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Know Edge Limited
Location Information Innovation

How Big is Global Insecurity of Tenure?

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FIG WORKING WEEK, CHRISTCHURCH NZ, MAY 2016, SESSION TS07A



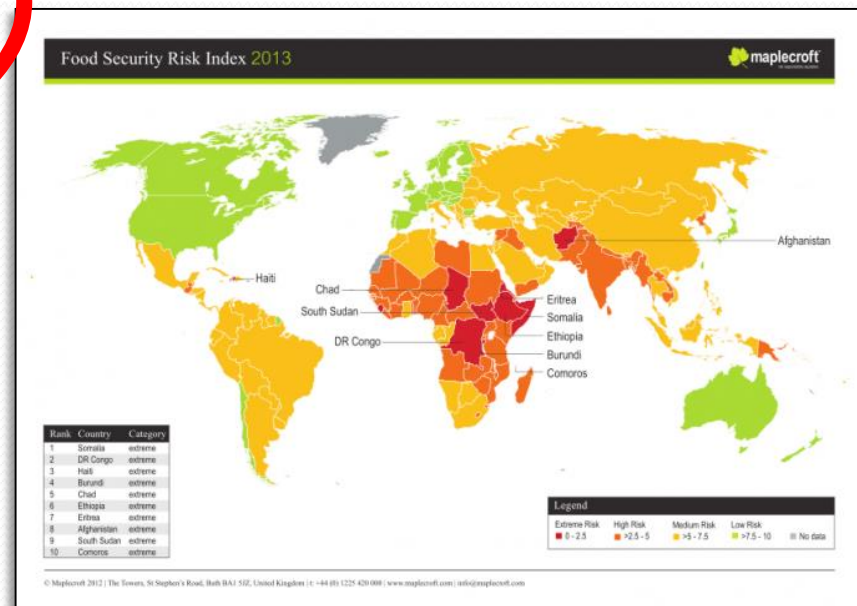
Why Do We Have Problems with Global Land Indicators?

How can we obtain information on the excluded?

The Cadastral Divide

70% world's population have no access to formal Land Administration services

Only 25% of the 6 billion land parcels worldwide are formally registered and have robust security of tenure.



Source: <http://reliefweb.int/map/world/world-food-security-risk-index-2013>

Tenure insecurity has a knock on effect on sustainable cities, climate change management, food security, poverty alleviation and more.

Where did this statistic come from?

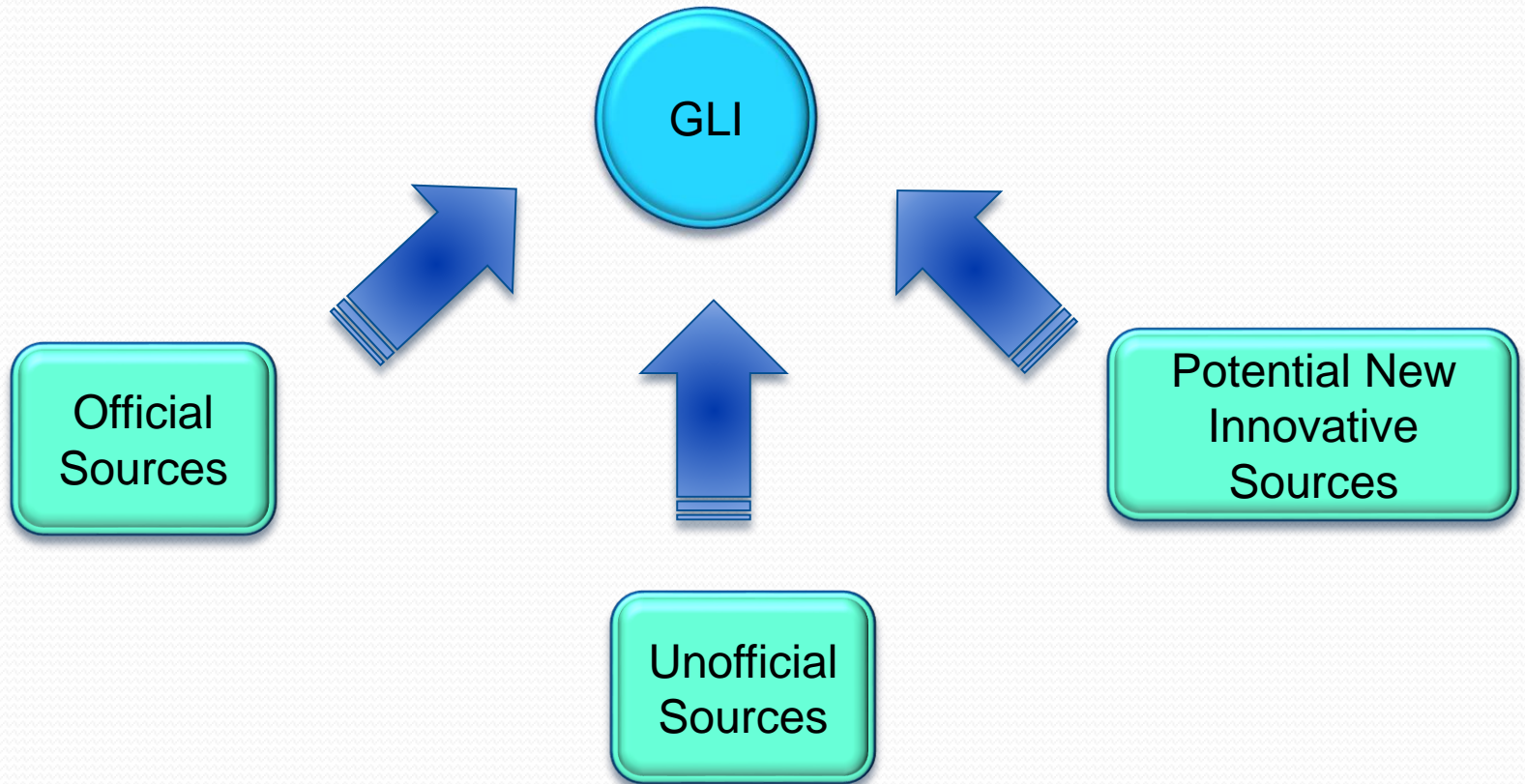


The Source of the Statistic

- Willie Zimmermann, in conjunction with UN-FAO, had an educated guess at the figure.
- I then published the caveated statistic in my 'Crowdsourcing support of Land Administration' paper in 2011.
- The statistic has now become a *de facto* standard that is quoted globally.
- This is the best we have!



Sources of Land Information



The background is a complex, abstract pattern of overlapping circles and wavy lines. The lines are black and white, creating a high-contrast, textured effect. The circles are of various sizes and orientations, some overlapping each other, creating a sense of depth and movement. The overall composition is dense and visually busy.

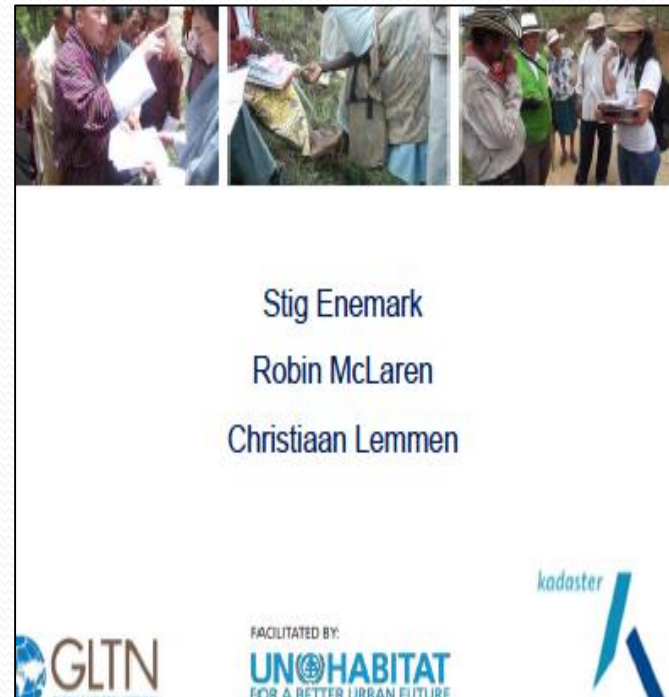
Accelerating Official Sources

Official Sources of Land Information

Enabling and accelerating land administration systems

Fit-For-Purpose Land Administration

- Flexible
- Inclusive
- Participatory
- Affordable
- Reliable
- Attainable
- Upgradeable



Official Sources of Land Information

Enabling and accelerating land administration systems

Mobile Application to Secure Tenure (MAST)
USAID Pilot Project in Tanzania

An easy-to-use, open-source mobile application that can capture the information needed to issue formal documentation of land rights.



Official Sources of Land Information

Enabling and accelerating land administration systems

- Land professionals / NGOs train trusted intermediaries in communities.
- Self-organize into collaborating networks.
- Intermediaries could be shared with other information services, e.g. health and agriculture.
- Land rights simply a bi-product of other services, e.g. microfinance, micro-insurance.



Source: www.flickr.com



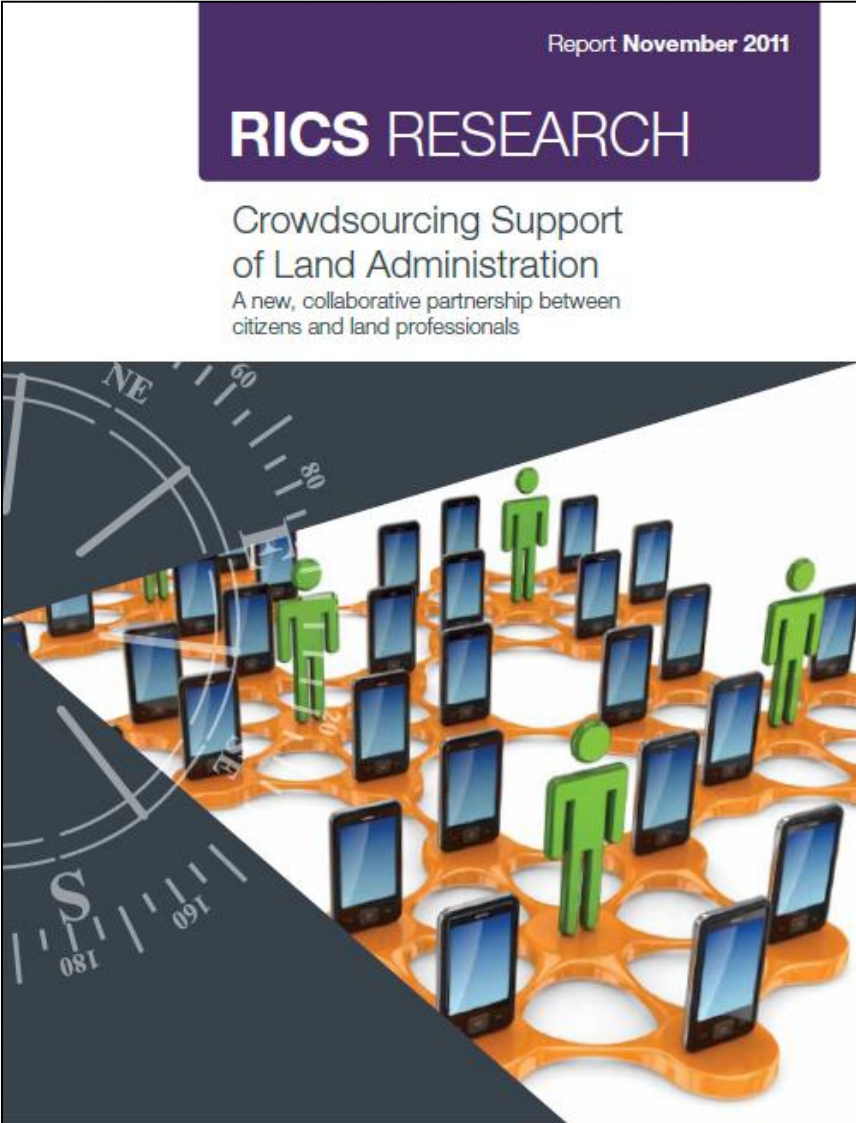
New Unofficial Sources

The Citizen Crowd

The Citizen as a Sensor

Capturing evidence of land rights

Robin McLaren (2011)



Report November 2011

RICS RESEARCH

Crowdsourcing Support
of Land Administration

A new, collaborative partnership between
citizens and land professionals

RICS the mark of
property
professionalism
worldwide

rics.org/research

New Initiatives Delivering Unofficial Land Rights Information

- Rights Resources Initiative
- Rainforest Foundation UK
- BRAC
- The Indigenous Peoples Alliance of the Archipelago (AMAN)
- Habitat for Humanity
- Open Tenure (SOLA)
- Landmapp
- Cadasta
- STDM
-



Source: <http://uwnews.org>

Unofficial Sources of Land Information

Landmapp - Delivering affordable land tenure mapping to rural communities



**Linking
smallholder
tenure and
productivity**



First pilot in Ghana with Kuapa Kokoo



Potential New Innovative Sources of Land Information

Crowdsource Perception of Security of Tenure through Social-Media

But how can we engage with communities and convince them to contribute – what is the incentive?



Crowdsource Perception of Security of Tenure through Social-Media



Build communities

- Outreach through building a community.
- A good example is UNICEF uReport in Uganda.
- A free SMS-based system that allows young Ugandans to speak out on what's happening in communities across the country, and work together with other community leaders for positive change.

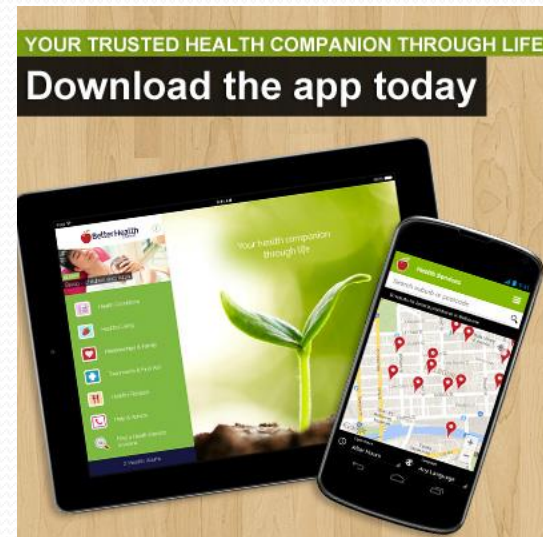
Crowdsource Perception of Security of Tenure through Social-Media

Outreach through existing information services

- Connect to existing information service infrastructure, e.g. health or agriculture.



Source: <http://africagreenmedia.co.za>



Source: <https://www.betterhealth.vic.gov.au>

Crowdsource Perception of Security of Tenure through Social-Media

Market research with SMS surveys

- Arrange SMS based surveys through mobile service providers.



Reliable, Cost-Effective Data

GeoPoll is the world's largest mobile survey platform, with a database of 200 million users in Africa and Asia.

[Learn More](#)

Property Valuation

Mobile Phone Users

Micro-financing

Agricultural Grants

Mortgages

Property Tax

Addresses

Social Security

Business Register

Environmental Constraints



School Registers

Census

Marketing Campaigns


Crowdsourcing information from satellite imagery

tomnod South Sudan: Food security 📍 💬 Sign In 👤 3 📍 0 🔒 0 🔔

Help us find...

📍 Permanent dwelling

Permanent dwellings include tukuls (circular-shaped local homes) and concrete block buildings. Tukuls have cone-shaped tops and a shadow will be visible due to its height. Many tukuls have been burned down in this area due to conflict. Do NOT tag burned-down dwellings. Burned dwellings will lack a shadow (height) and the usual cone shape.



Traditional round tukuls are an example of a permanent dwelling in South Sudan

Permanent dwellings include structures with thatch roofs or metal roofs

Traditional tukuls are round in shape

Facebook has used its AI tools to identify human-made structures in 20 countries

- Facebook has announced it will make highly detailed maps of places where it believes people are living available to the public later this year.
- 14.6 billion satellite images analysed covering 20 countries.
- Resulted in 350TB of data with a spatial resolution of 5m.
- Inform its Internet.org initiative



Can we Identify Clues in Imagery to Indicate Perception of Security of Tenure?

Can we identify evidence of longer term investments that indicate greater security of tenure?



Can we Identify Clues in Imagery to Indicate Perception of Security of Tenure?

Terracing



Can we Identify Clues in Imagery to Indicate Perception of Security of Tenure?

Crop Planting



Source:
<https://desertification.wordpress.com/2015/02/23/the-critical-role-of-smallholder-farmers-and-rural-people/>

Can we Identify Clues in Imagery to Indicate Perception of Security of Tenure?

Tree Planting



Source: <http://www.wri.org/blog/2015/05/regreening-africa-could-help-stem-tide-migration>

Can we Identify Clues in Imagery to Indicate Perception of Security of Tenure?

Irrigation



Source: <http://www.desiledger.com/photo/farmer-waters-cucurbit-field-with-traditional-method-called-furrow-irrigation-21659.html>

Can we Identify Clues in Imagery to Indicate Perception of Security of Tenure?

Fence Building



Source: <http://www.alamy.com/stock-photo/boma-fence.html>



Urban Sensing: Beyond Science

Interactive 12 metre D-Tower in Doetinchem, the Netherlands.

Activated by responses to a website that surveys the mood of the townspeople.

Fearful: **yellow**

In love: **red**

Source: Communications of the ACM, March 2008

The Robot Crowd

Exploration & Mapping with Autonomous Robot Teams



Thank You



Know Edge Limited

Location Information Innovation

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