SECURING LAND RIGHTS FOR THE WORLD IS FEASIBLE

A New Era in Land Administration Emerges

The challenge for the global land community is clear: secure land rights for all people, in all places, at all times. The response: a new era in land administration, one underpinned by a wave of innovative thinking and coupled with quickly maturing, scalable approaches that can be applied globally. Supported by world-leading private companies, modern geospatial technologies and a new professional mindset, the provision of global land administration that supports good land governance now appears to be a feasible objective within the current generation. This article charts the new way of thinking and uncovers why there are good reasons for optimism about the future security of global land rights.
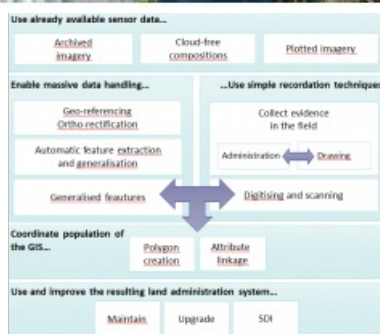
Securing land rights has been a priority of the international development sector for decades. An often-quoted estimate indicates that 75% of the world's people-to-land relationships are not documented and are outside the formal land administration domain. Meanwhile, populations and cities are growing and the pressure on land and natural resources is continuing to increase significantly. In the scramble for land it is often the poor who suffer most through dispossession, disputes and distrust. Appropriate administration of land normally marks the start of land-related conflict resolution and subsequent sustainable land use planning and natural resource management. This is crucial for people's fundamental needs – including food security, housing and gender equality – and it is a human right.

Global developments

Land is a cross-cutting theme in the global development discourse. The UN Post-2015 Development Agenda includes consideration of the land issue across a wide range of objectives. The UN Committee of Experts on Global Geospatial Information Management (UN-GGIM) guides the development of technology infrastructure to support land applications. The critical role of land and geospatial information management in support of global sustainable development is fully agreed at these levels. UN FAO has initiated and developed the 'Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security' (VGGTs). This comprehensive guide recommends that, where possible, states should ensure that the publicly held tenure rights are recorded together with tenure rights of indigenous peoples and the rights of the private sector in a single, or at least linked, land record system. Meanwhile, the World Bank has started assessment of good practices in the land sector through the Land Governance Assessment Framework (LGAF). The LGAF also provides tools for monitoring land governance as reforms are implemented. In addition, the UN-Habitat's Continuum of Land Rights is now a widely accepted philosophy. This breakthrough in the perspective of land rights is implemented in current land tools, as well as in those under development by the Global Land Tool Network (GLTN). There is now clear interest among the key global stakeholders to solve the land problem within our generation. Implementation of the VGGTs and the Continuum of Land Rights is the driving force behind the new era of land administration.

Fit-for-purpose

The International Federation of Surveyors (FIG) argues for the need to move beyond mere advocacy of the accepted continuum concept and to focus on embedding it into real land administration solutions. In practice this translates and expands into developing a continuum of adjudication and demarcation methods, a continuum of appropriate surveying technologies and techniques, and so on. The World Bank and FIG jointly promote the fit-for-purpose land administration approach that enables appropriate land administration systems to be built within a relatively short time, at affordable costs, and with the opportunity to upgrade when required. The fit-for-purpose approach recommends the use of 'general boundaries' to identify the delineation of land rights. The term 'general boundary' means that the position has not been precisely determined, although the delineation will usually relate to physical features in the field. It may be better to use the term 'visual boundaries', since this may perhaps be better understood by stakeholders outside the profession.

Visual boundaries

Visual boundaries can be easily identified on high-resolution imagery in the field using participatory mapping approaches. In some countries, members of local communities have been successfully trained to become 'grassroots surveyors' within the space of a few weeks. The required human resources for collecting evidence from the field can be effectively organised and scaled up in this way. Based on briefings with neighbours and community members, the boundaries can be drawn on top of an image using a pen. Administrative data, such as names and personal IDs, can be linked on site during this process using preliminary reference identifiers for the spatial units. If boundaries are not visible either in the field or on the image, some simple field surveys may be needed for data completion. Finally, it is important to remember that the local community should be allowed to check and agree on the data, preferably on the same day. The community 'sits around the map' – a social process where people determine their own rights to land, guided by a grassroots surveyor and/or land professional.

Data acquisition

There are alternative data acquisition approaches that can be adopted within the context of purpose, budgets and availability of human resources. These range from accurate measurements supported by Continuously Operating Reference Stations (CORS), through total stations and handheld GPS, to the use of a plane table, tape, chain and rope. UAVs are emerging as a promising alternative in cases where only highly accurate data is accepted. Imagery data sources such as Google Maps or Microsoft Virtual Earth can be used, and the inclusion of high-resolution data at those sites may be agreed. Administrative data collection can be paper-based or digital. All these data acquisition options can include methods to describe and label data quality elements. Quality labels are crucial for decision-making in dispute cases and also for later quality improvements.

Monumentation in the field should be avoided – unless people organise this themselves. Placing beacons is expensive, time-consuming and not efficient for achieving land administration with complete coverage. High-resolution imagery is normally of sufficient resolution to resolve conflicts about landholdings. The approach is not new and has been successfully used in several countries during the last few decades, such as in Cambodia, Ethiopia, Kenya and Rwanda for example (see Figures 1 and 2). The new aspect is that it is now scalable and can be applied in a massive way, including management of large volumes of data.

Automatic feature extraction

Today, automatic generalisation techniques have progressed to production environments, which would have been unimaginable some time ago. Similarly, automatic feature extraction from orthoimagery to support topographic mapping is now mature and can be used to assist spatial data collection for land administration purposes. This assumes a cloud-free satellite imagery composition. Images from fieldwork can be scanned and then compared with the results of automatic feature extraction from the imagery in a GIS environment. Automatic feature classification is not needed for this purpose. A pass generalisation can first be completed to obtain a set of vectors, which reasonably represents the visual boundary. Some interpretation and editing will be required as there may be topographic features inside a spatial unit of a right-holder. In the case of invisible boundaries on the imagery, some extra field observations may be needed. As a next step, the vectors obtained as a result of feature extraction can be reused in the spatial unit layer for land administration. The polygons can then be closed and corresponding spatial units automatically referenced to their final identifier. Administrative data collected by paper can be linked based on the preliminary identifier (see Figure 3).

Post-processing

Proper georeferencing and automatic feature extraction can be done later through post-processing, once resources are available. From an information management perspective, this requires versioning and management of historical data. The scanned imagery from the field has to be archived as source data. If automatic feature extraction is not available then digitisation can be executed on top of the scanned images with boundaries drawn in the field. Version management is needed in any case because quality improvement of geometric data is an important second step. This upgrade can be organised sporadically during data maintenance, based on accurate field surveys, with GPS for example. As soon as a set of new coordinates is available in an area, the existing data can be transformed. Systematic quality improvements can be related to land consolidation and implementation of urban plans.

Software sources

GIS functionality is available to support all the data acquisition and data handling processes. An example of functionality for data collection in land administration is the Social Tenure Domain Model (STDM) provided as open source software by GLTN or FLOSS SOLA with support from FAO. STDM-compliant software is also available from industrial software providers. Meanwhile, many software vendors offer functionality for surveying and feature extraction.

Information management in the cloud

A number of initiatives are emerging that are based on the concept of democratising land rights through citizen empowerment and crowdsourcing, including Open Tenure in SOLA from UN-FAO, MapMyRights™ Foundation, the Rights and Resource Initiative, the Missing Maps Project and MappingforRights. These initiatives involve citizens and communities capturing their evidence of land rights on mobile devices and recording that evidence on a global platform that is accessible globally in the cloud. These are trust-based rather than legal-based systems, and increased security of tenure through societal evidence and global publicity might become the norm for rights not yet recognised by national governments. These innovative initiatives are embracing scalable, fit-for-purpose approaches, and many are initially working with indigenous communities. They hold the potential to accelerate global coverage, but the matter of how crowdsourced land rights can be formalised over time still needs to be resolved.

Legal implications

The STDM and similar approaches such as FLOSS SOLA from FAO allow the inclusion of all people-to-land relations. This may include spatial units which are not legally occupied but are nevertheless legitimate according to the VGGTs. The converse may also be possible; land grabbing may result in titles, and land policies may require such situations to be repaired. This may imply a new and unconventional type of transaction: from freehold back to customary.

Debating the new era

Within the profession there is a serious debate on the key elements of the approach outlined above. That debate is about quality of spatial data; in essence it is about the positional accuracy of boundaries of spatial units. However, it is often not mentioned that data quality concerns completeness (coverage), logical consistency, topological consistency, positional accuracy, temporal accuracy and thematic accuracy. In many countries those issues are not considered in an integrated way, primarily because responsibilities are distributed across different stakeholder groups. This must be solved by means of data integration and data harmonisation and also by integrating crowdsourced data.

This fits very well with the needs of land administration, which is in principle not about accuracy based on highly technical nationwide standards. Total coverage is urgently needed to secure land rights and manage the use of land, and also to avoid land grabbing and forced evictions and to ensure social injustice. These fit-for-purpose approaches are fast, affordable and ideal for meeting this requirement. As a second stage, positional accuracy can be improved over time using sporadic approaches. All activities require good management of quality-related metadata. Continuous maintenance is needed and should be aligned with quality upgrading through the well-known processes of cadastral renovation, homogenisation, reconciliation and revision.

Further reading

- Enemark, Stig, Bell, Keith, Lemmen, Christiaan and McLaren, Robin, Fit-for-purpose Land Administration, International Federation of Surveyors, FIG Publication No. 60, 2014
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- UN Habitat, Handling land: innovative tools for land governance and secure tenure. UN Habitat/IIRR/GLTN, Nairobi, Kenya, 2012
- FAO, Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security, Rome, Italy, 2012.

https://www.gim-international.com/content/article/a-new-era-in-land-administration-emerges