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Making MoNLIS

Mongolia's Countrywide Land Information System

In Mongolia, traditional cadastral systems have for decades enjoyed a reputation for reliability, well-defined processes and security. But in the last few years, technological progress, social change, globalization, and increasing business relations with legal and environmental consequences have put a strain on traditional systems.

Mongolia has been working to implement Cadastre 2014, a methodically arranged public inventory of data concerning all legal land objects in a certain country or district, based on a survey of boundaries. Such legal land objects are systematically identified via separate designations, and private or public laws define them.

The Cadastral 2014 is based on six statements:

1. Cadastral 2014 will show the complete legal situation of the land, including public rights and restrictions.
2. Separation between map and registers will be abolished.
3. Cadastral mapping will be dead—long live modeling.
4. "Paper and pencil" cadastre will be gone.
5. Cadastre 2014 will be highly privatized. Public and private sectors work closely together.
6. Cadastre 2014 will recover costs.

The Mongolian Land Sector

Mongolia, with an area of 1,565,000 square kilometers and a population of 2.7 million, has one of the world's lowest population densities. About 1.7 million of Mongolia's people live in towns; the capital, Ulaanbaatar, is by far the largest, and population growth is concentrated in urban areas.

Administratively, Mongolia is divided into 21 Aimags (provinces), which are further divided into a total of 329 Soums. Ulaanbaatar City has six districts and a further three remote districts some distance from the main city.

NLIS Objectives

Mongolia developed a National Land Information System (NLIS) called MoNLIS to help the Administration of Construction, Land Affairs, Geodesy & Cartography in the Ministry of Construction and Urban Development Mongolia (ACLAGaC) in its functions, emphasizing cadastral mapping and title registration. MoNLIS advances the government's land-privatization policy, providing a more streamlined and transparent public service.

The main priorities of MoNLIS include the following:

- Transfer state land rights. This involves processing applications for ownership, possession and use of land. These applications are processed in city and district offices (Ulaanbaatar), and Aimag and Soum offices in the regions.
- Assess and collect land-fee payments (land rent/tax) and valuation.
- Produce and maintain large-scale cadastral maps. Procedures are being developed, and further work is needed to standardize all the information and ensure systematic updates.
- Produce and maintain topographic maps. These support the development of cadastre and other thematic datasets.

Users can access a parcel map to apply for a certificate of possession (top) as well as transfer the rights of land possession (bottom).

Mongolia's MoNLIS features a variety of layers to visualize the country's land and infrastructure.

· Monitor land use, quality, valuation, condition, capability and resources in urban and rural settings.

These priorities were grouped into three broad functional areas that determine the scope of the NLIS:

1. Topographic mapping and cadastre development
2. Land administration
3. Land management and planning

There also was a requirement to collect "land fees" and increase the property tax base apace with privatization. Other stakeholders, such as banks and ministries, also will draw on the data provided.

The goal of MoNLIS is to support government land-reform policy by helping to develop a functional property market in Mongolia, through the provision of secure and transparent titles to property, thereby encouraging the efficient use of Mongolia's land resources. MoNLIS also provided a communication backbone for land-information access and exchange across agencies.

MoNLIS was based on the foundation of the geodetic reference network and topographic mapping with a multipurpose cadastre that's closely integrated with land-management and planning functions. This provided a registration system to administer land and property transactions as well as collect taxes and land fees.

ALAGaC is drawing extensively from MoNLIS for a wide range of functions at all levels of administration. Emphasis was on functional links to eliminate duplication and redundancy in current systems. A unified data model enabled an integrated national system to be constructed.

The Legal Situation

The population around the city area is growing, and demand for land is increasing for new investment opportunities from international business entities. The absolute control of individual or legal land entities is increasingly being restricted by public interest. To provide security of land tenure, all relevant facts must be made obvious by the NLIS.

Prior to MoNLIS, all the applications were processed in semi-automated processes or via manual methods. All applications were received at land offices in the form of paper-based applications with supporting documents.

During the process, these paper-based applications physically move inside the land office as per Mongolian government regulations. After completing these processes, all the files are stored in the physical archive.

In offices where MoNLIS implementation is complete, responsible officers no longer are involved with such activity—they're happening through the system. Land officers can find the status of a particular application through a query using the application ID, reducing significant manual activity. All information related to land and allotment is stored securely in a central database.

Separation Abolished

Mongolia has a land-recording system that consists of map and land-registration components. Surveyors typically handle the map part, while notaries take care of the land-registration element.

This subdivision often resulted in two different organizational units dealing with the same matter. Such separation was necessary before MoNLIS, because the available technology didn't allow other solutions. After implementing MoNLIS, the division of responsibilities has changed.

Because all transactions previously were manual, it was difficult to monitor transactions at different geographies. But the centralized MoNLIS database stores the entire country's data, which are analyzed and generated with less effort.

Long Live Modeling

Maps have always been models, but the available technology couldn't use the models in a flexible manner—different scales had to be brought by different data models. MoNLIS creates maps of different scales and registers them in different forms from a single window.

MoNLIS has the following advantages:

· Flexibility in information representation. Type, scale and content of a representation are chosen according to needs.

· Information is stored once, and different products are derived from the same data.

· The digital model is easy to handle, and data representing the model can't be destroyed.

· Distribution and publication of cadastral information is easy.

· Because the application has almost all types of required spatial data layers (89 spatial layers) stored at one place, the application also is used for various land-use and infrastructure planning, including demand generation, planning public transportation, solid-waste management and emergency response.

No More Paper and Pencil

MoNLIS has been the preferred tool for all cadastral work in Mongolia instead of traditional paper maps, deeds and document files. Because all the information is stored in one database for the entire country, analysis and reports can be generated at national levels.

This application has also two modules: a legal database and a digital archive. These modules store documents for archiving and future reference.

Highly Privatized

Mongolia's land sector was entirely controlled by the government until the end of the communist era in 1992. At that point, there was rapid privatization, resulting in corruption and the involvement of land mafias.

MoNLIS created the flexibility that's better provided by private institutions. All information in the mapping module is linked to parcel objects.

MoNLIS also keeps all the survey data related to land-value estimation as per Mongolian government land regulations. Such survey data can be referred from the system, and peripheral value can be estimated. Necessary provisions have been kept to export data for further analysis in statistical systems.

Operational work for the system is being done by the private sector (e.g., small, local survey companies), and system maintenance is being done by RMSI. Most of the tasks necessary to build up and maintain a cadastral system are being handled by the private sector without endangering security.

The public sector also is playing an important role, because it guarantees the legal security of the land-recording system. Senior officials can implement efficient and powerful procedures for supervision and control of work.

The Web interface also can be used to estimate land value.

Recovering Costs

Land is a natural resource with considerable financial and aesthetic value. And MoNLIS has required significant investments of time and resources during the last decade.

However, the investment and operation costs have started to pay back in terms of land taxes and fees—there has been a significant increase of land revenue. The system is taking care of a variety of transactions, such as application management, land fee and tax collection, land-valuation data management, and land-quality details.

MoNLIS was designed to streamline the land sector in Mongolia, and Cadastre 2014 was the right fit for the Mongolian situation. Now, after 10 years of rigorous effort, the dream has been realized.

But this is just the beginning. Current GIS technology provides a variety of options for implementing a robust land-records management system, but the Mongolian land sector is young and dynamic, and regulations are continuously being changed to attract foreign investment and mining interests. Continuous care will be required to upgrade the system and data along with changes in regulation and law.

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