



# Land Governance in an Interconnected World

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY  
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## THE NEED FOR APPROACHES AND TECHNOLOGY OF TOMORROW

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## **ABSTRACT**

Having land rights for all at the short term at affordable cost and with an acceptable quality is a clear ambition that has been defined by many national and international organizations worldwide. In speeding up the development of land registration, the knowledge and technology of tomorrow are key enablers. Innovation and the embracement of unforeseen developments are believed to be a prerequisite for success.

Innovations in land administration sector should not only be seen as to be dependent on technology. Also process innovation is important as human, social and ethical criteria are dynamic factors as well as our (the understanding of the) physical environment we live in.

Modern day technology also offers a lot of possibilities for the involvement of users. It is believed that a user demand driven development of land administration will result in higher sustainability.

Besides the United Nations (UN GGIM and its Expert Group on Land Administration and Management), other global organised organisations play an important role in impelling the development of land administration worldwide. Examples are FIG, World Bank, ISO and OGC.

As innovation is not a linear process nowadays, meeting the objectives is therefore dependent on the rate of innovation in our sector. In this assumption, the relevance of change, the influence of technology, the ability of land administrations to adapt (and perhaps show leadership) including the key role of users should be emphasized.

It is believed that stakeholder involvement is crucial in sustainable development of land administration systems, which has many different aspects. Apart from technology also standardisation, societal constellation, partnerships (including finance and business models) and capacity building give opportunities for acceleration of developments.

**KEY WORDS:** Land administration, sustainable development, innovation, development path, stakeholders



## 1. INTRODUCTION

Having land rights for all at the short term at affordable cost and with an acceptable quality is a clear ambition that has been defined by many national and international organizations worldwide. The understanding that land tenure security is a crucial aspect of sustainable development is widely accepted nowadays.

Registration of land rights (both in formal and informal systems) is a key enabler for realising the 2030 Agenda for Sustainable Development and its respective 17 Goals as adopted by the United Nations in September 2015. For example, registered land rights are essential to end poverty (goal 1), to obtain gender equality (goal 5) and to combat climate change (goal 13). But land rights also relate to other Goals like zero hunger (goal 2), sustainable cities and communities (goal 11), life on land (goal 15) and peace, justice and strong institutions (goal 16). Tenure security can be seen as a prerequisite for sustainable development (de Zeeuw and Lemmen, 2017).

By connecting the ambition *to have land rights for all* to the UN Sustainable Development Goals (SDG's) the needed effort is made even more specific. At the same time the feasibility should be realistic. If to this day the documentation of relationships between people and land does not exceed a percentage of 30, how can land rights for all (rich, poor, male, female, old, young) than be achieved by 2030?

The question is if present technologies and approaches will bring us the sustainable development we envisage or is more innovation required? In speeding up the development of land registration, the knowledge and technology of tomorrow are key enablers. In this paper an optimistic view is presented on how these enablers can contribute effectively. Innovation and the embracement of unforeseen developments are believed to be a prerequisite for success.

## 2. STATE OF PLAY IN LAND ADMINISTRATION

Technology is everywhere and data is ubiquitous in land administration. Satellite imagery, GPS and the internet give opportunities that we could not imagine just a few decades ago. Standards like the Land Administration Domain Model (LADM) provide an approved basis for new initiatives. The same applies to the existing knowledge, tools and experience regarding the use of these standards. Also leading frameworks like the Voluntary Guidelines (FAO, 2012) and the Guiding Principles on Fit For Purpose Land Administration (S. Enemark, R. McLaren and C. Lemmen, 2016) allow for well-designed systems, balancing the legal, spatial and institutional frameworks.



The use of modern technology is not restricted to data itself; services can be developed accordingly. Innovation in this case does not just refer to technology. Aspects that need attention in land administration development are (de Zeeuw and Lemmen, 2017):

- Data, imagery, knowledge & experience
- Standards (ISO, OGC, LADM+)
- Approaches (Fit for Purpose LA, VGGT, New Urban Agenda, SDGs)
- Tools (Open Source, commercial)
- Infrastructure
- Cases and best practices
- Indicators, targets, global insight
- Partnership, awareness, leadership & finance

All these issues should be seen in a continuously changing environment. Human, social and ethical criteria are dynamic factors as well as our (understanding of the) physical environment we live in. Climate change, changing energy demands, conflict, economy and many other factors make that we have to adapt our strategy in order to achieve land rights for all and for a land administration development continuously.

Public Private Partnerships are relevant in relation to the implementation of land administration with regards to cross-agency and cross-boundary partnerships. Target 17 of the SDG's says: 'Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.' The role of private sector in land administration is evident. Stakeholders are public authorities with responsibilities in land administration, Non-Governmental Organisations, land professionals (conveyors, notaries, lawyers, surveyors, valuers, brokers, spatial planners, land tax officers etc.), database and GIS providers, service providers, etc.

## **2.1. User demand**

Modern day technology offers a lot of possibilities for the involvement of users. It is usually technology that is available, easy accessible and simple to use. Participation is being encouraged, resulting in fact in an expected increase of commitment and enlarged inclusiveness in societies. This challenges land administration organisations to participate and explore new angles of their activities, to stay involved. Think for instance about the internet of things, the changing roles of contributors becoming developers in the value chain, new ways of making data accessible and the shift in societal focus from ownership to use. A changing approach to privacy, easier access to data and creation of new services are topics that need to be addressed, although the real challenge will be the development of the land administration organisation itself. New requirements require new approaches: meaning here that skills and competences need to meet new demands from the users. Sharing and networking become new competences in our business processes and cadastral organisations have to evolve from data providers to information providers, to service providers in the near future (de Zeeuw and Salzmann, 2017).



## **2.2. Global support**

The Member States of the United Nations have to be the custodians of results (mainly through the adopted SDG's Agenda) and have to encourage global coverage through their UN organisations, like FAO and UN-Habitat. The Global Geospatial Information Management initiative (UN-GGIM) is in place, as well as the Expert Group on Land Administration and Management of UN-GGIM (UN-EG-LAM), recognising its role in the Land Administration Domain. Their Agenda calls for new data acquisition and integrated approaches. That includes a stronger contribution of earth observation and geospatial information. The Group defined two main objectives:

1. Play a leading role at the policy level by raising political awareness and highlighting the importance to decision makers of the need for timely and fit for purpose land administration and management and;
2. Encourage the use of geospatial information tools and systems to improve the legal certainty of all citizens in the world with respect to the registration of the relation between people and land.

Overarching focus of UN-EG-LAM is to improve tenure security and better land and property rights for all. The indicators (Tier 1,2 and 3) as defined for the different SDG's are meant to support review and follow-up, measurement and monitoring progress. More information on this indicators can be obtained from various UN websites. Interestingly enough, (land) registrations and geo-information play a role at two levels within the SDG's: *i*) as a result and *ii*) for the monitoring of progress.

The Expert Group acknowledges the following guiding principles being part of (inter)national policy making:

- Affordable access to basic geospatial datasets
- Avoidance of duplication particular in mapping (collect once for a multiplicity of purpose and use)
- Data sharing
- Interoperability and spatial data infrastructures
- Timely and good quality of data

The Expert Group recognises as well that a (global) tenure security 'atlas' should be promoted in order to provide and visualise the state-of-play of tenure security at all levels. The atlas should also support the monitoring of progress of tenure-based SDG's.

Besides the United Nations, other global organised organisations play an important role in impelling the development of land administration worldwide. Examples are FIG, World Bank, ISO and OGC. The latter can be considered as the new kid on the block.

Recently, The Open Geospatial Consortium (OGC) recognised the developments in Land Administration and has set up a Land Administration Domain Working Group. OGC has standing liaisons with major players in the Land Administration domain, including Technical Committee 211 of the ISO, the Royal Institute of Chartered Surveyors, International Association



of Assessment Officers, the World Wide Web Consortium, OASIS, FIG, GLTN and private sector companies including ESRI, Trimble and Thomson Reuters. OGC always strives to use, build on and complement existing standards. The ISO 19152 Land Administration Domain Model (LADM) covers basic information related to components of land administration: land administration includes water and elements above and below the earth's surface, and people.

### **3. THE DEVELOPMENT PATH**

#### **3.1. innovation**

Modern approaches and technology allow us to speed up the process of land administration considerably. Implementations in countries like in Rwanda have proved that more than 10 million parcels can be registered in less than 10 years for less than 10 dollar per parcel. Without modern technology (like the use of satellite imagery) and innovative approaches this would not have been possible. But land administration is not about one-size-fits-all and the Rwanda case cannot be projected to other countries or regions in the world.

This means that we believe that without true innovation, the land administration practices worldwide are expected not to sync with the objectives of the SDG's, having land rights for all by the year 2030. As innovation is not a linear process nowadays, meeting the objectives is therefore dependent on the rate of innovation in our sector. In this assumption, the relevance of change, the influence of technology, the ability of land administrations to adapt (and perhaps show leadership) including the key role of users should be emphasized. This paper is meant to make an appeal to the professional sector to focus on and invest in innovations of technologies and processes.

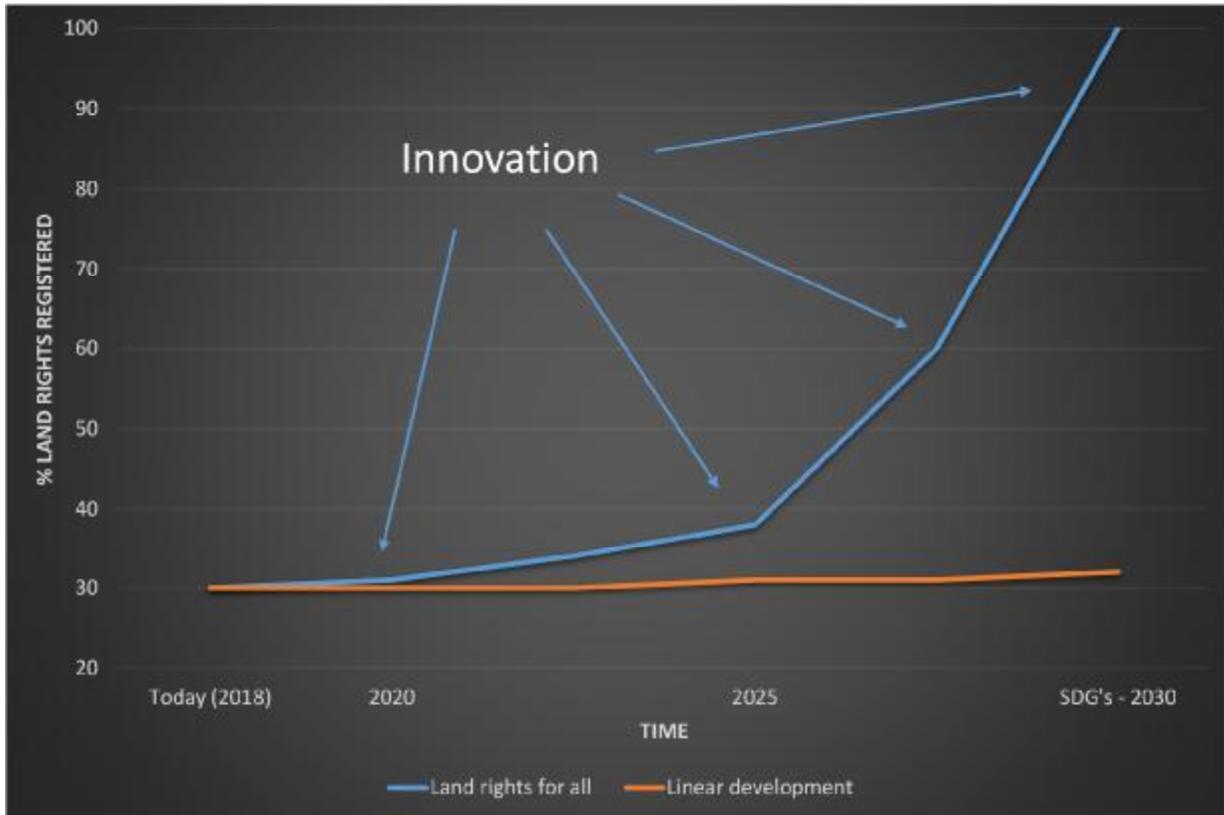
Figure 1 is an illustration of how exponential use of innovation is assumed to support us in reaching our goals by 2030. It is recognised that achieving our goals is influenced by much more factors and the real environment is much more complex than represented in this figure (e.g. in this figure global population growth has not been taken into account). But the figure captures the assumption that 'the approaches and technology of tomorrow are needed to achieve our goals of the day after tomorrow'.

The innovation as such cannot be specified in advance. But we see that a broad range of geospatial technologies and applications is available. They range from satellite and drone imaging and mapping, to geodesy, precise positioning, geo-information science, cartography, spatial data infrastructure and many surveying sub-disciplines. The scientific and professional disciplines in the geo spatial community design, develop and apply those technologies. Apart from this technical component a land administration has also a social and legal component. This makes land administration an arena where many different scientific and professional disciplines meet. Depending on phase stage of development and the level of societal acceptance of the land administration those involved disciplines may be different.



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**Figure 1.** Illustration of the assumptive need for human, technological and methodological innovation and how it might help us to achieve the objective of land rights for all by the year 2030 in alignment with the SDG's.

### 3.2 Stakeholders

All stakeholders involved in the domain of land administration development influence the feasibility of this exponential development. A common vision and strategy of these stakeholders will define if innovation will contribute to achieving the goals. This means that the continuous linking with the voluntary guidelines and sustainable development goals is key in aiming innovation and (disruptive) technology.

Therefore it is believed that stakeholder involvement is crucial in sustainable development of land administration systems, which has many different aspects. Of course the private sector and scientist have a task and objective to lead the technological development, but also other components of development need attention. For example, in policy and strategy development governments should take the lead by introducing measures that speed up the process of land administration. In table 1 an overview is given of different stakeholders and their possible contributions.



	Policy and strategy	Technology	Methods and Fit for Purpose LA	Social development	Advocacy	Financing and Business models
Private sector		X				X
Science		X	X	X		
Governments	X		X	X		X
Professionals			X		X	X
NGO's			X	X	X	
Citizens				X		

*Table 1. Possible stakeholder involvement in innovative and disruptive development of land administration systems.*

#### 4. OPPORTUNITIES FOR INNOVATION

Innovation as such is not predictable, but it should be understood that it concerns a broad pallet of arena's where the activities should take place. Without the pretention to be complete it is believed that apart from technology also standardisation, societal constellation, partnerships (including finance and business models) and capacity building give opportunities for acceleration of developments.

**Technology** will probably generate advantages/be beneficial in the coming decade. The cost of data acquisition will reduce to a fraction of today's level (think of satellite imagery or crowd sourced data) and consumer electronics and IT will influence the professional geo-information sector drastically. Inclusion of Lidar-technology into mobile devices for example, will create new possibilities, unexpected synergetic effects and potential applications in land recordation methods. Ongoing developments in the block chain technology, robotics, social media and open source software will open horizons and speeding up the land recordation process.

**Standardisation** of data formats, software interoperability and knowledge systems will also improve. That is part of the process and applies for example to the already mentioned Land Administration Domain Model (LADM, ISO 19152). LADM is ready for a revision within the ISO and OGC environment.

**Social** conflict and insecurity will remain global issues, as is land use shifting from rural to urban. Rural areas can obtain potentially unexpected new purposes (like sustainable energy storage) and urban re-allotment will create new social structures and spatial planning issues. Societies will become networked in nature and economies will have more focus on sharing and



individual entrepreneurship. In that world trust in (governmental) information will be essential. Institutional frameworks need to evolve accordingly.

**Partnerships** will become essential. At the global level professional organisations like FIG, World Bank and OGC have to make the difference. Working in the golden triangle (science, government/NGO's and private sector) is believed to be a successful formula for innovation, development and speeding up existing processes.

New forms of **capacity development** prosper by the Internet. Access to massive online courses (MOOC) develops in our field of work rapidly. High level intensive training programmes like BSc and MSc are no longer the only fit for purpose education level for land administration practices. Differentiation in education will arise with an increased role for citizen participation.

But we have to be aware, it can turn in the other direction as well; disruptive technology means as well that we don't know yet what will happen; what used to work doesn't work anymore. Therefore, clear vision and strategy is needed. What does it require from us and what opportunities do we see.

## 5. NEEDED INTERVENTIONS TO CREATE THE RIGHT CONDITIONS

Taking into account the opportunities we see a relevant role for all stakeholders in land administration to create the right conditions to accelerate innovation. The following interventions are proposed in order to guide and promote the boosting of land administration in the world:

- The creation of political will, both nationally and internationally. 'Think global, act local' is a good starting point for advocacy and awareness campaigns.
- Financing, taking in account that systems should be demand driven, feasible and affordable.
- Innovation of a sector. Land administration does not stand on its own. Examples and developments in other sectors should be followed and monitored, understanding the applicability in land administration. Fit for Purpose Land Administration is a good sustainable methodological starting point for development.
- Business model development for the private sector, professionals and governmental bodies. The large amount of parcels to be registered should open up new business for the traditional stakeholders, but also allows new kids on the block. Not only first time registrations provide opportunities, also the maintenance and improvement of system offer opportunities, create new markets and spin-offs; A thousand jobs of 10\$ are more attractive than one job of 500\$, a small tax revenue on a million parcels is more attractive than a large revenue on a few parcels.
- Citizen participation is crucial. Inclusive models are needed to ignite innovation.
- Connecting people should be key, we must not forget why things are done.
- Make the connection referring to the acknowledged and adopted SDGs.



## 6. CONCLUSION

The ambition to have land rights for all by 2030 as a part of the SDG's is believed to be feasible. However, an important prerequisite is the ongoing innovation of approaches and technology; it is the technology of the coming decade that makes the ambition it feasible. Innovations in land administration sector should not only be seen as to be dependent on technology. Also process innovation is important as human, social and ethical criteria are dynamic factors as well as our (the understanding of the) physical environment we live in. This innovation and the embracement of unforeseen developments are believed to be a prerequisite for success. Developed countries and international organisations have a responsibility in taking the lead in this innovation, searching for partnerships with governments, NGO's, private sector and knowledge centres worldwide.

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