project, together with Urban Planning and Participatory Budgeting.

A brief presentation was made of the organisations taking part in each of the exchange lines, describing the work in the Land Registry area carried out by the municipalities of Inhambane, Lichinga and Manhiça, with the support of the Brazilian city of Maringá. Lastly, an explanation was given of the activities planned for the next phases of the project.

07 LEGAL FRAMEWORK IN MOZAMBIQUE
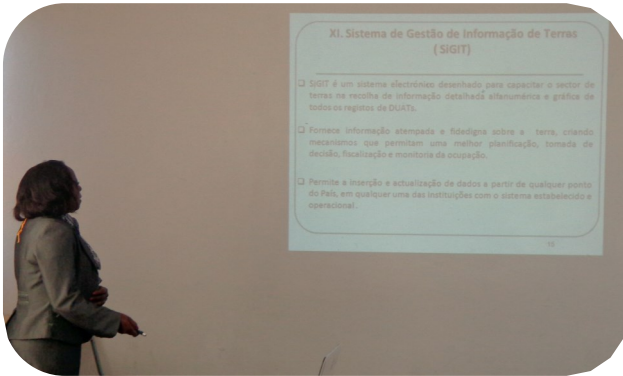
Dr. Teresinha Pascoal, from the National Directorate of Land and Forests, gave an extensive description of the legal context in Mozambique and the Land Act. She began by defining key concepts such as urban land, land division, creation of "plots" and the different ordinance plans in the cities, the Urban Structure Plan, General and Partial Urban Development Plan and the Detail Plan.

> It is important to emphasize that in Mozambique the land belongs to the State and is a significant fact. This was an strong point of difference during the discussions.

She then went on to clarify several topics related to DUATs (Right to Use and Benefit from Land), such as the different competences for their authorisation, the requirements for assigning them and the different acquisition modes. It is important to note that land in Mozambique is owned by the state and this significant fact has a decisive effect on the country's situation. This aspect was emphasised strongly during the debates.

She also explained the DUAT organisation process and the different documents required according to the Urban Land Regulations.

Lastly, she explained the Land Information Management System (SiGIT) and the minimum structure a municipal land registry service should have in order to function correctly.

The presentation given by Teresinha Pascoal indicated that many changes had occurred and many decisions had been issued in this respect since the approval of the first Land Act in 1979, and a sound knowledge of the legal framework was essential for implementing the land registry in the different municipalities.

08 LEGAL FRAMEWORK IN BRAZIL

Federal constitution

National legislation

State laws

Municipal laws
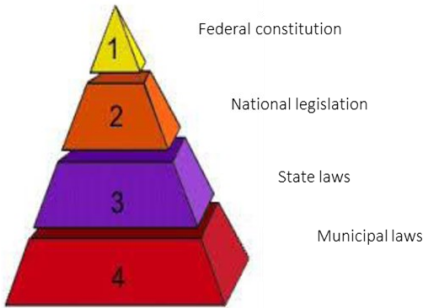
Nelson Pereira da Silva, representing the city of Maringá in the Brazilian State of Paraná, explained how the Brazilian laws functioned with respect to the land registry.

In doing this, the first aspect he clarified was the pyramidal structure used as a basis for these laws, ranging from the Federal Constitution to municipal laws.

On each of the four legislative levels, there are laws referring to or related to the land registry, all of which operated in a coordinated manner. Consequently, the first level (Federal Constitution) includes issues such as right of ownership, social function of ownership, Master Plans or mandatory land parcels.

On the second level, the concept of Urban Policy, progressive taxation and directives for preparing the Master Plan are included, as the national legislative framework.

The third level is formed by provincial laws, and the land registry is also considered.

Lastly, the municipal laws are those which deal in greatest depth with the land registry. This level includes articles referring to the social function of the city, the general objectives, the Macro-zones, parameters of use, occupation and division of land, urban boundaries, tax zones, building codes and municipal taxation, among others.

"Guiding facts have emerged for training, such as: right to property x right of use; natives x Landowners, etc. "

The session ended with an interesting debate moderated by the lawyer and specialist on the subject, **Jaime Diaz** representing the NGO "Bosque y Comunidad", in which the latter, Teresina Pascoal and Nelson Pereira analysed the similarities and differences between the two legislative systems.

09 INCLUSIVE LAND REGISTRY

The architect **Pablo Fernández,** from Arquitectos Sin Fronteras, gave a clear explanation about one of the urban development tools considered in the project of Inclusive Land Registry.

In the introduction, he gave a summary of the different definitions of the land registry over the years, with special emphasis on its evolution from a more financial and economic concept to the versatile, inclusive character it has today.

"A good land registry is one that not only contributes to the fair distribution of the tax burden, but more important, one that promotes safety in land ownership, defends social rights and paves the way for fairer urban planning."


He also paid special attention to the **plot design** as a land registry unit, and the representation of its boundaries and the different land registry nomenclature systems.

Then a description was given of the different sector-based or themed land registries, giving specific examples of each one. These are:

economic land registry	for tax-related matters
physical land registry	as a registry for the location and sizing of the plots
legal land registry	considered as a property registry
environmental land registry	enabling the identification of characteristics and natural resources
current use land registry	recording the use of each plot at the time of creating the registry
potential use land registry	recording the Master Plans of the city
land registry of roads, water courses, services and public buildings	
social-economic land registry	with social, economic, health and education data regarding the occupants of each plot

Lastly, **the versatile land registry as the sum of all the above** was defined, as a fundamental need for the inclusion of the social and economic data of the occupants, thereby guaranteeing the **true usefulness of the register as a tool for taking decisions and for urban planning.**
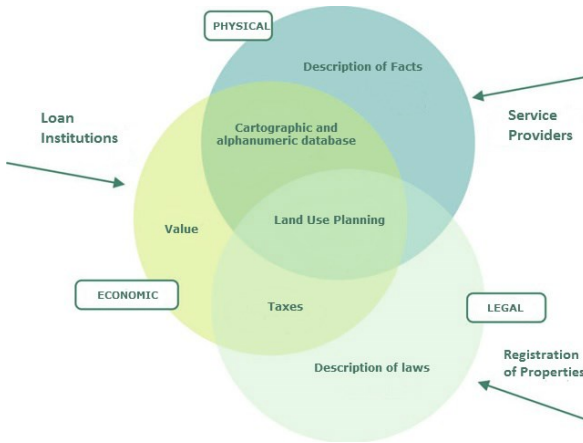
Another central theme of his presentation was the organisation of implementing inclusive land registry, with a view to ensuring that it did not become an onerous project in terms of execution time and investment, by trying to make the analysis as complete as possible, within a specific budget.

He then stressed the importance of updating the registry as one of the most important challenges in the process. To overcome this difficulty, he recommended the creation of a collaborative network by the different institutions interested, to allow them to share the investments and update the data, so that everyone could benefit.

At the end, a round table was organised at which all the municipal technicians and participants had the chance to discuss their doubts and give their impressions on the subject.

10 LAND REGISTRY EXPERIENCES

Different technicians and representatives from five municipalities in Mozambique (Inhambane, Maxixe, Manhiça, Lichinga and Xai Xai) and one in Brazil (Maringá) presented the current situation of their registries, the resources available to them, the organisation of the registries and the main challenges they faced.

**INHAMBANE -** Eugenio Casimiro

"The city of Inhambane has a manual land registry and work on digitalising it commenced in 2012, but the results were not the desired ones."

MAXIXE - Ernestino José

"In the municipality of Maxixe we had difficulties in acquiring and assimilating the appropriate technology for an inclusive land registry. We would like to learn about GIS tools"
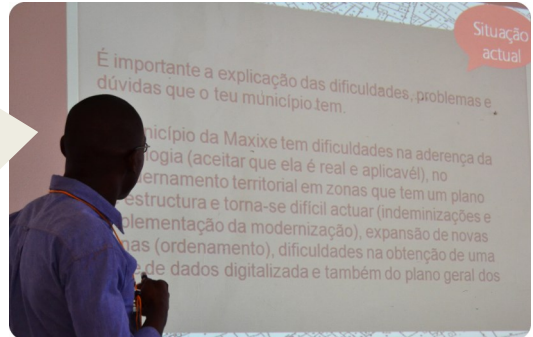
MANHIÇA - Isaac Gove
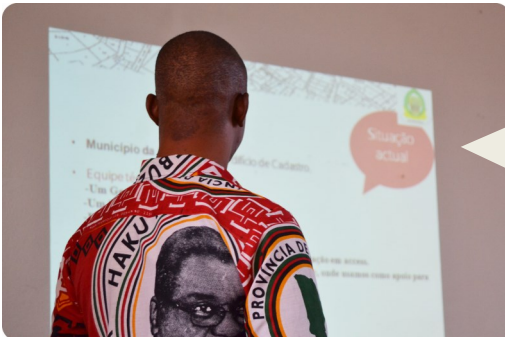
"In the municipality of Manhiça we are currently digitalising the data, but they are not socio-economic data and they are not geo-referenced."

LICHINGA - Zainadino Bacar

> "In the municipality of Lichinga we have a digitalised land registry that operates as a SiGIT (Land Information Management System), with almost 26,500 processes entered, but we need qualified technicians. These processes were part of the "Millennium Challenge MCA Project" (2011-2013) funded by USAID

XAI XAI - Justino Massingue

> "In Xai Xai we lost all the land registry information in the floods of 2000, but after a lot of hard work we now have a digital land registry geo-referenced with GIS software"
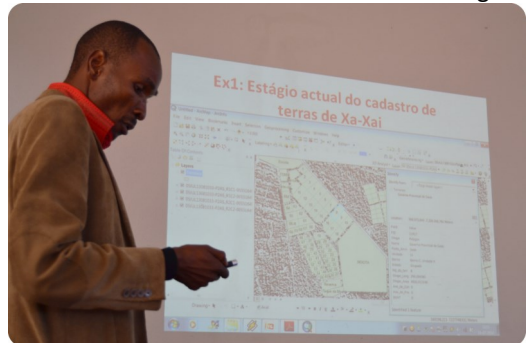
The city of Xai Xai has a geo-referenced alphanumeric database through GIS software. This project has been implemented since 2009. As a result, they can work with data from tables of orthoimages that contain the previous information on the land distribution as shown in the following figure:
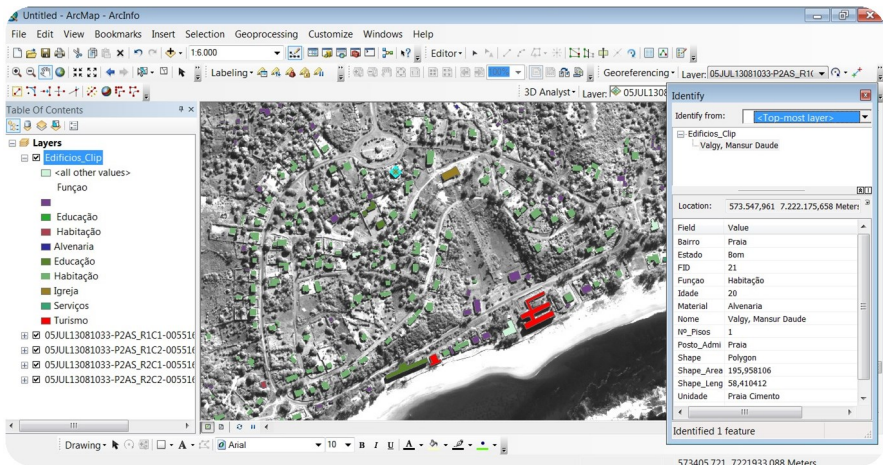
"The use of GIS brings many benefits for the city and citizens. The rationalization of work avoids duplication of efforts. Now you can perform a more complete analysis of the data and provide a solution to the social problems quickly and accurately."

MARINGÁ - Nelson Pereira da Silva

Today, Maringá has one of the most complete versatile land registries in Brazil. In 1995, thanks to an aerial survey flight, the first orthoimage mosaics of the municipality were obtained. In 2000, the digitalisation of data related to different sectors originally included in printed documents was commenced, in an attempt to create a versatile land registry. In 2005, using high-resolution satellite images, we updated the mapping base and continued to enter data.

Nelson Pereira was quite clear in stressing the benefits of having a versatile geo-referenced land registry. As he explained, the different secretariats sent the data to a single geo-referenced database, accessible from an Internet site. The system is therefore extremely efficient and information can be accessed in real time, which also provides greater transparency

The main applications for geo-processing the data are:

− Optimisation of storage space
− Location of public buildings and services;
− Environmental management;
− Transport system management;
− Territorial organisation;
 Communication with citizens. This aspect is especially important, as thanks to a geo-referenced information system with unrestricted access, civil society organisations or citizens themselves can access the information, analyse it and place orders for the municipality.

A description was given of different case studies on using the registry in Maringá, such as:

-EDUCATION: The social data of school students is entered in the geo-referenced land registry so that the municipality can provide each student with a place in the school that best suits their characteristics and location.

-TAXATION: The land registry GIS tool is used to conduct tax inspections, without having to travel to the site.

-HEALTH: Medical centres can also enter their data in the GIS registry to determine the area to be attended by each centre, and the focus and scope of epidemics, etc.

-PUBLIC SERVICES: The social data on the inhabitants of a certain area can be used to compare them with the radius for action of different public services and directly ascertain their main shortcomings.
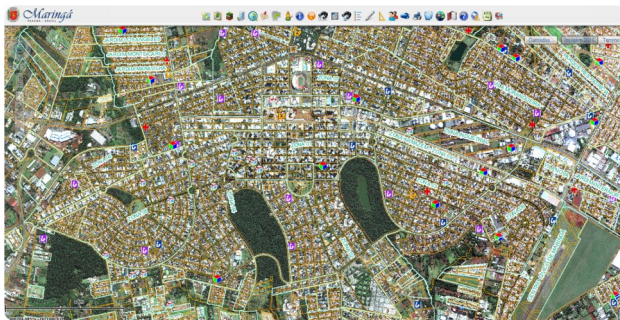
In conclusion, he proposed the next steps to allow the municipalities of Mozambique to set up a land registry similar to the one in Maringá.

11 WORK GROUPS

The training participants were divided into several work groups in order to study the different municipal land registries through a SWOT analysis (Strengths, Weaknesses, Opportunities and Threats). The Mozambique cases were grouped together and compared with the Brazilian case, with the results being as follows:

LAND REGISTRIES OF INHAMBANE, MAXIXE, MANHIÇA, LICHINGA AND XAI XAI:

WEAKNESSES

-Shortage of qualified technicians
-Lack of work equipment.
-Insufficient funds.
-Lack of adaptation to technologies.
-External economic dependence.
-Weak planning capacity.
-Lack of sector-based and institution coordination.

THREATS

-Political instability.
-Lack of foreign investment.
-Rapid growth of cities.
-Lack of sustainability of projects, or abandonment.
-Alteration in leadership (councillor/president)
-Security of database.

STRENGTHS

-Political will.
-Technicians willing to work and improve.
-Existence of a legal framework.
-Existence of a minimum land registry framework and basic services.

OPPORTUNITIES

-All the municipalities are at the initial stage.
-External aid.
-Existence of software.
-Existence of qualified technicians in the market.
-Existence of taxation elements.

MARINGÁ LAND REGISTRY:

WEAKNESSES

-Dependence on foreign technology.
-Lack of reliability of the data
-High data maintenance costs.

THREATS

-Vulnerability of data ownership.
-Alteration of data.

STRENGTHS

-Technically qualified human resources.
-High tech equipment.
-Own economic resources.
-Integration of different actors in the land registry work.
-Efficiency.

OPPORTUNITIES

-Citizen participation in urban processes.
-Political stability.

WORK GROUP CONCLUSIONS

Despite the differences in the social, legal and political context between Mozambique and Brazil, the different technicians and municipal managers took part in the training and subsequently attended the presentation of the different land registry experiences. They admitted, through the municipal land registries which increased the value of experiences in cities such as Xai Xai, that it was possible to take small steps toward establishing a land registry such as the one in Maringá.

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12 GIS IN USING THE LAND REGISTRY

The architect **Ignacio Martínez**, from the NGO "Alianza por la Solidaridad" explained that after deciding on the type of land registry wanted or needed, it was necessary and essential to select the correct technique for implementing the registry.

"We are faced with the need to relate data (names, addresses, uses, properties, surfaces and socio-economic data) to geographical coordinates."
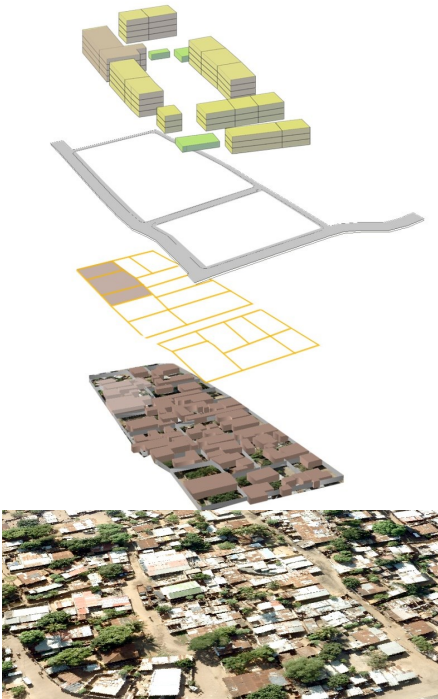
He described the Geographic Information System (GIS) and explained why it was suitable for working with land registries.

After entering the information on the plots in an alphanumerical table with geo-referenced data (whether or not based on orthoimaging), it was possible to easily combine different sets of information and generate maps.

There is no doubt that the GIS software is a powerful tool that will assist in exploring the data entered and in generating graphic documentation of enormous use in order to contribute to correctly understanding the real situation of the municipalities and contribute to urban planning.

13 LAND REGISTRY RESEARCH

Ignacio Martínez also explained the different phases of registry analysis. Given the need to obtain basic information in order to use the GIS tool and take decisions based on the registry, research was the best method to start with. The research phases were as follows:

A) PLANNING

-Diagnosis. This consists of analysis based on different scales. Firstly, diagnosing the territory (extension, land use, urban and environmental ordinance, limits, approximate number of properties, types and ownership of land, etc.) and secondly, the characterisation of the different settlements (types, materials, construction technology, etc.). Lastly, an analysis of the municipal land registry (human and financial resources, equipment, mapping, satellite photos, political and institutional will, simultaneous projects with the same objectives, etc.)

-Budget. A study of certain activities (offices with community leaders, training), interviewer remuneration, materials used and transport.

-Programming of tasks. Some activities are: seminars for community leaders, purchase of equipment and computer programmes, training of interviewer candidates, hiring of staff, acquisition of images and printing and dissemination of the start of the activities, among others.

-Pre-selection of interviewers. The candidates must meet certain minimum requirements to be admitted, such as being of legal age, and preferably having technical training and a basic knowledge of maps and analysis.

B) IMPLEMENTATION

-**Execution.** This consists of field work, or the effective conducting of research. The territory distribution of the interviewers is a very important task, and for that reason the blocks where the interviewers will work must first be assigned to each of them.

It is advisable to work in an orderly and organised manner in each district, without scattering the interviewers throughout different districts simultaneously.

-Quality control. Some of the mechanisms that can be used are: constant field visits without warning, review of surveys at the time they are handed out, regular meetings with supervisors and interviewers, periodic review of the encoding / digitalisation of the surveys and support for managers in writing technical reports.

14 PRACTICAL CASE STUDY

Ana Cubillo - Ana Cubillo – researcher from the Habitat Development Studies Centre (CEDH) of Universidade Eduardo Mondlane, explained the diagnosis made in the Chamanculo D district as part of the Partial Plan implemented by the Municipal Council of the city of Maputo. The diagnosis of Chamanculo D included the study of data, in which more than 5000 industrial

"Diagnosing the informal district of Chamanculo D (Maputo) through a study of data about the inhabitants helps us better understand their needs."
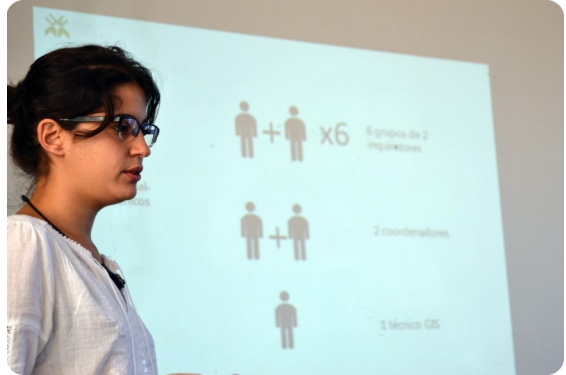
estates were included in the registry (structural unit recognised by orthoimaging) without using GPS and with a team of twelve interviewers, two coordinators and one GIS technician. The data obtained consisted of information about the type and condition of the buildings, and the personal and socio-economic data of the occupants. Using all the above data and the GIS tools, diagnostic maps were created which proved to be extremely useful for obtaining a better understanding of the context and taking the right decisions.

15 APPLICATION OF THE SHARED EXPERIENCES

To analyse in depth the learning and identifying possible obstacles, the participants were divided into four groups for the purpose of carrying out a practical exercise. They used orthoimages of four areas of the municipality of Inhambane (airport zone, rural zone, coastal flood zone and built-up city zone). Each area had different problems and contexts in order to generate a land registry. The application was requested in three steps:

1. Type of registry needed, specifying the research issues in accordance to the needs of the assigned zone: reclassification, environmental risks, sewage, tourism, services, etc .

2. Adequate study method for each case (only orthoimaging, low-precision GPS, total station) and preparation of a small mapping sample designing the assumed land plots (or land registry units) on the orthoimaging using tracing paper.

3. Combining the data obtained to create useful maps, depending on each case, and deciding which institutions could be contacted to share the information and achieve an even more complete and useful diagnosis.

The execution of this practical exercise was extremely helpful for the technicians, as they were able to understand the different concepts through the simulation of land registry and the subsequent public presentation of conclusions.

16 CONCLUSIONS

Lastly, the debate permitted a series of general conclusions to be drawn regarding the state of the municipal land registries.

It is true that the situation of the different municipalities in relation to the land registry varies considerably, but after a synthetic exercise, the following conclusions were drawn:

CONCLUSIONS:

-Evaluation of the importance of implementing a real land registry (function, concepts, application and components).

-Understanding the land registry as a basic tool in the management and administration of municipal services.

-Understanding the importance of the inclusive land registry in developing the municipality.

-GIS is a fundamental tool in implementing the inclusive land registry.

-Not all the municipalities require the same type of land registry.

-There is a lack of coordination between municipalities.

-Care institutions require municipalities with a land registry, but do not support them.

-Identification of the need to share information and experiences and for coordination among authorities, councils and other institutions in order to harmonise the municipal land registries.

Apart from the foregoing, an evaluation was made, by groups, of the training activities and a list of suggestions was drafted for improvement purposes, including the following:

> **SUGGESTIONS:**
>
> -Training not only for technicians but also for those responsible for taking decisions.
> -Engagement of all urban planning technicians.
> -Continuous coaching, thereby constituting authentic ongoing training.
> -Creation of an inclusive land registry manual.
> -Availability of tools.
> -Training in GIS software in the short term.
> -Acquisition of basic equipment for the work of the municipalities.
> -More time for training in field work.
> -More complete training: computers, software, etc.

Lastly, all the participants discussed the next steps required to continue making progress in the important objective of improving municipal land registries in Mozambique in order to implement more social urban policies and guarantee the correct development of its cities.

The next step in the project was a visit to Maringá by the technicians to the cities of Xai Xai, Inhambane and Manhiça in Mozambique, scheduled for the month of October. The main priorities of this visit were the possibilities, utilities and resources of the land registry department.

17 ANNEX: LIST OF PARTICIPANTS

NAME	INSTITUTION	CITY
Ana Carolina Cortés	ASF	Maputo
Pablo Fernández	ASF	Madrid
Plácido Lizancos	ASF-UPC	A Coruña
Eduard Valls	ASF	Barcelona
Custario Manuel	ASF	Inhambane
Francisco Macuacua	ASF	Maxixe
Manuel Pasctor Conjo	ASF	Manhiça
Isaac Gobe	Conselho Municipal	Manhiça
Zedequias F. Timane	Conselho Municipal	Manhiça
Ignacio Martínez	Alianza por la Solidaridad	Maputo
Ana Cubillo	CEDH-UEM	Maputo
Jaime Diaz	Bosque y Comunidad	Maputo
Adérito Cumbane	ANAMM	Maputo
Ismael Valoy Gove	Conselho Municipal	Inhambane
Zainadino Bacar	Conselho Municipal	Lichinga
Eusébio Naposso	Conselho Municipal	Xai-Xai
Justino Massingue	Conselho Municipal	Xai-Xai
Teresinha Pascoal	DNTF	Maputo
Nelson Pereira da Silva	PMM	Maringá
Ernestino José	Conselho Municipal	Maxixe
Eugenio Casimiro José	Conselho Municipal	Inhambane
Félix Ganuário	Conselho Municipal	Inhambane
Hermenegildo Macuacua	Conselho Municipal	Inhambane
Joao Batule	SDPI	Mututuine
Cris Rangel	PCMC	Maputo
Abilio Macuacua	GIZ	Inhambane
Christian Konrad	GIZ	Inhambane

CREDITS:

Event organisation:

Municipal Council of the city of Inhambane

United Cities and Local Governments (CGLU)

Arquitectos Sin Fronteras

National Association of Municipalities of Moçambique (ANAMM)

Alianza por la Solidaridad

Preparation of report :

Content: Pablo Fernández - Arquitectos Sin Fronteras

Layout and editing: Pablo Fernández - Arquitectos Sin Fronteras, Shubha Sinha -UCLG

Photographs: Ana Carolina Cortés, Ana Cubillo, Pablo Fernández.

Review and contributions: Alessa Bennaton and Sara Hoeflich—UCLG, Ana Carolina

Cortés -   Architects without Borders

Ilustration: Eduard Valls Vivas (https://eduardvalls.wordpress.com)

Annotations

UCLG
United Cities
and Local Governments

FNP
Frente Nacional de Prefeitos

Arquitectes
Sense Fronteres

Universitat de Lleida
Càtedra Unesco
Ciutats Intermèdies,
Urbanització i Desenvolupament

ANAMM
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