4th UK Land Forum: New Technologies for Mapping and Documenting Land Rights

# Summary and recommendations

## Date: Wednesday, April 26, 2017

## Time: 13:00-16:30

## Place: ODI, London

## Background and focus

This event was convened to discuss the use of new technologies to map and document land rights, and their impact on land registration and administration, and provide updates on recent activities of Forum members, including DFID.

Recent innovations in technology are revolutionising efforts to document land rights and to open up access to land data around the world. Technology, such as GPS and drones, now allow practitioners to document land rights effectively at much lower cost, in even the most remote locations, compared to traditional surveying techniques. While these innovations have the potential to help secure land rights for the estimated 70% of land in low and middle income countries that is currently undocumented, they are not without challenges. The use of such technologies require complex software and computer infrastructures, and their adaptation and use in resource-constrained environments requires financial and technical capacities to be in place. Different needs require different scales of technology, and technology use may need land policy to be adjusted to ensure that it fulfils national requirements and follows due process.

The aim of the meeting was to facilitate discussion around land and technology based on recent research and activities to move towards answering key questions about the role of technology, including:

1. What role can new technology play in driving down costs and accelerating the process of mapping and documenting rights and getting formal recognition?
2. How are the outputs being used by national governments in their formal land registration and administration system?
3. What are limits to, and challenges, of using these new technologies?
4. What other areas could technology contribute to in land governance and administration?

To frame and inform this discussion, presenters provided an overview of different types of technology, drawing on a recent review and the experience of SA Catapult; and offered some concrete examples of how technology is being used on the ground, and the opportunities and challenges this raises. Countries featured included Tanzania, Rwanda, Ethiopia (DAI), Kenya and Zambia (Cadasta and Namati). Participants also formed break-out groups to focus on the question of the impact of technology on costs and other potential uses of technology.

## Key points emerging from the evidence and discussions

### Types of technology

* When discussing the role of technology, we need to identify the stage of mapping and documenting rights and getting formal recognition we are referring to:
  + Types of imagery – be it from satellites or drones, and the relative accuracy and cost of each.
  + Capturing rights prior to the field, through extracting them from imagery or using social media tools.
  + Capturing rights in the field – here, there are a wider range of technological options currently on the table, including: putting smart paper sketchmaps into digital environment, and mobile technology (e.g., MAST (Tanzania and Burkina Faso), UN-FAO solutions for open land administration, GLTN’s social tenure domain model, and Landmapp – linking smallholder tenure and productivity).

### General issues raised

* There was real excitement and engagement about the opportunities for using new technology to reduce costs, and make data more transparent and accessible, as well as a range of other uses.
* When comparing “new technology”, most participants agreed that the point of reference is traditional surveying practice of using beacons to identify and map rights, a process that is deemed both to be costly and slow, and unable to meet the needs of the documenting the estimated 70% of land in low and middle income countries that is currently undocumented.
* Many emphasised the need to focus on the scalability and flexibility of new technology and approaches to adapt to rapidly changing circumstances, even just with minimal land transfers.
* Challenges of using new technology and going to scale include:
  + Where do you store and process huge amount of data being generated? Do issues of maintaining sharing and access to the data potentially undermine transparency?
  + The need to change the mindset of Land Professional Organisations who may be resistant to these new approaches – land surveyors, lawyers, project managers.
  + Cybersecurity – how to secure land rights information.
  + Advocacy at political levels – need to focus on politicians to get them on board.
* Concept of fit-for-purpose (FFP) approaches and technology:
  + Understanding of FFP: the review of technology available highlighted that when assessing technology and investment choices, the focus should be on a “fit-for-purpose approach” that will meet the needs of society today and can be incrementally improved over time. This should be flexible and focused on serving the purpose of the systems (citizens’ needs such as providing security of tenure and control of land use) rather than focusing on top-end technical solutions and high accuracy surveys.
  + There was general consensus that an FFP approach was useful, particularly in deciding on the balance of costs and accuracy when procuring geo-spatial data.
  + Participants emphasised that this concept needs to be:
    - Fit for the purpose of different groups with clear aims (i.e., fit for *whose* purpose and for *what*) ensuring that the decision about what approach and technology to use puts the user at the centre rather than getting swept up in excitement about modern technology.
    - In line with the existing legal and policy framework to ensure that a new approach meets required standards and uses appropriate institutions. However, technology is also seen as a way for people to advocate for changes in the law and shift attitudes about what is possible, playing a disruptive role.
* There was a sense of current or potential technology users being overwhelmed by the different choices available, with the need for guidance to make informed choices that will work for the needs of a particular user group.
* Underlying the potential for technology to reduce costs and promote greater transparency in the land sector is the role and importance of open data, provided either as a public good or through a public-private partnership.

### Do new approaches reduce costs of mapping and documenting land rights?

In considering this question, participants noted several points of clarification:

* It is important to look at the *whole life costs* of mapping and documenting rights, including ongoing maintenance of information, management systems, etc. rather than comparing only one part of the chain.
* It continues to be hard to compare costs of mapping and documenting a parcel of land as they often include different components (e.g., the calculated cost per parcel may – or may not- include the cost of acquiring imagery) and this is often not made explicit.

Within these parameters, participants made the following general points:

* There was no unequivocal position that technology that provides an alternative to traditional surveying reduces the costs of mapping and documenting rights.
* However, there is the potential to reduce costs in some parts of the process:
  + Technology can drive down the costs associated with imagery capture (satellite imagery, drones for small areas) and management of information. Costs associated with these technologies are coming down in any case.
  + Technology also makes it cheaper to deliver transparency, i.e. making information publicly available. Programmes and algorithms can automatically index huge quantities of spatial data; electronic platforms can reduce costs of hosting data and making it available on demand.
* There are some costs that cannot be cut by using new technology, and – indeed - should not be cut if it means shortcutting the process, including:
  + Participation: technology cannot reduce costs associated with providing high quality and sufficient information to stakeholders. Face-to-face time in meetings, answering questions, understanding views and priorities of different groups, and gaining consent all take time. Cost savings shouldn't undermine these processes.
  + Similarly, gaining official buy-in is important - it is unlikely technology can save costs associated with gaining government approval for activities (although it can make these processes more efficient).
* There is a trade-off between costs and accuracy/resolution of geospatial data: higher resolution imagery costs more. People agreed that technology users need to be sure that they have the right level of resolution for each situation and balance this against the costs of procuring the imagery.

### Other applications of spatial data technology

* In practice, many of the new approaches are about a great deal more than registering land rights. It is important to disentangle these different uses and opportunities so we can understand where technology can make the biggest difference.
* Participants identified different applications, including:
  + Supporting land use planning processes, particularly community-based land use planning and zoning, and village boundary definition.
  + Collecting data on basic services and other urban planning needs.
  + Facilitating greater efficiency and transparency in agricultural value chains.
  + Monitoring crops and climate change, including flood mitigation
  + (Contributing to) assessment of what is fair compensation by producing evidence of occupation, which can support claims of eligibility to compensation (example of recent slum clearance in Port Hardcourt, Nigeria); and, where historic imagery is available, going back in time and checking land use to support longstanding claims of community members (e.g. if land planted to crops, how many standing trees, etc.).
  + Bringing down costs of administering land borne by the state by providing cheaper solutions for managing data; and producing information that state land agencies can commercialise to defray costs of acquiring imagery. Data can also be shared and used by different state agencies.
* Future cost-benefit analysis of technology should try to capture these benefits too. However, data needs to be at an appropriate level of resolution, and organisations should consider different levels needed when thinking about obtaining geospatial data for a range of different uses.

## Conclusions and recommendations

1. The discussion reinforced the prevailing feeling that new technology allows new processes and approaches to mapping and documenting rights to be adopted with exciting opportunities to reduce costs, and improve transparency and agency.
2. However, the meeting also confirmed the challenges and limitations of using new technology on the ground and the importance of keeping user needs front and centre in driving technology selection, rather than the other way around, particularly when thinking about drones, blockchains, etc., which can sound exciting but may not be fit for purpose or accessible to users.
3. The number of options available – and their implications – seemed overwhelming to users at the meeting and there was a call for more practical research on how to move forward, preferably with a donor championing guidelines or criteria for assessing what would work best in particular contexts.
4. A broad consensus emerged that technology has the potential to reduce costs at certain points in the process of mapping and documenting land rights. There are trade-offs between costs and accuracy/quality that an FFP concept can help to resolve.
5. Improving the availability and lowering the cost of access to baseline maps and imagery is vital to reducing the costs of mapping and documenting land rights. Investing in this as a public good or promoting public-private partnerships to provide spatial data are both ways forward.
6. There are also areas where technology cannot necessarily reduce costs or time, including consultation, negotiation and resolving historic conflicts, which require face-to-face contact.
7. Political buy-in and alignment with a country’s legal and policy framework are crucial to sustain processes and approaches using new technology. Anyone championing the use of technology in land should build this into their analysis.

## Suggested themes for future UK Land Forum meetings

Participants contributed ideas of themes for further meetings of the UK Land Forum. The table below summarises these under different headings. These suggestions will be further collated and bottomed out to form proposed agendas for future meetings.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Land Administration** | **Land management** | **Data and technology** | **Land Governance and Titling** | **Various** |
| Northern/developed countries approaches vs Southern/developing countries; challenges and opportunities in a changing world | Top-down vs bottom-up approaches to land management | Consideration of social and cultural requirements alongside data-driven solutions | Why are we titling land? (Concerns about turning land into a commodity / going to highest bidder vs use) | Provision of end-to-end solutions - removing the complexity of data and produce user-driven solutions |
| How can formal land administration systems be prevent from reverting to informal systems? | Cultural differences and impacts of land management approaches and processes | Importance of user requirements | Different requirements of improving land governance vs mass titling | How can policy balance the need to maximise the social utility of land as well as its economic efficiency? |
| The rise and influence of Earth Observations on Land Administration |  | Importance of standards - both data and in-country | Interaction between formal and informal (+ what triggers the need for formalisation) | Land governance: tenure security, opportunities for young men and women? |
| Land Administration Capacity Development |  | Data management - registration systems for low income growth | International standards vs regional/local practice | Sustainable business models -post-project completion |
| FFP Land Administration |  | International standards vs regional/local practice | Land governance: tenure security, opportunities for young men and women? | Building community consent - civic education |
| Institutional models for land administration |  | Data integration | Building community consent - civic education |  |
| Corruption in land administration |  |  |  |  |
| International standards vs regional/local practice |  |  |  |  |