

Using Crowdsourcing to Examine Land Acquisitions in Ethiopia

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Abstract

Land grabbing is a global phenomenon that has radically increased since 2005. Global and national estimates are highly uncertain due to the rapid pace of acquisition and lack of transparency. Here we demonstrate that through the use of the Geo-Wiki crowdsourcing tool and volunteers, we can estimate areas of settlement and cultivation that are part of large-scale land transactions for known areas where land acquisitions have taken place as well as for Ethiopia as a whole.

1 Introduction

Land grabbing refers to the acquisition of large tracts of idle farmland (>10,000 ha) by corporations and foreign states via long-term leases on state owned land to produce products for export such as biofuel, cash and food crops (GRAIN 2011, LAVERS 2012). Most land acquisitions are targeted in developing countries that are known for having weak systems of land governance (LAND MATRIX PARTNERSHIP 2012). To date, the scale of this “global land rush” is difficult to assess due to its rapid pace (RULLI et al. 2013), the lack of consistent data (ANSEEUW et al. 2012) and the non-transparent manner of the deals themselves (LAND MATRIX PARTNERSHIP 2012). Thus, global estimates about land transactions are highly uncertain, ranging from 47 Mio ha (DEININGER & BYERLEE 2011) to 83.2 Mio ha (ANSEEUW et al. 2012). In total, there are at least 62 investor countries targeting 41 countries worldwide (RULLI et al. 2013). However, the majority of acquisitions have occurred in only 11 countries which accounts for about 70 % of the area acquired (ANSEEUW et al. 2012). Seven of these countries are African and the majority are located in East Africa (LAND MATRIX PARTNERSHIP 2012). The reason for this concentration can be found in the availability of land and the significant potential to increase yields. Ethiopia is among the countries where national data on land transactions are unreliable due to a lack of transparency. The World Bank estimates that land acquisitions in Ethiopia were around 1.2 Mio ha in 2010 (DEININGER & BYERLEE 2011) while other estimates include 2.4 Mio ha in 2012 (LAND MATRIX PARTNERSHIP 2012) and 3.6 Mio ha reported by GRAIN (2011). Although the Ethiopian government claims that it only leases areas that are ‘idle’ (WILY 2010, SHEPARD 2011, LAVERS 2012), recent studies have revealed that large tracts of land

were already occupied by the local population before the land acquisitions took place (WILY 2010, RAHMATO 2011, LAND MATRIX PARTNERSHIP 2012, RULLI, et al. 2013). Therefore the aim of this study is to determine whether land acquisitions in Ethiopia have taken place in areas that are inhabited or where the local population is cultivating the land. If this is the case, the local population may be displaced and land acquisitions may be seriously affecting local livelihoods. Using the Geo-Wiki crowdsourcing tool and volunteers, we examined the land use in regions of known land acquisitions with high resolution satellite imagery, asking users to identify the degree of settlement and cultivation from the images. The crowdsourced data allowed us to calculate estimates of settlement and cultivated areas for the known land acquisitions and to further extrapolate these estimations to the whole country.

2 Methodology

Data on land acquisitions in Ethiopia were provided by the Land Matrix Partnership. In total, there were 56 land deals, covering an area of around 2.4 Mio ha (LAND MATRIX PARTNERSHIP 2012). The top three investors by investment size are India (1.1 Mio ha), Ethiopia (367,550 ha) and Saudi Arabia (260,000 ha), accounting for almost 75 % of all land acquired. Of these deals, only 14 are geo-referenced covering 585,712 ha (LAND MATRIX PARTNERSHIP 2012). The locations were only provided as single geographical coordinates, so buffers were calculated around these points to equal the size of the reported acquisitions in the database.

To determine the land use in these polygons, a crowdsourcing tool called Geo-Wiki (FRITZ et al. 2012) was used. Geo-Wiki uses volunteers to gather information about land cover based on Google Earth. For this study, Geo-Wiki was modified to focus on the identification of differing degrees of cultivation and settlement in randomly distributed 1 km pixels across Ethiopia. The online tool can be found at hackathon.geo-wiki.org. For each pixel, the level of settlement and cultivation had to be identified by the user from a set of four classes: (1) none, (2) low, (3) medium or (4) high. Users were also asked to indicate their level of confidence in the validation, ranging from low to high. Users were provided with simple instructions and the opportunity to contact experts via social media (e.g. Facebook, Skype) as well as by email. An example of the interface is provided in figure 1. In total 33 volunteers from all over the world participated. The participants were mostly academics (51 %) with almost half of them having experience in land cover classification (46 %). Using these volunteers, we collected around 80,000 points, which represents roughly 8 % of Ethiopia's land area. Of this, around 80 % of the validated pixels were supplied by the top three participants, having a medium to high confidence in their validations.

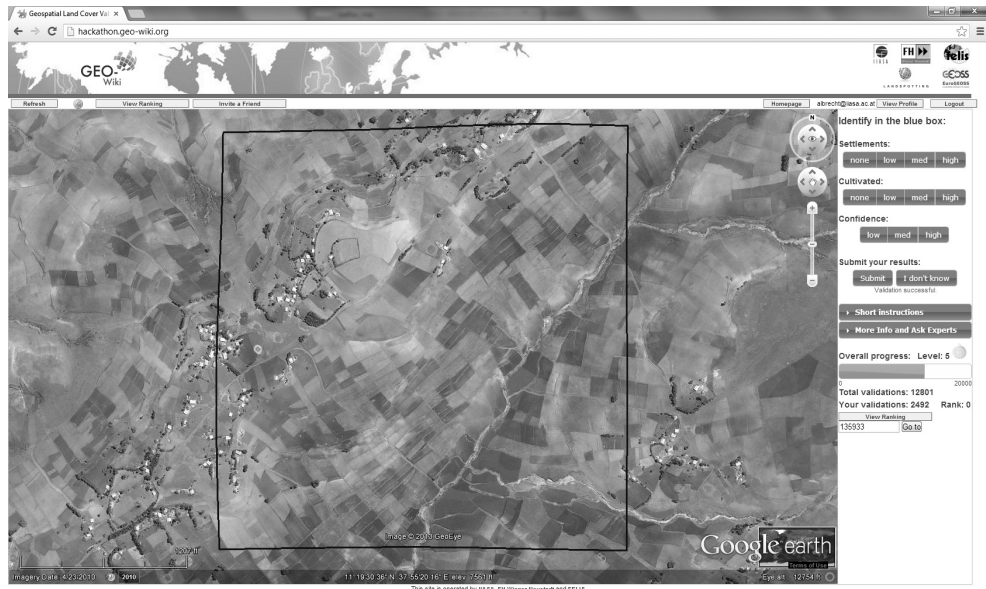


Fig. 1: Interface of hackathon.geo-wiki.org

3 Results

From the total number of validations, we extracted 2,547 validation points using the buffer areas of the geo-referenced land deals. This represents an area of 254,700 ha, covering almost 45 % of the 14 geo-referenced farmland acquisitions. We used the results of this crowdsourcing campaign to analyse whether land transactions have been taking place on land that is either settled, cultivated, or both, settled and cultivated.

The majority of land leased to investors was vacant. However, with respect to all settlement classes (low, medium and high), around 26 % of the area within the land acquisition zones was already occupied by the local population and 24 % of this land showed signs of cultivation (low, medium and high) (Table 1).

Table 1: Percentage of settled and cultivated land that was part of the land acquisitions

	Cultivation (%)				
Settlement (%)	None	Low	Medium	High	Sum
None	71.0	2.0	0.4	0.9	74.3
Low	5.2	6.8	2.9	6.6	21.6
Medium	0.1	0.2	0.7	2.7	3.7
High	0.0	0.1	0.3	0.0	0.5
Sum	76.2	9.0	4.4	10.4	100

If these percentages are extrapolated to produce a national estimate, then 627,266 ha of already inhabited area and 579,014 ha of area that is cultivated by the local population are part of large-scale transnational land deals. Preliminary research by the Land Matrix Partnership has indicated that nearly 227 Mio ha have been part of transnational land deals since 2001 (OXFAM INTERNATIONAL 2011). We can extrapolate these numbers to all land deals and therefore we estimate that approximately 59 Mio ha and 54.4 Mio ha for inhabited and cultivated areas, respectively, are threatened by the impacts of land transactions.

4 Conclusion

Several authors state that there is no 'idle' land in Ethiopia, or anywhere in Africa (WILY 2010, SHEPARD 2011). Foreign and national investors are usually interested in countries holding large tracts of non-cultivated land with agricultural potential. However, land transaction deals lack transparency, i.e. the actual tenure of the leased lands are unclear (WILY 2010, ANSEEUW et al. 2012). Governments lease land under the assumption that it is vacant and not in use for settlement or cultivation by the local population (WILY 2010, SHEPARD 2011, LAVERS 2012).

Based on the analysis presented here, we have demonstrated that this is partly true. However, in one out of four cases, the land acquired was already settled or cultivated (presumably) by the local population to some extent. In the case of Ethiopia, locals only have customary land holdings instead of real property (SHEPARD 2011), enabling the government to reallocate the land for public purposes (RAHMATO 2011). This uncertain land tenure has severe consequences for the local people that depend on the land for their daily livelihoods, e.g. the loss of pasture lands and water access points (ABBINK 2011). In addition to this, land transitions cause dispossession and displacement (RAHMATO 2011). Hence, regions where large-scale land acquisitions have occurred in inhabited areas might face high levels of malnourishment (RAHMATO 2011).

It is expected, that by 2015, more than 7 Mio ha representing 38% of the land currently cultivated by local farmers will be part of transnational land acquisitions (RAHMATO 2011). Hence, we conclude that current transnational land acquisitions pose a threat to the local farmers. We further highlight the fact that more research is needed to evaluate the short- and long-term impact of these land acquisitions.

References

- ABBINK, J. (2011), Land to the foreigners: Economic, legal, and socio-cultural aspects of new land acquisition schemes in Ethiopia. *Journal of Contemporary African Studies*, 29 (4), 513-535.
- ANSEEUW, W. et al. (2012), Transnational land deals for agriculture in the global south. The Land Matrix Partnership.
- DEININGER, K. & BYERLEE, D. (2011), Rising global interests in farmland. Can it yield sustainable and equitable benefits? World Bank, Washington, DC.

- FRITZ, S., MCCALLUM, I., SCHILL, C., PERGER, C., SEE, L., SCHEPASCHENKO, D., VAN DER VELDE, M., KRAXNER, F. & OBERSTEINER, M., (2012), Geo-Wiki: An online platform for improving global land cover. *Environmental Modelling & Software*, 31, 110-123.
- GRAIN (2011), Land grabbing and the global food crisis.
http://www.grain.org/bulletin_board/entries/4429-new-data-sets-on-land-grabbing.
- LAVERS, T. (2012), 'Land grab' as development strategy? The political economy of agricultural investment in Ethiopia. *Journal of Peasant Studies*, 39 (1), 105-132.
- RAHMATO, D. (2011), Land to investors: Large-scale land transfers in Ethiopia. IS Academie: Land Governance for Equitable and Sustainable Development, Addis Ababa.
- OXFAM INTERNATIONAL (2011), Land and Power. The growing scandal surrounding the new wave of investments in land. Oxfam Briefing Paper, 11.
- LAND MATRIX PARTNERSHIP (2012), Land Deals: Ethiopia. Online public database on land deals. <http://landportal.info/landmatrix/get-the-detail/by-target-country/ethiopia>.
- RULLI, M.C., SAVIORI, A. & D'ODORICO, P. (2013), Global land and water grabbing. *PNAS Proceedings of the National Academy of Sciences of the United States of America*, 110 (3), 892-897.
- SHEPARD, D. (2011), The role of the international finance corporation in promoting agricultural investment and large-scale land acquisitions. *Proc. of the International Conference on Global Land Grabbing, Land Deal Politics Initiative*.
- WILY, A. L. (2010), Whose land are you giving away, Mr. President? *Proc. of the Annual World Bank Land Policy & Administration Conference*, Washington DC.