



Digital Innovations

Global Programme Responsible Land Policy

Technological progress offers a great opportunity for more effective, efficient and transparent land management. In recent years, devices that provide geographic information have significantly improved. Satellite imagery has become more precise and accessible. Today, open-source geographic information system (GIS) applications like QGIS support viewing, editing, and analysis of geospatial data. QGIS is provided by the Open Source Geospatial Foundation as freeware. Affordable high-tech tablets allow surveyors to capture more perspectives; interviewers make use of enhanced software that synchronises with servers that automatically combine data with spatial information. Transparency is enhanced by displaying results online, as information is available not only to all authorities, but also the public.

For the Global Project Responsible Land Policy (GPRLP), piloting new technologies holds the potential to introduce efficient systematic approaches to (1) land registration procedures and land administration, (2) enhanced conflict monitoring or (3) increased transparency regarding agricultural investments.

1 Peru: Rural Cadastre Systems "SIC Comunidades" and "SICAR"

In Peru, digital innovations now allow to monitor the legal recognition and titling procedures of peasant and native communities, an important aspect of the realization of indigenous territorial rights. In September 2018, the Ministry of Agriculture launched the Cadastre System for Peasant and Native Communities (*SIC Comunidades*) and the Cadastre System for Rural Properties (SICAR). Both are innovative web applications with a map viewer

ICT SOLUTIONS IN THE LAND SECTOR

Typical Information and Communication Technologies (ICT) include devices, networks, services and applications that collect, process, store and/or transfer information in digital form. Examples range from innovative internet-based technologies and remote sensing tools to technologies that have been in existence for much longer, such as radio, telephone, mobile phone, television and satellites. There are various tools like:

- Data Collection and Surveying Tools
- Observation Tools
- Land Registration Tools
- Land Use Planning Tools
- E-Learning Tools

The majority of land governance projects use digital solutions to achieve their project goals. With the development of new technology and the proliferation of open source solutions, the adoption of digital solutions has strongly increased. All GIZ projects that deal with land registration are digital by default (digital solutions are part of the project design). Two areas seem to be noteworthy: the increasing use of database solutions and geoinformation systems including remote sensing.

to be used by all 25 Regional Governments, the entities in charge of land titling in Peru. SIC Comunidades contains a regularly updated database and maps of communal land titles; SICAR provides the same for individual rural land titles. Both systems allow uploading and validating plans, perform quality control, migrate cadastral information and generate cadastral products.

The main innovation of the rural cadastre system is the interoperability of both systems with diverse governmental geographic information systems on other territorial categories (e.g. natural protected areas, production forests, mining and oil concessions). Overlaps with these areas often become obstacles in the community titling process. The visualization of the cadastral information can be also used by the other institutions, especially the ones which share their data within the interoperable information system, e.g. for land use planning or the declaration of new protected areas. Balancing the principles of transparency (an important aspect of preventing corruption) and data protection (especially important in the context of indigenous rights), currently only SICAR has a public viewer (accessible by internet at <http://georural.minagri.gob.pe/sicar>) which, however, also shows the outlines of titled communities.

2 Ethiopia: The Commercial Agriculture Management Information System "CAMIS"

In Ethiopia, digital tools enhance the monitoring of Responsible Agricultural Investments (RAI). The Commercial Agriculture Management Information System (CAMIS) is a distributed web application system, which aims at providing functions to support the inventory of commercial agricultural investments and different contract farming models. CAMIS targets the performance monitoring and evaluation of lease-based agricultural investment and contract farming projects. Through the Land Administration function, the system keeps track of land leased to investors. CAMIS works like a land bank and maintains a land inventory. It also provides basic information on parameters of soil, climatic conditions, land-

scape and water quality for irrigated lands. As part of the web portal, the Bid workflow management enables land promotion for investment, provides an online investor registration platform and facilitates bid processes. A major function of the system is the Farm management, performance monitoring & evaluation function, which enables relevant authorities to keep track on periodic performance monitoring records including social and environmental impacts. The system also includes an application, which helps to easily collect field-level data during the monitoring of agricultural investment projects.

3 Laos: Conflict Monitoring System "CMS"

In Laos, land conflict monitoring and resolution mechanisms are improved utilizing a system for documentation, mapping and monitoring of land conflicts. In the field, data is collected via an App about conflicts and entered offline in the CMS, for subsequent synchronization with the database. Whenever a technical team encounters a conflict, it is directly entered into the CMS, feeding an up-to-date database, which enables following-up on previously identified conflicts. The application features the options to enter any new conflict, to show existing conflicts on a map, and to display all conflicts as a list. A constantly updated database based on an interview application combines information from the field with geographic data. Trained staff within capacitated institutions can analyse and respond to identified types and clusters of unresolved land conflicts. This way, land issues are systematically tackled by local authorities.

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