

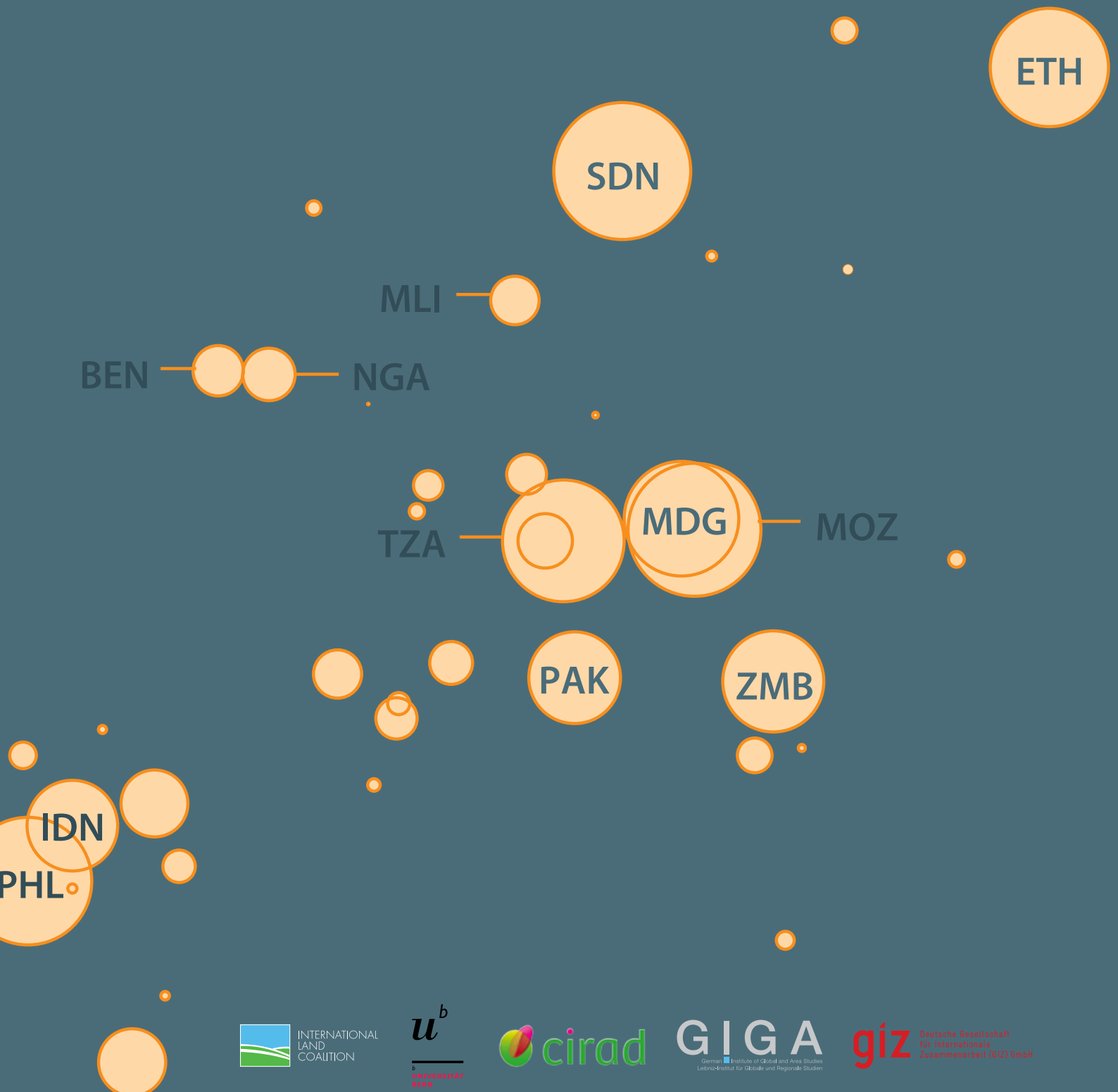


April 2012

# Transnational Land Deals for Agriculture in the Global South

Analytical Report based on the Land Matrix Database

Ward Anseeuw, Mathieu Boche, Thomas Breu, Markus Giger, Jann Lay, Peter Messerli and Kerstin Nolte



# landportal.info/landmatrix

The LAND Matrix, out of which this report was produced, is an online public database of large-scale land deals facilitated by a partnership between the following organisations:

**The International Land Coalition (ILC)** is a global alliance of civil society and intergovernmental organisations working together to promote secure and equitable access to and control over land for poor women and men through advocacy, dialogue, knowledge sharing and capacity building. [www.landcoalition.org](http://www.landcoalition.org)

**The Centre for Development and Environment (CDE)** is the University of Bern's centre for sustainable development research. Its mission is to produce and share knowledge for sustainable development in cooperation with partners in the global North and South. [www.cde.unibe.ch](http://www.cde.unibe.ch)

**CIRAD** works with the whole range of developing countries to generate and pass on new knowledge, support agricultural development and fuel the debate on the main global issues concerning agriculture. CIRAD is a targeted research organization, and bases its operations on development needs, from field to laboratory and from a local to a global scale. [www.cirad.fr](http://www.cirad.fr)

**The GIGA German Institute of Global and Area Studies** is a Hamburg-based research institute focused on political, economic and social developments in Africa, Asia, Latin America, North Africa, and the Middle East. Through a unique combination of area and comparative area studies, the GIGA examines not only the issues and challenges facing these specific regions but also new developments in North-South and South-South relationships. [www.giga-hamburg.de](http://www.giga-hamburg.de)

**The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)** offers customised solutions to complex challenges. We are an experienced service provider and assist the German Government in achieving its objectives in the field of international cooperation. We offer demand-driven, tailor-made and effective services for sustainable development. [www.giz.de](http://www.giz.de)

---

Edited by Tim Bending

Design by Vittorio Mastellone and Federico Pinci

Citation: Anseeuw, W.; Boche, M.; Breu, T.; Giger, M.; Lay, J.; Messerli, P. and K. Nolte. 2012. "The State of Large-Scale Land Acquisitions in the 'Global South'. Analytical Report Based on the Land Matrix Database". CDE/CIRAD/GIGA, Bern/Montpellier/Hamburg.

ISBN: 978-92-95093-71-3

©2012 CDE, CIRAD, GIGA

# Transnational Land Deals for Agriculture in the Global South

Analytical Report based on the Land Matrix Database  
Number 1: April 2012

By The Land Matrix Partnership  
(CDE, CIRAD, GIGA, GIZ, ILC)

Authors:

Anseeuw, W.; Boche, M.; Breu, T.; Giger, M.; Lay, J.; Messerli, P.; Nolte, K.



# Table of contents

Executive Summary	vi
Introduction	1
<b>1. Global overview – The rush for land for agriculture</b>	<b>3</b>
Effective implementation of large-scale land acquisitions	4
A growing phenomenon – although its pace has slowed	6
<b>2. Where are investments targeted?</b>	<b>7</b>
A national perspective: concentration on selected countries with specific characteristics	9
Local-level analysis: the role of land cover, yield gap and accessibility	16
<b>3. Investors and investor countries</b>	<b>21</b>
Where does the investment come from?	21
Characteristics of investors	24
<b>4. Learning more about the drivers</b>	<b>26</b>
Water as a driver: the role of water in large-scale land acquisitions	32
The destination of production from large-scale land acquisitions for agriculture	35
<b>5. Processes and impacts: How land deals are implemented</b>	<b>36</b>
Land rights and land governance in target countries	37
Contracts, transparency and the involvement of local communities	40
Bibliography	46
Appendix 1: Land Matrix Methodology	48

## Figures

Figure 1: Reported acquisitions for agriculture between 2000 and 2010	6
Figure 2: Land acquisitions by region, number of projects and size	7
Figure 3: Land acquisitions by sub-region in Africa, number of projects and size	8
Figure 4: Most targeted countries according to size of total reported acquisitions	9
Figure 5: The location of land deals in relation to suitable available land and the yield gap	13
Figure 6: Typology of land acquisitions according to Global Hunger Index 2011 and agricultural GDP	14
Figure 7: Share of land acquisitions in different global land cover classes	17
Figure 8: Share of land acquisitions in different classes of yield gap in target countries	19
Figure 9: The accessibility of land deal locations	19
Figure 10: Distribution of land acquisitions to different classes of population density in target countries	20
Figure 11: The origin of investment – top 20 countries	22
Figure 12: Land acquisition by type of investor	24
Figure 13: Land acquisition by type of investor on implemented projects	25
Figure 14: Land acquisitions by category of production	27
Figure 15: Land acquisitions by category of production, number of projects and size	28
Figure 16: Targeted regions for food production, number of projects	29
Figure 17: Region of origin of investors, food crop projects	29
Figure 18: Targeted regions for flex crops production, number of projects	31
Figure 19: Impact on water consumption for crop production in target countries	34
Figure 20: The destination of production from large-scale land deals	35
Figure 21: Destination for projects exporting production	35
Figure 22: Land Tenure Security	37
Figure 23: Former land use	39
Figure 24: Former Legal Land Owner	39
Figure 25: Involvement of the community	40
Figure 26: Number of projects with reported evictions	42
Figure 27: Reported Benefits	44
Figure 28: Projects with Reported Domestic Jobs Creation	45

## Tables

Table 1: Number of large-scale land acquisitions for agriculture and their size	3
Table 2: Land acquisitions for agriculture with contract signed	5
Table 3: Land acquisitions for agriculture where production has started	5
Table 4: Key socio-economic and institutional indicators of target countries	11
Table 5: Target countries and investment origin countries compared	23
Table 6: Sectors affected by land deals	26
Table 7: Water scarcity and water intensity of large-scale land acquisitions if implemented in investor countries	33
Table 8: Single Case Evidence on compensation	43
Table 9: Reliability Codes	48

## Boxes

Box 1: The case of Cambodia	10
Box 2: Testing the influence of yield gap and land availability on the targeting of investment	12
Box 3: Characterizing key aspects of land deal locations	16
Box 4: Sectors affected - Mainly agriculture, but other land uses are important as well	26
Box 5: Indicators for water balance changes in investors' countries	32
Box 6: Conflicting land rights and land use in Western Kenya: The case of Dominion Farms	38
Box 7: Communal land and the role of chiefs in Zambia	41

# Executive Summary

The 2007/2008 spike in the price of agricultural commodities was accompanied by a spike in media reports of huge transnational farmland acquisitions. Commentators were soon referring to “land grabbing”, or to a new “global land rush”. However, others have argued that the boom is really only a bubble which is driven by speculation and is thus not likely to materialize in real projects. While some have seen a major threat to the rights and livelihoods of the rural poor in the Global South, others have pointed to potential opportunities arising from new investment in a long-neglected sector. The real extent and the nature of this new phenomenon have been hard to assess, particularly because of the lack of reliable data.

The Land Matrix project was set up to respond to this gap. It is a partnership between the Centre for Development and Environment (CDE) at the University of Bern, the Centre de coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), GIGA German Institute of Global and Area Studies, Gesellschaft für Internationale Zusammenarbeit (GIZ) and the International Land Coalition (ILC). The Land Matrix project systematically collates and seeks to verify information on large-scale land acquisitions. It records transactions that entail a transfer of rights to use, control or own land through sale, lease or concession; that cover 200 hectares (ha) or larger; and that have been concluded since the year 2000. The main sections of the database are now publicly available (<http://www.landportal.info/landmatrix>).

This report draws on the Land Matrix database to analyze and better understand the phenomenon of large-scale agricultural land deals. It focuses on:

- » land acquisitions or investments (“deals”) targeting the Global South and Eastern Europe, including only low and middle income countries;
- » transnational deals, excluding deals where only

domestic actors are involved; and

- » deals where the envisioned land use is agricultural.

The Land Matrix figures confirm that there is a worldwide rush for land, although it has lost some of its initial pace. Many deals have been more than just speculation and strategic positioning. A large number of contracts have been signed and followed through by the implementation and start of operation of projects.

However, the “global land rush” is anything but a simple phenomenon. It involves a large number of target countries with very different investment conditions, as well as a great variety of actors with differing investment motives. Each land deal has its own specific characteristics. In addition to the complexity of the topic, there is a huge lack of transparency on land governance matters, in particular regarding planning and decision-making processes, contractual agreements, and issues of community involvement and compensation. Little is known about the short and expected long-term effects of these investments. Even with the data collated by the Land Matrix project, the picture of large-scale land acquisitions remains hard to decipher.

This study has five main parts. The first gives a global overview and emphasizes the indisputable reality of the large-scale land acquisitions. The second details the target countries and regions. It looks at the determinants of investment decisions and inquires whether investors really target marginal land. Thirdly, this study examines the investor countries, the investors and their characteristics. The fourth part focuses on learning more about the drivers of the global increase in demand for land. Finally, the processes of large-scale land acquisitions are examined, including an assessment of compensation and potential benefits.



## Global overview

The Land Matrix database provides evidence that the phenomenon may be even larger than assumed until now. This report suggests that:

**The rush for land is real, although it has fallen from its 2009 peak.** The Land Matrix contains reports of 1217 agricultural land deals, amounting to 83.2 million ha of land in developing countries. This is equivalent to 1.7% of the world's agricultural area. Data for 625 (51.4%) of these deals, covering 43.7 million ha (39.3%) have been evaluated as coming from a reliable source of information. Nonetheless, it is still difficult to estimate the true scale of the phenomenon, which may still be larger than all the reported deals together, because of the lack of transparency that surrounds many deals. Moreover, some of these deals lack information on the size of the deal.

**A significant proportion of reported deals lead to real legal transfers and implementation.** Out of 1217 agricultural land deals, 403 (32%) were reported as signed, corresponding to 26.2 million ha. 330 (27%) of the reported deals have so far led to implementation activity, affecting approximately 21 million hectares.

**The rush has slowed, but continues.** Reports of land deals declined after their peak in 2009, but the decline in the actual conclusion of contracts was slower. While some of this decline may be due to the easing of commodity prices, the financial crisis and new realism about the risks of the investments concerned, it may also reflect a new wariness about announcing very large-scale prospective deals, and a shift in media interest to other topics.

## Where are investments targeted?

The Land Matrix also provides evidence on the targets of investment, which can be analyzed on a global, regional or local scale, and in terms of quality of governance and level of economic development, and the types of natural resources involved.

**Africa is the most targeted region.** 754 land deals covering 56.2 million ha are located in Africa, compared with 17.7 million ha in Asia, and 7 million ha in Latin America. Reported land deals in Africa concern an area equivalent to 4.8% of Africa's total agricultural area, or the territory of Kenya.

**The majority of reported acquisitions are concentrated in a few countries.** A large number of countries (84) are reported to be targeted by foreign investors, but just 11 of them concentrate 70% of the reported targeted surface. Among those 11 countries, 7 are African, namely Sudan, Ethiopia, Mozambique, Tanzania, Madagascar, Zambia and DR Congo. In South-East Asia, the Philippines, Indonesia and Laos are particularly affected.

**Investors are targeting countries that are among the poorest, are poorly integrated into the world economy, have a high incidence of hunger, and weak land institutions.** The data reveal a tendency for investors to focus on the poorest countries, and those that are also less involved in world food exchanges. Our results confirm that investors are targeting countries with weak land tenure security, although they try to look for countries that, at the same time, offer relatively high levels of investor protection. Furthermore, 66% of the reported deals go to countries with high prevalence of hunger.

**Investors are competing for land with local farming communities.** Approximately 45% of the land deals target cropland or crop-vegetation mosaics. Intensive competition for cropland with local communities is therefore likely. Even where national indicators may suggest large reserves of suitable land, target locations are often found within cultivated areas and farmland. This analysis thus contradicts the notion that investments are mostly focused on "idle" land and serve to bring it into production.

**Forested areas are highly affected by land acquisitions.** About 24% of the land deals are located in forested areas, representing 31% of the total surface of land acquisitions.

**Investors have a tendency to target land with high yield gaps, good accessibility and considerable population densities.** Spatial analysis of land deals reveal that investors tend to target cropland where the yield gap is relatively large, and where additional inputs (water, fertilizers, seeds, infrastructure and know-how) may create greater yields. Accessibility is another criterion for choice of target area: the majority of deals may be less than 3 hours away from the next city. More than 60% of all land deals target areas with population densities of more than 25 persons per km<sup>2</sup>.

### Who are the investors?

While the focus of early media reports was on the role of public bodies such as sovereign wealth funds, and on certain investor countries, it has so far been difficult to get a comprehensive picture of the type of investors involved in large-scale land acquisitions. The Land Matrix provides data on the type and origin of investors.

**A new regionalism is emerging.** According to the Land Matrix results, investment originates from three groups of countries: emerging countries (Brazil, South Africa, China, India, Malaysia, Korea); Gulf states; and countries in the “Global North” (USA, European countries). There is a strong trend of intra-regional transactions with, for example, firms from Brazil, Argentina and South Africa seeking to replicate domestic success through investments in their regional neighborhoods.

**Investment is coming from wealthier, food importing countries.** Countries of investment origin have an average GDP per capita four times higher than target countries. The former are also net importers of food, with net imports of US\$ 13.9 per capita (US\$ 306 per capita for countries that are only the origin of investment, not targets).

**Investors are both public and private actors.** The Land Matrix data reveal four different types of investors: private companies (442 projects; 30.3 million ha); state-owned companies (172 projects,

11.5 million ha); investment funds (32 projects, 3.3 million ha); and private-public partnerships (12 projects, 0.6 million ha).

**Partnerships are important for investors.** Foreign investors have built partnerships with domestic companies in 12% of cases, probably as a way of reducing the costs of complex local administration, and for legislative reasons in some contexts. Foreign investors also often act in partnership with each other. Investors from USA, UK and South Africa have formed such partnerships in about a third of the deals in which they are involved.

### What is driving the land rush?

The driving forces behind large-scale land acquisitions include increased global demands for different crops and, at a more fundamental level, expected future demands for water, food and energy. Investor choices about the location of land acquisitions and the types of crops grown are a reflection of the expectations created by these long-term trends.

**The rush for land is being driven by long term trends.** The recent surge in investor interest has been triggered primarily by the food price crisis of 2007-2008. But far from being a brief phenomenon, the land rush is likely to continue in the long run because of the trends that are driving it. Among the main drivers, we find expectations of rising prices, population growth, growing consumption rates and market demand for food, biofuels, raw materials and timber, carbon sequestration and financial speculation.

**Investors are acquiring water.** In some regions of the world, water scarcity is increasingly a key constraint on agricultural production, leading to escalating competition for water resources. Calculations reveal that in two thirds of the countries targeted, water consumption will increase as a result of large-scale land acquisitions. Overall, the increase in water consumption in these countries is estimated at 12.7%. Land acquisitions can be expected to have a positive effect on the freshwater balance of investors’ countries of origin, by contrast.

**Both food and non-food crops are important, but investors are seeking flexibility to switch between them.** Drawing on reliable data sources, the Land Matrix reveals that food production accounts for 34% of investments, non-food crops account for 26%, “flex crops” for 23% and “multiple uses” for 17%. The importance of non-food and “flex” crops shows the extent to which investors are attracted to biofuels and other, more traditional, “high value crops” such as rubber (37 projects).

The “flex crops” (soybean, sugarcane and oil palm) are so called because these crops can either be used for food or non-food purposes (particularly for biofuel). The importance of flex crops and multiple use projects makes the real balance between food and non-food production difficult to determine. It also suggests the importance to investors of flexibility in the face of risks linked to price volatility, commercialization, and so on.

**Most projects are export-oriented.** For the 393 cases where information on the main destination of production is available, export is the principal aim of production. Domestic markets are of marginal concern. Of the projects that are export-oriented, 43% aim to send the production to the country of origin of the investors. These projects are mainly concerned with food crop production (42%), which supports the argument that food security is one of the drivers of the land rush.

### **How do large-scale land acquisitions take place, and what are the impacts?**

Two of the chief causes of concern about large-scale land acquisitions relate to the way they are decided and carried out, and their local impacts. For a number of the cases recorded in the Land Matrix database, information has been reported on such issues as consultation, on who is recognized as the vendor or leaser, on who used the land prior to the acquisition, on the displacement of former land users, and on compensation, employment and other benefits.

**Land governance systems are often not adequate to deal with large-scale land investments.** The involvement of foreign investors often has repercussions for the local land tenure system. It is common that the prospect of attracting foreign investment may alter the significance and role of formal land rights that are often held by state. Local authorities such as village chiefs who often play a key role in allocating land rights appear to frequently fail to act in the community’s interest.

**Governments are selling land that is used by smallholders.** The analysis of the limited number of projects with information on previous land use confirms that the land acquired by investors is often used by smallholders. However, the same land is typically sold or leased by the state; this being a direct consequence of diverse land tenure systems, in particular in African countries.

**Acquisitions are rarely based on Free, Prior and Informed Consent (FPIC) and there is limited but worrying evidence on evictions.** The evidence from the Land Matrix reveals that only very few projects seem to engage in adequate consultations with local communities. In the few cases with community involvement, the consultation process is typically described as “limited”. Moreover, the database reports a small number of projects that lead to substantial evictions. While information on the sensitive issue of displacement is – not surprisingly – scarce, the fact that most land acquired was at least partially used by local farmers, gives cause for concern.

**Rates of compensation are often very low. For a limited number of cases, the Land Matrix has information on compensation (typically stated intentions).** Compensation arrangements range from in-kind grants to the community, such as building social or productive infrastructure, to cash-payments for affected individual farmers. One-off payments are frequent, but lease fees are also paid in some cases, and range from 7 US cents to 100 US\$ per ha annually. Such variation is linked to the lack of functioning land markets and corresponding

price signals in many affected regions, a situation that some investors may exploit to their advantage. As those compensation or lease payments are often received by local authorities on behalf of communities, they may be prone to theft.

**Some infrastructure, but little evidence on benefits from employment generation.** Evidence on how local communities may otherwise benefit from investment projects is also scarce. The great majority of projects with reported benefits mention infrastructure improvements such as health or education facilities, better access to markets and project infrastructure that can be used by the local population.

The limited information on employment creation suggests that for some projects, this effect could be significant. However, it is difficult to distinguish between additional employment creation and job replacement, in particular where smallholders lose access to land and their former employment.

## Key conclusions

In summary, this report confirms that the drive for land acquisition is a global trend that already has considerable impacts. The database on which it is built, the largest of its kind, shows that Africa is the continent mainly targeted. On global scale, land deals since 2000 are reported to affect an area equivalent to more than 1.7 percent of the global agricultural area.

Investors from countries that are wealthier and net food importers are acquiring land in poorer countries with high incidences of hunger and weak land governance. Both food and non-food crops are produced, often for export.

Although there is a tendency to acquire land in countries with large reserves of uncultivated land, a closer examination reveals that almost half of the deals concern areas that are already used for crops. Investors target areas that are easily accessible, have a high yield gap and have considerable population

densities. High competition for land with existing users is unavoidable.

Acquisitions are rarely based on Free, Prior and Informed Consent (FPIC) and there is limited but worrying evidence on evictions. Scarce reports on other benefits suggest some infrastructure provision, but provide little evidence on benefits from employment generation.

Large-scale land acquisitions are also partly targeting forested and grazing land, creating trade-offs with environmental and social goals. There are also indications that water stress may increase as a result of land acquisitions in target countries.

# Introduction

The 2007/2008 spike in commodity prices marked the start of a surge in media reports on farm land acquisitions that were soon referring to a new “global land rush”. However, others have argued that the boom is really only a bubble, and not likely to materialize in real projects. While there have been common concerns expressed that the rush for land may constitute a major threat to the rights and livelihoods of the rural poor in the Global South, others have pointed to potential opportunities for food security and rural development arising from new investment in a long-neglected sector.

The real extent and the nature of this new phenomenon have been hard to assess, particularly because of the lack of widely available, reliable data. There is a huge lack of transparency on land governance matters, in particular regarding planning and decision-making processes, contractual agreements, and issues of community involvement and compensation. Little is made public, or even known about the short and long-term effects of these investments.

In addition, the “global land rush” is anything but a simple phenomenon. It involves a large number of target countries with very different investment conditions and land governance systems, as well as a great variety of actors with differing investment motives. Each land deal therefore has its own specific characteristics, defying attempts to make easy generalizations.

The Land Matrix project was set up to respond to the lack of widely available, reliable data on large-scale land transactions in the Global South. It collates and evaluates data from a wide range of sources on large transnational transactions in the agricultural sector and other sectors. This report represents the first thorough analysis of the Land Matrix database.

The Land Matrix figures confirm that there is a worldwide rush for land, and while the rate of land acquisition in developing countries appears to have lost some of its initial pace, the Land Matrix data does not support the argument that this rush is only a speculation-driven bubble, unlikely to materialize in real projects. A large number of land acquisitions have been followed by project implementation.

## **The Land Matrix - Tracing, verifying and following-up land deals world-wide**

Since 2009, a partnership between the Centre for Development and Environment (CDE) at the University of Bern, Centre de coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), GIGA German Institute of Global and Area Studies, Gesellschaft für internationale Zusammenarbeit (GIZ) and the International Land Coalition (ILC), has been systematically collating and verifying information on large-scale land acquisitions. This Land Matrix records transactions that entail a transfer of rights to use, control or own land through sale, lease or concession; that cover 200ha or larger; and that have been concluded since the year 2000. The database is now the largest of its kind.

The data comes from a variety of sources including media, international and non-governmental organizations, as well as academic (and in part field-based) research. Reports are chiefly sourced through the two most active Internet portals that deal with land transactions, [www.commercialpressuresonland.org](http://www.commercialpressuresonland.org) of the Land Portal operated by the International Land Coalition (ILC) and [www.farmlandgrab.org](http://www.farmlandgrab.org) operated by the NGO GRAIN.

Data classified as reliable are available via the Land Portal (<http://www.landportal.info/landmatrix>) and include information on name of investor, country

of origin, target country, hectares of acquisition and sector of production. The database contains further fields of information that have been collected where possible, on which this report has also been based, but which are not made public for legal reasons.

### How reliable is the data?

The database ranks data reliability on a scale of 0 and 3. A reliability rank of 0 is given to land transactions only reported by the press or other sources (typically websites), and that have not undergone any process of verification. A reliability rank of 1 is assigned to transactions reported by sources judged more reliable, in particular research papers based on field research, company websites and government records. A reliability rank of 2 is given to land transactions that have been cross-checked by the Land Matrix Partnership through questionnaires submitted to organizations working in the host country. A rank of 3 is assigned to cases where contractual agreements have been made publicly available. Cases with reliability ranking of 1, 2 or 3 are referred to as “**reliable**”. The term “**reported**” refers to all cases, including those with a ranking of 0. As the database matures, cases will be revised in terms of their reliability.

However, it must be noted that even where data has been classified as “reliable”, it can still be subject to change.

Various factors may also influence the coverage of the database. One factor is media bias (e.g. a tendency to focus more on some countries as “land-grabbers” than others). Another is the effect of different levels of transparency. Thus Peru’s transparency laws allow access to information on all large-scale land acquisitions, for example, whilst reports and research may under-represent the phenomenon in Congo Basin states. Information on the implementation status of each acquisition (whether the project is in the start-up phase, in operation, etc.) is limited, being available only for some cases reported as having a completed contract.

### The coverage of this report

This report covers:

- » Countries of the ‘Global South’, including only low and middle income countries, and countries in Eastern Europe, as targets of land acquisition.
- » Acquisitions by foreign investors (excluding purely domestic transactions).
- » Agriculture-oriented projects (although globally assessing the significance of land acquisition in other sectors, in-depth analyses will exclude mining, tourism, etc.).

The figures presented in this report thus differ significantly from those in previous reports based on the Land Matrix such as “Land Rights and the Rush for Land” (Anseeuw et al., 2012) which used a less selective range of data (covering sectors such as forestry and mining, for example). This report also reflects updates to the database as of February 2012, including new entries and revisions based on the ongoing cross-checking process. More details on the methodology of the Land Matrix are given in Appendix 1.

This report is structured in 5 parts. Part 1 gives a global overview and emphasizes the indisputable reality of the large-scale land acquisition phenomenon. The second part details the target countries and regions and, notwithstanding announcements that marginal land will be targeted, the factors that appear to influence investors’ choice of locations. Part 3 presents investor countries, the investors and their characteristics. Part 4 focuses on the drivers of land acquisitions. Finally, the processes of large-scale land acquisitions are detailed in Part 5, presenting the different land tenure systems affected, the previous land uses/users, the displacements occurring, as well as the information available on compensation and potential benefits.

# 1. Global overview – The rush for land for agriculture

## The rush for land – A reality

The Land Matrix contains reports of 1217 agricultural land deals, amounting to 83.2 million hectares of land in developing countries. This includes all reported and reliable data on transactions, concerning solely agriculture. Of these reports, data on 625 deals (51.4% of total) covering 32.7 million hectares (39.3% of total) are classified as reliable, and we can say with confidence that in these cases a land transaction, i.e. at least a transfer of land rights, has taken place (Table 1). The identified surface areas represent respectively the area of France and Germany combined (reported data) or Germany, Belgium and the Netherlands together (reliable data), and are equivalent respectively to 1.7% and 0.7% of world's agricultural land.<sup>1</sup>

The results emerging from the Land Matrix thus provides evidence that the scale of the phenomenon affecting developing countries is significantly larger than assumed until now, even if only agricultural

deals are considered. The World Bank report, "Rising global interest in farmland" (2010) presents a figure of 46.6 million hectares worldwide reported in the press between October 2008 and August 2009. The Land Matrix figures reveal a reported area 78.6% greater than this (although more reliable data only account for an area 29.8% lower than the World Bank estimation). One of the major reasons explaining this difference is the different time period considered.

A significant proportion of the deals that are reported, but for which no reliable information source yet exists, have very probably taken place. Indeed, the reported data may underestimate the real scale of the phenomenon. The main reason for caution in estimating the scale of transactions is the non-transparent manner in which these deals are taking place. Very little information is readily available regarding these deals.

**Table 1: Number of large-scale land acquisitions for agriculture and their size**

	Number of deals	Number of hectares
Only Reported	592	50481345
Reliable	625	32735012
Total	1217	83216357

Source: Authors' calculations based on the Land Matrix.

<sup>1</sup> Global agricultural land amounts to 4889 million ha, source: <http://faostat.fao.org/>

# Effective implementation of large-scale land acquisitions

It is evident that a high proportion of deals that are reported, and that can even be classified as from a reliable source, are never implemented. Out of the 1217 agricultural land deals, amounting to 83.2 million hectares of land in developing countries, 403 deals (31.5%) covering 26.2 million hectares were reported as actually signed (the reliable data covers 223 cases and 11.3 million hectares, see Table 2). To estimate the area that has been brought into production under these deals is still more difficult, as implementation may be only partial. However, 330 projects, nominally covering 21 million hectares, are reported to have started production. This represents approximately the area of the United Kingdom. Although the latter represents only 25.3% of area covered by all reported deals, it does represent an 81.9% implementation rate for deals that have been reported as signed.

The difference between the reported deals and projects that have started production is related to the following factors:

- » Some operators may have underestimated the managerial and technical difficulties related to the implementation of large land deals in often difficult ecological, political, bureaucratic and socio-economic environments. This issue is likely to be particularly relevant to operators that do not have an established track-record in agriculture.
- » Investors may not be successful in gaining the

attributes they seek, thus leading the investor to pull out. This was reportedly the case in Mali and Madagascar among others (Oakland Institute, 2011a; Andrianirina-Ratsialonana et al, 2011). Brautigam (2011) gives the example of a Chinese parastatal backing down on its allegedly well-received request to access 100,000 ha to three million hectares of forested lands to grow oil palm, following feasibility studies which showed insufficient transport and infrastructure support from the area.

- » Some public announcements of land deal negotiations may reflect the strategic and speculative positioning of investors aiming to secure land even in the absence of specific investment plans in the short term, but in the expectation that land prices will increase.

The gap between reported deals, reliable cases, and implemented projects, should not cause complacency. Indeed, announcements, negotiations and certainly contracts signed but not implemented may still exacerbate pressures on land and lead to displacements or a weakening of land rights for the local population. Potential benefits of long-term investments, such as irrigation and other infrastructure, access to markets and jobs (see Chapter 5), will not materialize either.



**Table 2: Land acquisitions for agriculture with contract signed**

	<b>Number of deals</b>	<b>Number of hectares</b>
Only Reported	180	14900000
Reliable	223	11300000
Total	403	26200000

*Source: Authors' calculations based on the Land Matrix.*

**Table 3: Land acquisitions for agriculture where production has started**

	<b>Number of deals</b>	<b>Number of hectares</b>
Only Reported	128	8235326
Reliable	202	12800000
Total	330	21035326

*Source: Authors' calculations based on the Land Matrix.*

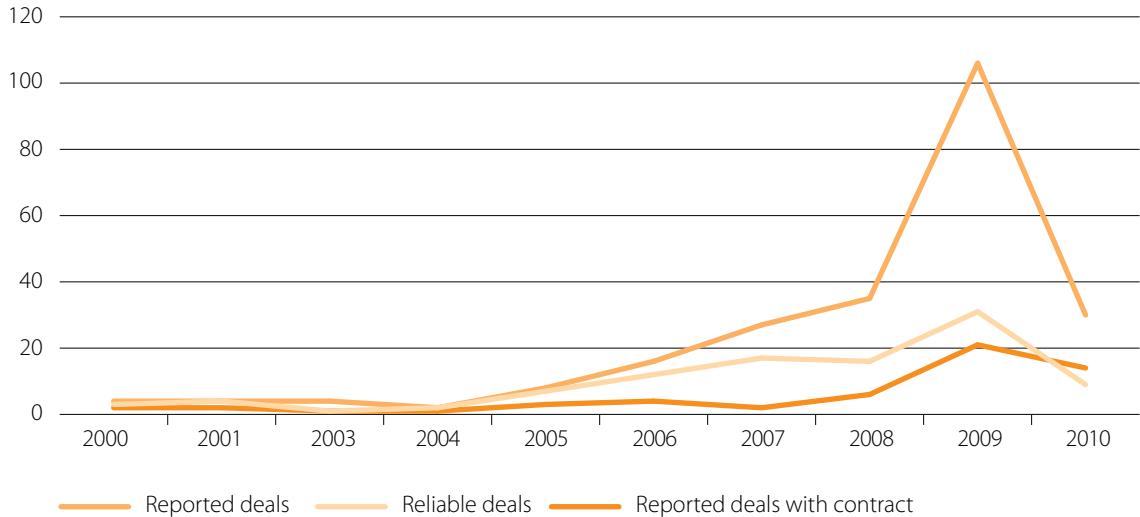
# A growing phenomenon – although its pace has slowed

The Land Matrix data (reported and reliable) suggest that the rate of acquisitions remained low until 2005, whereafter it accelerated greatly, peaking in 2009 and slowing down again in 2010 and following years (Figure 1). The surge of 2005–2009 can be related to the food price crisis and a range of factors that triggered new investor interest in land (Anseeuw et al., 2012). The slowdown in 2009 is likely to be partly due to the 2008–2009 financial crisis and a consequent deceleration in the rate of acquisition. It may also be due to potential investors becoming more realistic about the risks of difficult conditions, technically but also socio-politically. This was the case in Madagascar following the withdrawal of Daewoo (Andrianirina-Ratsialonana et al., 2011). Thirdly, it may be that significant critical press coverage has made potential investors more wary of large-scale acquisitions in poor countries, or at

least less inclined to publicly announce new large acquisitions.

This being said, overall, the data are suggestive of a long-term trend of growing commercial interest in land, somewhat masked by a possible new-found wariness (since 2009) about attempting very large-scale land deals, or publicizing those under negotiation. A similar trend is revealed by the reliable dataset and by deals where a contract is reported as signed. However, the declines in the latter since 2009 are less steep. Reporting of the signing of contracts has remained relatively constant at a level significantly higher than in the early 2000s.

**Figure 1: Reported acquisitions for agriculture between 2000 and 2010**



Source: Authors' calculations based on the Land Matrix.  
Note: N = 245 for reported data & N = 102 for reliable data.

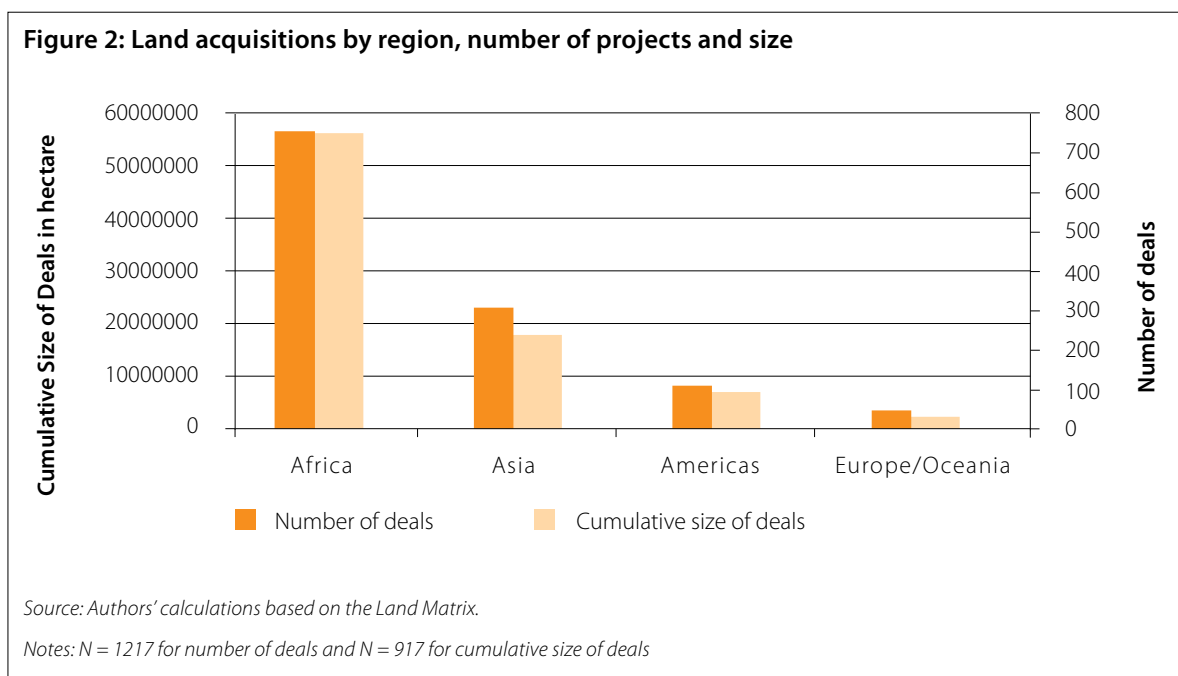
## 2. Where are investments targeted?

Africa appears to be the main target of the land rush. Of the 1217 publicly reported deals, 62% of the projects covering a total area of 56.2 million hectares are located in Africa, while some 17.7 million hectares are reported in Asia, and 7 million hectares in Latin America. The remaining 2.2 million hectares are in other regions, particularly Eastern Europe and Oceania (Figure 2).

For Africa, the reported large-scale land acquisitions for agricultural production correspond to the total territory of Kenya, or 4.8% of Africa's total agricultural areas.<sup>2</sup> Africa stands in stark contrast to other continents, where large-scale land acquisitions account for 1.1% and 1.2% of agricultural land in Asia and Latin America respectively. Even if only a small share of the agricultural area in Asia is targeted by land acquisitions, the 307 reported deals make up a considerable surface of 17.8 million hectares.

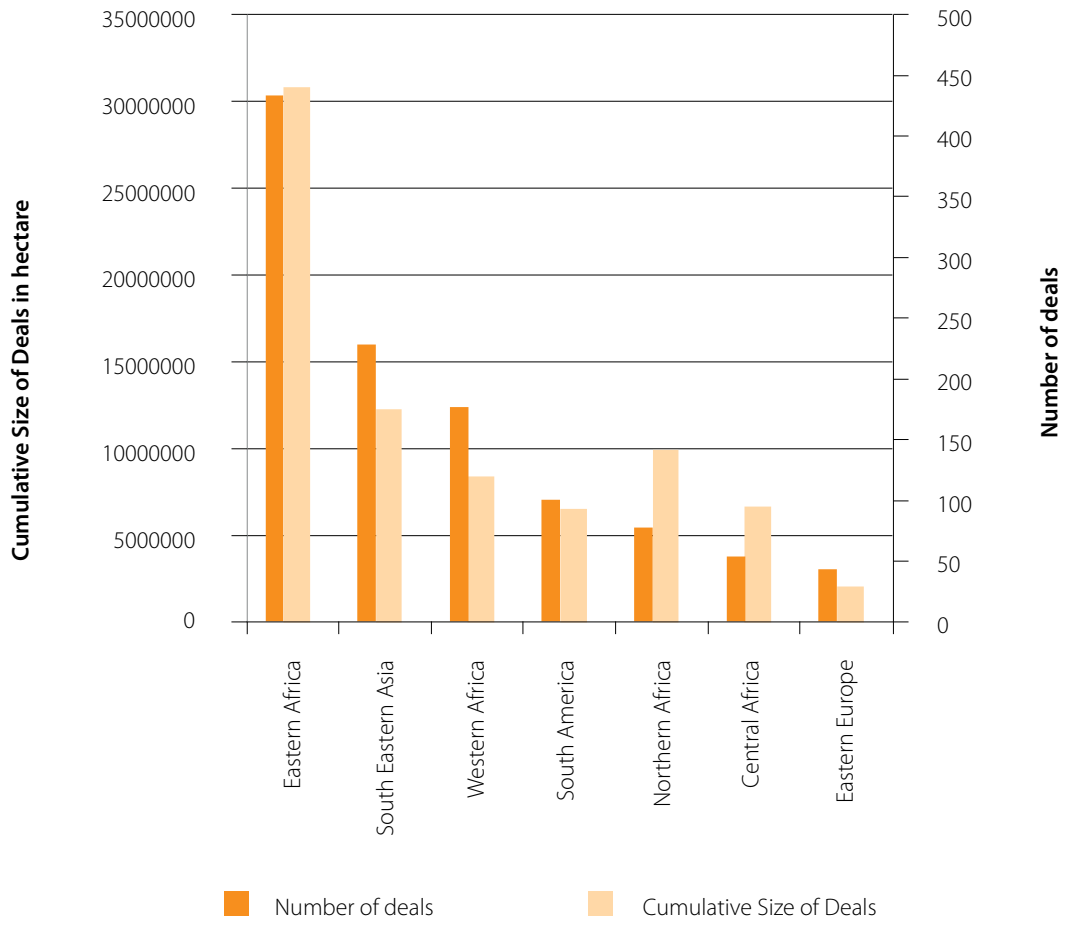
This pattern of distribution may reflect the strong media interest in African deals, as much as real-world differences in volumes of transactions. That said, in Asia, population density and current land pressures seem to constrain large-scale land acquisitions; Latin America has known a strong concentration pattern of its agricultural land in the 1980s, leaving less room for the present large-scale acquisition dynamics.

There are also significant differences between sub regions (see Figure 3). Eastern Africa is clearly the most targeted area in the World with 1/3 of the reported projects and area affected. The concentration of deals in this part of the world is even more significant (45%) if we only consider reliable data. Western Africa appears to be the third most targeted area (15% of all projects), after South-East Asia (19% of all the projects; 25% according to reliable data).



<sup>2</sup> Source: <http://faostat.fao.org/>

**Figure 3: Land acquisitions by sub-region in Africa, number of projects and size**



Source: Authors' calculations based on Land Matrix data.

# A national perspective: concentration on selected countries with specific characteristics

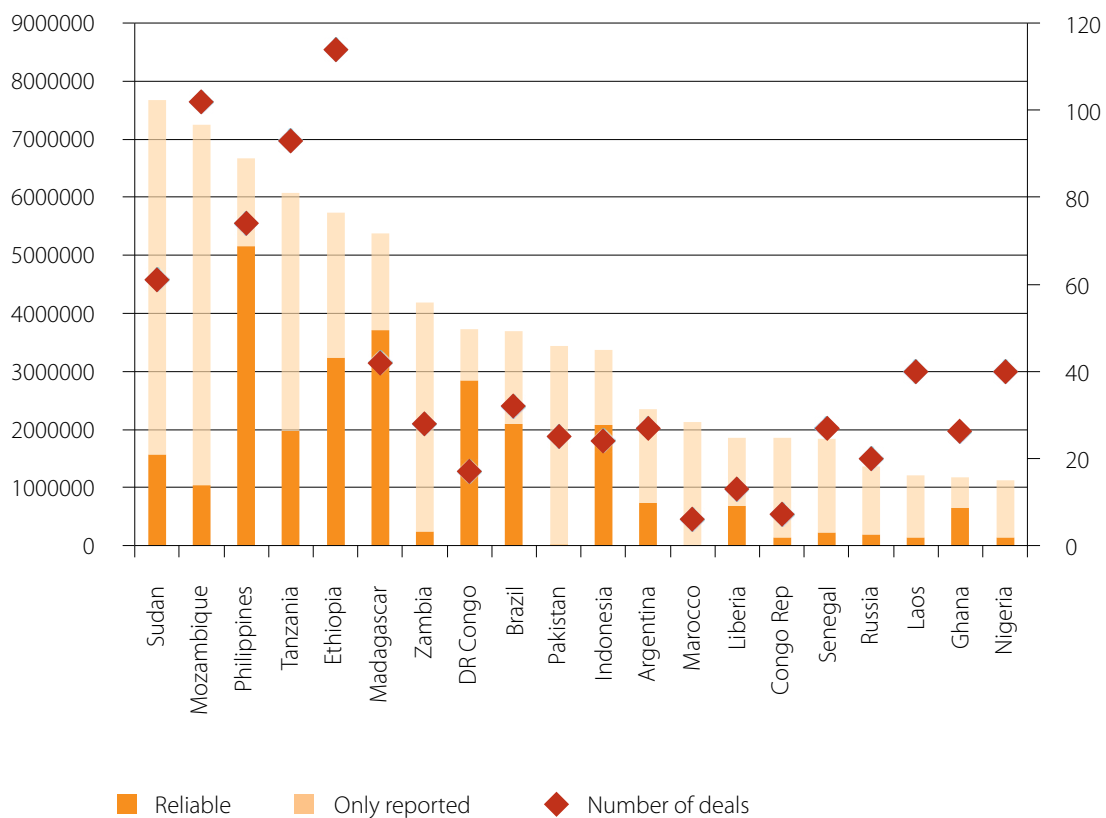
## Few countries are hosting the large majority of land acquisitions

The demand for land by foreign actors seem to be widespread in developing countries around the world. Although a large number of countries (84) are targeted by foreign investors, 11 countries of them concentrate 70% of the reported targeted surface. Among those 11 countries 7 are African (Figure 4).

African countries also represent half of the countries

in the top 20 most targeted countries for land acquisition for agricultural production according to reported observations. Countries such as Sudan, Ethiopia, Mozambique, Zambia, DR Congo and Tanzania are facing a large part of the reported demand for land by foreign actors, both in terms of cumulative size and number of projects. Although the share of reliable observations differs from one country to another, most of these countries are still among the most targeted even when only reliable

**Figure 4: Most targeted countries according to size of total reported acquisitions**



Source: Authors' calculations based on Land Matrix data.

observations are considered. In other words, the strong interest of investors for African countries can be confirmed by our data.

Asia is the second most targeted continent. South-East Asian countries such as the Philippines (74 deals on 6.6 million ha; or 5.2 million ha according to reliable data), Indonesia (24 deals on 3,36 million ha; or 1.3 million according to reliable data) and Laos (40 deals on 1.1 million ha reported; 140,000 ha reliable) are most prominently represented. In South Asia, Pakistan and India are also among the main targeted countries.

### BOX 1:

#### The case of Cambodia

Cambodia does not appear among the 20 most targeted countries. However, investor's interest in this country is significant as 60 deals are recorded in the Land Matrix (for a cumulative size of 400,000 ha). This particularity illustrates the diversity of the phenomenon and the difficulty to fully measure the intensity of the investor interest in a particular country.

In Latin America, Brazil (32 reported deals on 3.7 million ha; 2.1 million ha reliable) and Argentina (27 reported deals on 2.7 million ha; 1 million ha reliable) are the most targeted. Both Brazil and Argentina already have well-developed agricultural-food value chains. Domestic actors operate large-scale farms, facilitating the establishment of foreign investors who are able to mimic these models (Collier & Venables, 2011). Many other Latin American countries are also facing commercial pressure on land, yet with different drivers (mining and conservation) and/or actors (domestic investors), as in the cases of Peru, Chile and Colombia.

Former socialist countries such as Ukraine and Russia are the main non-OECD European countries concerned by this phenomenon as target countries. Food crop production, particularly cereal production, is the main reason for investors to acquire land in

those countries. Farmlands are among the most fertile in the world and the land tenure structure is favorable for investors (Cochet and Merlet, 2011). Because of our coverage limitations, the scale of the phenomenon in this part of the world is underrepresented.

### Socio-economic and institutional characteristics of target countries

There are many differences between countries that are targeted by investors, particularly in terms of the intensity with which they are targeted. Nonetheless, it is possible also to identify some key characteristics that they tend to share. Table 4 compares different categories of target countries and countries of origin according to selected socio-economic and institutional development indicators (all target countries; countries that are only targeted and are not simultaneously the origin of investment; the 10 most affected target countries and the 17 least affected target countries).

Table 4 shows that the most affected countries are significantly poorer than both the least affected countries and the average of targeted countries. They are also less involved in world food exchanges. This confirms that the poorest countries, with the least developed economies, in particular agricultural economies, are the most targeted by investors.

Data on governance suggest that institutions are significantly weaker in the most affected countries (those with most reported deals) than in average target countries. These institutions encompass regulatory frameworks, government effectiveness, the rule of law, corruption control and investor protection. However, governance indicators are not significantly weaker for the countries with most signed deals and where production has most frequently begun. This result suggests that governance issues, especially regarding investor protection, are a determining factor for effective engagement in agricultural production.

But land governance institutions present a different case. The most affected countries (including countries with the highest number of contracts signed or

projects already in production) have weaker land institutions, and this is true for countries with the highest number of contracts signed and projects already in production, as well as for countries with the most reported deals. This provides clear evidence that investors are targeting the poorer countries with weak land tenure security (Arezki et al., 2011). Investors are interested in countries that combine a strong general institutional framework, that protects their investment and allows them to smoothly operate their business, with low land tenure security that gives them easy and possibly cheap access to land.

**Table 4: Key socio-economic and institutional indicators of target countries**

	Targeted countries	Targeted countries (not origin of investment)	Most affected countries			Least affected countries
			(total reported deals)	(signed deals)	(started production)	
No of observations (countries)	84	52	10	10	10	17
<b>Basic socio-economic characteristics</b>						
Population (2010, millions)	63.6	17.3	38.4	37.3	39.7	8.07
GDP per capita (2010, US\$ millions, 2005 PPP)	4,404	3,497	1,649***	1,080***	1,353***	7,278
Food imports (2009, US\$ millions)	42,036	9,952	11,088**	8,309***	9,220***	16,094
Food exports (2009, US\$ millions)	45,021	9,096	7,430**	6,115***	6,844***	14,910
<b>Institutional Variables</b>						
Regulatory Quality Rank (%)	36.50	33.35	28.66**	31.34	33.30	38.05
Voice Accountability Rank (%)	35.63	35.22	31.23	39.76	35.68	42.76
Political Stability Rank (%)	31.76	33.00	28.91*	33.06	31.65	43.86
Government Effectiveness Rank (%)	35.77	32.63	28.42**	28.94	31.14	38.67
Rule of Law Rank (%)	33.25	30.59	27.96**	30.56	29.85	35.82
Control of Corruption Rank (%)	33.83	34.32	31.76**	31.91	28.18	38.24
Investor Protection Rank (%)	5.03	4.79	4.56*	4.76	4.72	4.76
Land tenure security Rank (%)	2.29	2.16	1.87***	1.93***	1.86***	2.34

*Notes: The table shows unweighted averages of country characteristics. "Most affected countries" were selected in three alternate ways: according to the number of reported deals, according to the number of signed deals, and according to the number of deals where production was reported to have begun. The t-test was used to test the significance of the difference between the averages for all targeted countries, and the averages for the 10 most affected countries (according respectively to reported deals, completed deals, and started production). The statistical significance of the differences between most affected country averages and all target country averages is shown as follows: \*\*\* denotes significance at the 1% level (very significant), \*\* at the 5% level and \* at the 10% level.*

*Source: Authors' calculations based on the Land Matrix.*

## Agro-ecological characteristics of target countries

Resource endowments, and particularly agro-ecological characteristics, are considered to be important factors in determining the targeting of investment (Arezki et al., 2011). Among these characteristics, the “yield gap” and land availability (see Box 2) have been described as major determinants of patterns of land acquisitions, and have been used to provide a typology of investment countries (Deininger and Byerlee 2011, 2012). The yield gap is a measure to compare current yields with potential yields in a given location. It is the difference between performance that is technically achievable and the effective yield observed (FAO and IIASA cited in Arezki et al., 2011). One of the underlying hypotheses explaining the interest in farmland is the availability of land where current yields are low compared to the potential yields, as such land can be improved and its market value increased. Land availability refers to land suitable for rainfed cultivation that is currently non-cultivated, and that has a population density of less than 25 persons per km<sup>2</sup>.

The Land Matrix data was used to test the influence of land availability and yield gap on the distribution of investment interest (Box 2, Figure 5).

This analysis confirmed the usefulness of the typology of target countries proposed by Deininger and Byerlee (2012). Figure 5 shows how target countries can be classified into four groups:

- » **Type 1: Suitable land available, high yield gap:** These countries (upper-right square in Figure 5) appear to have both land resources of medium and good quality available, and significant potential for increased yields. As Deininger and Byerlee (2012) observe, many target countries fall within this category. Land Matrix data suggests that target countries of this type represent the largest share of land acquired, amounting to 58% of all land deal surfaces. Among the most affected countries in this category, the majority are African, especially from East Africa.

- » **Type 2: Little suitable land available, high yield gap:** In this category, we find a number of West African countries, but also Ukraine, Cambodia and Morocco. Even if only 13% of acquired land falls into this category of target countries, competition for land with the local population may be especially intense, as land is already scarce.
- » **Type 3: Little suitable land available, low yield gap:** This group accounts for 17% of all acquired land surfaces and is dominated by the Philippines, Indonesia and Pakistan. Even though endowed with little available suitable land, these countries

### BOX 2:

#### Testing the influence of yield gap and land availability on the targeting of investment

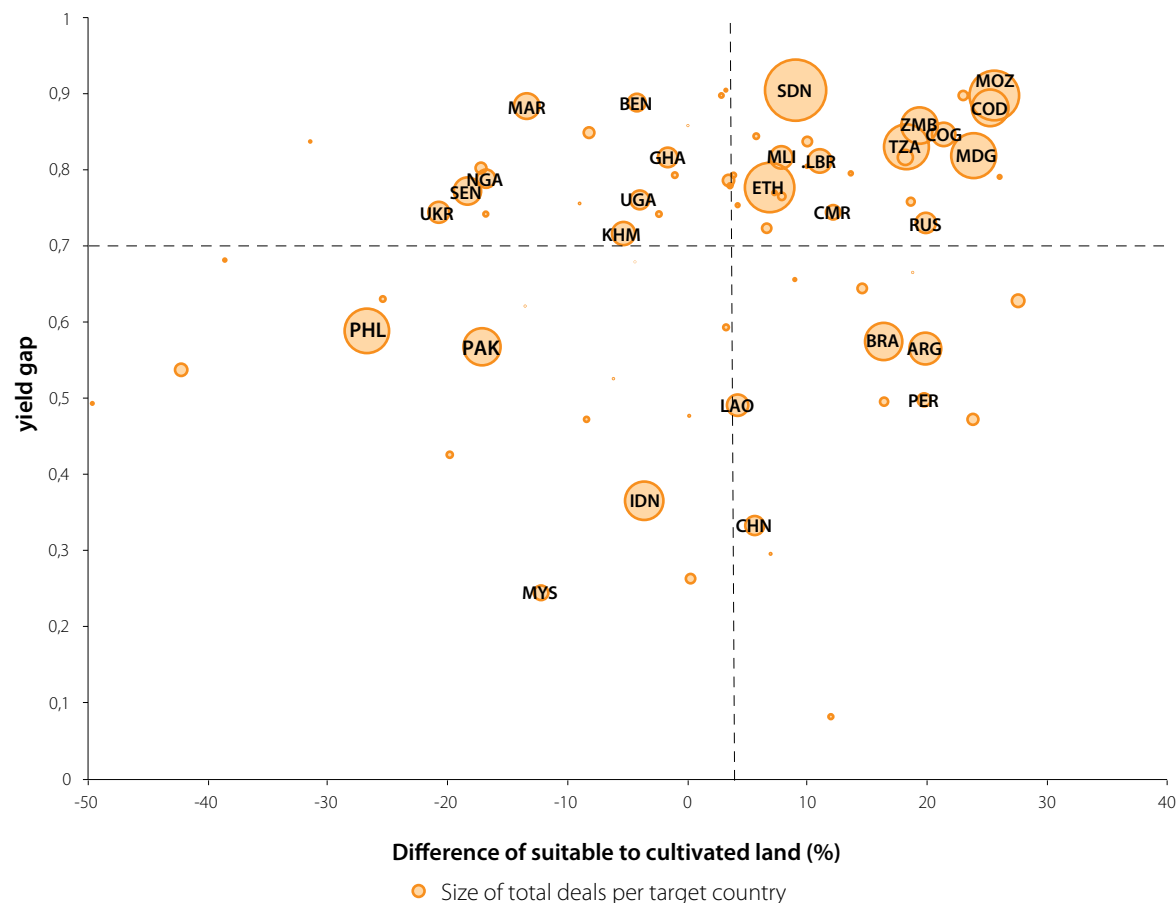
**Yield gap:** to estimate the yield gap in targeted countries, we used global data layers from the global agro-ecological zoning (GAEZ) method developed by the International Institute for Applied Systems Analysis (Fischer, Velthuisen, Shah, & Nachtergaele, 2002). Taking into account local agro-ecological conditions this method assesses the gap between potentially achievable rain-fed yields of five major crops as compared to the current yields.

**Available suitable land** was estimated from data available from GAEZ (IIASA/FAO, 2010; Fischer, Velthuisen, Shah, & Nachtergaele, 2002). As we considered a larger set of countries than Arezki et al. (2011), we used accessible data layers from GAEZ indicating the suitability of land for five important crops (wheat, oil palm, sugarcane, soybean, and maize) to calculate the average suitability for production of these five crops. This figure was then compared to currently used cropland to give a measure of relative availability of suitable land for each country.

These two indicators were used to establish a typology of all destination countries and all agricultural land acquisitions in the land matrix database (Figure 5).



**Figure 5: The location of land deals in relation to suitable available land and the yield gap**



Source: Authors' calculations based on the Land Matrix; IIASA/FAO 2010.

Notes: The difference between the percentage of land area that is available (uncultivated) and suitable for cultivation, and that is actually cultivated, is given for each country on the horizontal axis. This is used as an approximate measure of scarcity of land. A positive value indicates that more land is suitable yet uncultivated than is cultivated. The vertical axis displays the yield gap. A high value indicates a high gap between potential and actual yields. The land acquired by foreign investors for each country is represented by the size of the bubble in figure 5. The 20 countries most affected by land acquisitions are identified by acronyms.

have attracted large numbers of land acquisitions. However, there seem to be particular areas in these countries where investors still find attractive land for investment, despite low overall availability of land. Yield gaps may not be uniformly low. This may imply that land is subject to land deals despite the fact that it is already cultivated.

- » **Type 4: Suitable land available, low yield gap:** This group accounts for only 12% of land deals by surface area. Brazil and Argentina are the

most affected countries in this group, with Laos and China playing a lesser role. Due to large land reserves, and probably good investment climates, these countries seem to be attractive targets for investors despite relatively low yield gaps.

Although it reveals clear patterns, a national-level analysis of the effects of agro-ecological and socio-economic conditions is, on its own, limited. Such conditions, in contrast to governance and macro-

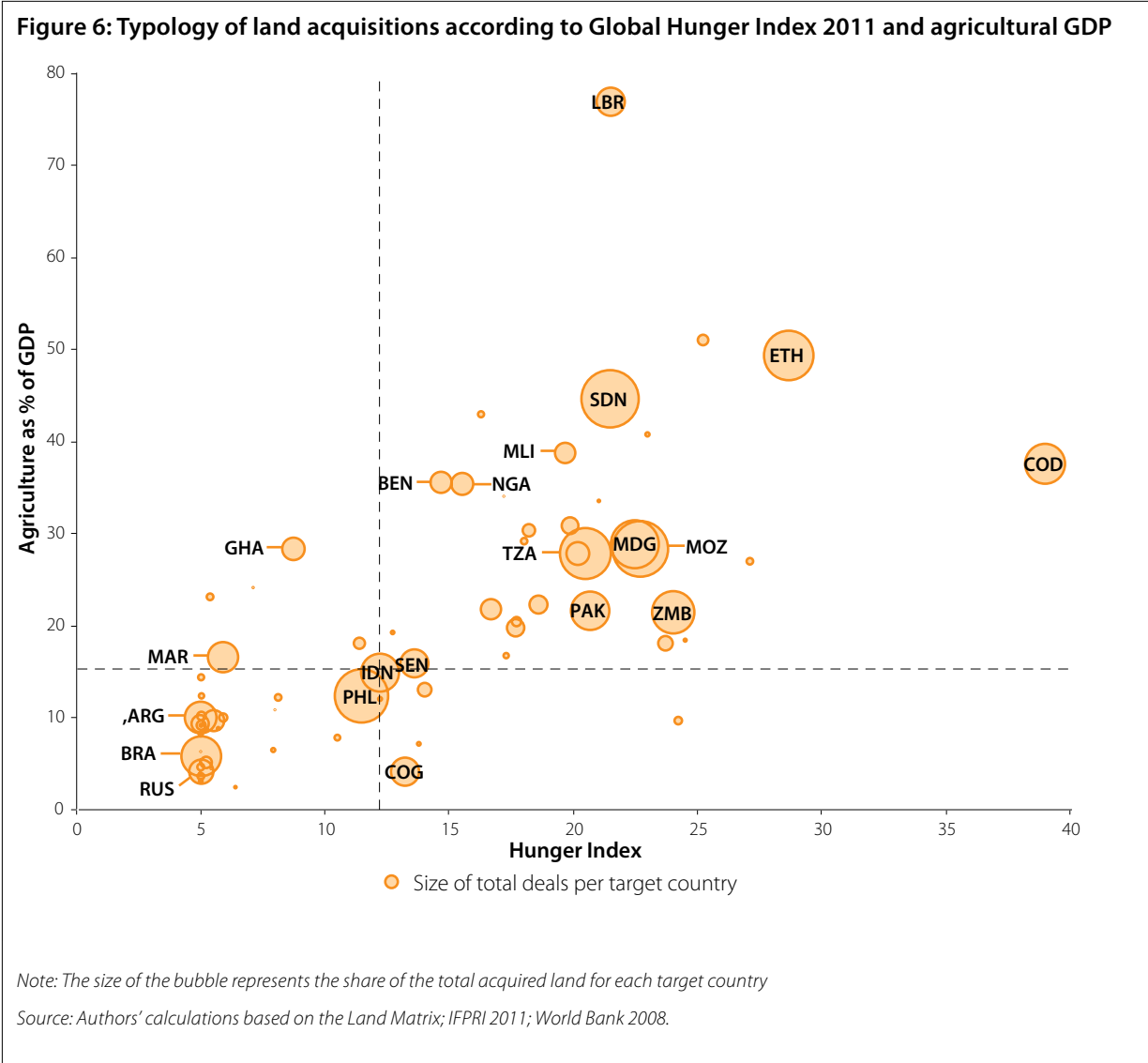
economic factors, vary widely within a country. A complementary analysis at a sub-national level, as provided below, is thus important.

**Target countries are affected by hunger and show high agricultural shares of GDP**

The Land Matrix data show that target countries are significantly poorer than investor countries. In order to illustrate this finding in more detail, the data on land acquisitions was compared with data on the prevalence of hunger and agriculture’s share of GDP for each target country (Figure 6).

Figure 6 illustrates how countries with a high prevalence of hunger tend to be more dependent on agriculture. It also reveals two main groups of target countries. The first group of target countries show above average hunger prevalence and an above average agricultural share of GDP. This group accounts for a share of 66% of the land area acquired in reported deals. A second group scores below average on the Hunger Index and has below average agricultural shares of GDP. These countries host a total of 22% of the total surface of land acquisitions.

The concentration of deals in countries affected by hunger and relatively dependent on agriculture gives cause for concern. As a significant proportion



of this land is likely to be destined for non-food production or export, investment schemes may have an adverse impact on local food availability. Relative dependence on agriculture suggests that people may have few alternatives for income generation. Evictions and resettlements are likely to have more adverse impacts under such circumstances than they would in richer societies with more diversified economies. Figure 6 also shows that a number of important target countries (notably Argentina, Brazil and Russia) exhibit very different economic and social conditions from the majority. Here, the socio-economic impacts of land deals may be very different from impacts in most countries.

# Local-level analysis: the role of land cover, yield gap and accessibility

## The need to bridge generalised and contextualised information on land acquisitions

Information on land acquisitions is typically available either at a national and very general level, or at a local and very specific case study level. While national-level information may neglect the importance of local implementation contexts, insights from case study evidence may often be too context specific to be generalized.

In order to bridge this gap, the Land Matrix project has sought to geo-reference as many land acquisitions as possible. This allows specific acquisitions to be related to key characteristics of specific locations (Box 3).

## Cropland and forests are the most commonly targeted land covers

A comparison between Land Matrix data on the location of land deals and land cover types from the Globcover 2009 dataset is presented in Figure 7. The percentage of land deals corresponding to each land cover type is shown, and can be compared with the average percentage of each land cover type in target countries. This makes it possible to assess if land deals in one land cover class are over or under-represented.

Figure 7 shows that 43% of all 246 deals concern some form of cropland. These deals make up 22% of land acquisition surfaces, suggesting that land deals for cropland may not tend to cover such large areas as ones that affect land cover types such as forests. Interestingly, different cropping mosaics, which often indicate smallholder activities, are most affected. Irrigated areas are being targeted by investors.

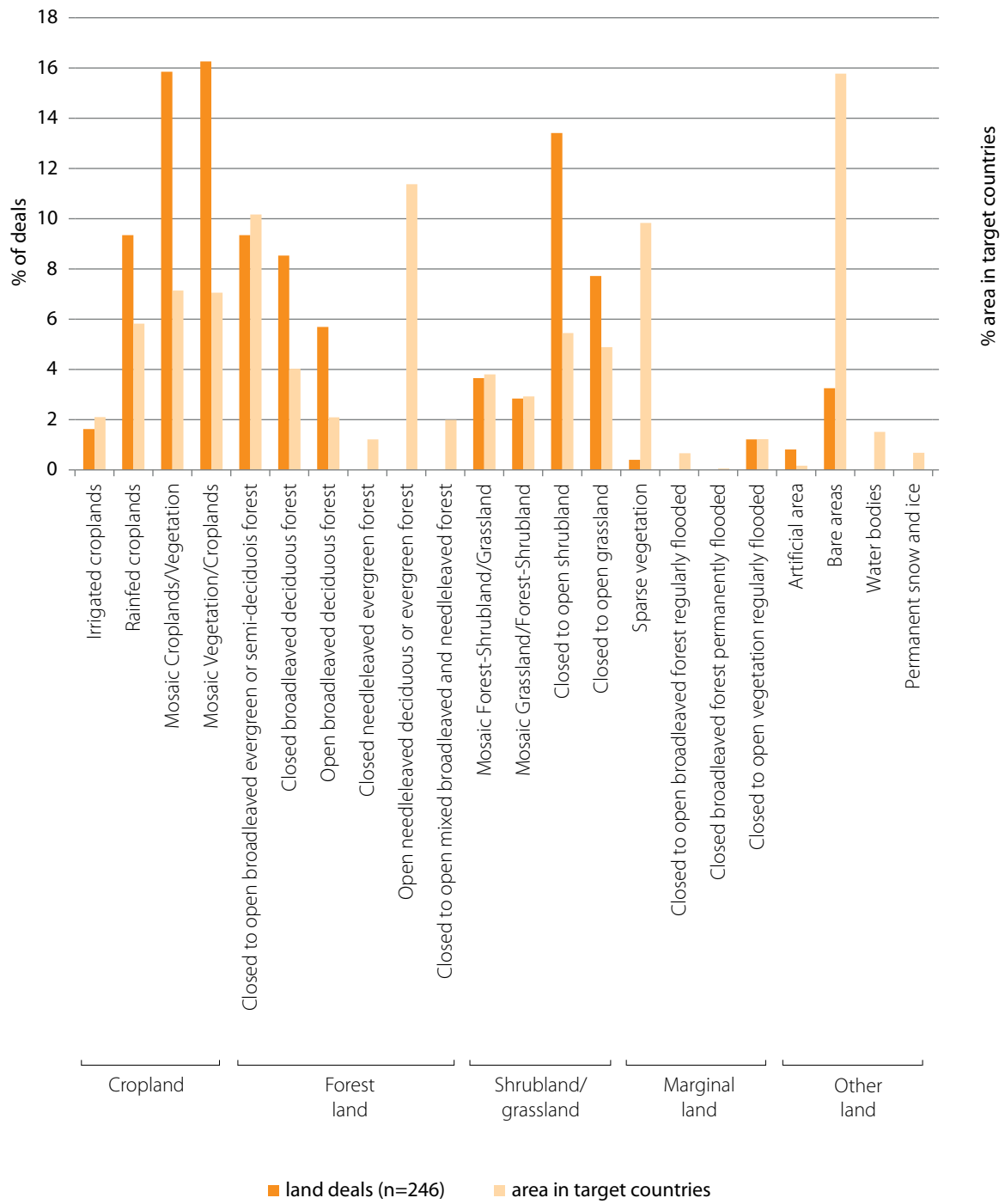
### BOX 3:

#### Characterizing key aspects of land deal locations

From the Land Matrix data, it was possible to extract a total of 246 agricultural land acquisitions with detailed information on location. For an initial analysis, an average acquired area was assumed, and this was compared with three publically accessible global datasets. These are:

- » **Global land cover:** to study what land cover classes are targeted by land acquisitions we referred to the global dataset Globcover 2009 from the ESA that has a resolution of 300 m at the equator.
- » **Yield gap:** The yield gap dataset for a combination of major crops of IIASA/FAO (2010) has been used. It represents the difference between potentially achievable yields and the actual crop production in the year 2000 in current cultivated land with a resolution of 10 km at the equator.
- » **Accessibility:** The accessibility dataset represents the travel time from a given location to the closest city with more than 50,000 inhabitants in the year 2000. The data layer has a resolution of 1km at the equator and was produced by the Global Environmental Monitoring Unit – Joint Research Centre of the European Commission (Nelson A. 2008).
- » **Population density:** A population density layer with a resolution of 5 km at the equator from CIESIN, FAO and CIAT (2005) has been used. These global datasets (maps) allows us to approximately characterize key aspects of the specific development contexts of the 246 land acquisitions for which location data exists.

**Figure 7: Share of land acquisitions in different global land cover classes**



Note: the axis to the left represents the share of all agricultural land deals in a given land cover class whereas the axis on the right indicates what share of the combined area of all destination countries falls within a specific land cover class.

Source: Authors' calculations based on the Land Matrix; Globcover 2009 from ESA 2010.

Thus while aggregate, national-level data suggest that investors do target countries with abundant “available land”, this local-level analysis suggests that nearly half of all land acquisitions target land with ongoing cropping activities. Areas already used for cropping by local people are clearly overrepresented in terms of land acquisitions indicating a strong interest for these lands.

Forests also represent an important target for agricultural land acquisitions. 24% of all deals (and 31% of their total area) go to forest land cover classes, representing the largest share of total surface acquired. These figures even exclude forest fragments associated with shrub and grassland mosaics. This evidence is a strong indication that the increase in the economic value of land through land acquisitions leads to significant trade-offs with regard to environmental services, such as biodiversity and CO<sub>2</sub> sequestration, and also to significant trade-off with regard to the timber, food and other non-timber forest products (not to mention social and cultural value) that are of critical importance to many poor and marginalized rural populations.

*Shrub lands and grassland* represent the third most important target of land acquisitions; 28% of all deals (representing 17% of their surface area) concerns these land cover classes. Although some of this land may have a potentially higher economic benefit if converted to cropland, these lands are often also grazing areas for pastoralist communities or important areas for biodiversity.

The remaining 5% of land deals (and 30% of their total surface area) can be found in bare areas (e.g. desert), wetlands, and urban or peri-urban areas classified as “artificial”.

These findings underline the importance of studying the specific local contexts of land acquisitions using land cover data with the best possible spatial resolution. It allows us to put into perspective the national level data that suggests that yield gap and available land are key determinants of land

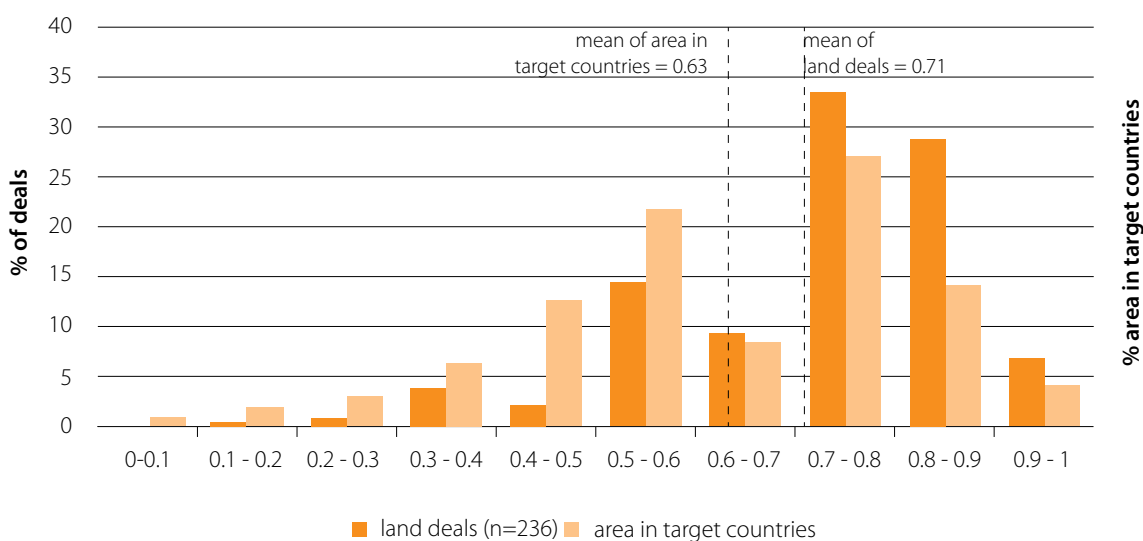
investments. We see that in most cases the land acquired is already under different forms of use – e.g cultivation or grazing - and that competition is unavoidable. Forest, like grassland, may be “available” for cultivation, but its cultivation implies significant trade-offs against the provision of important environmental services and other economic and socio-cultural functions.

### **Investors target land with high yield gaps, good accessibility and considerable population densities**

The above analysis of targeted land cover classes at the local-level illustrates that the national-level data may be misleading. However, the comparison of land deal locations and local-level data on yield gaps tends to confirm the conclusions of the national-level data, namely that investors target cropland where the yield gap is relatively large, and where additional inputs (water, fertilizers, seeds, infrastructure and know-how) may create greater yields (Figure 8). The land cover analysis above suggests that such land is often covered by mosaics of cropland with vegetation and forests, which may be related to smallholder activities with generally low productivity levels, but considerable population densities.

**Accessibility** may also drive an investor’s decision to acquire land. Whether investors choose easily accessible – and probably more populated – land, or invest in accessing land in remote and possibly less populated areas is likely to be an important determinant of the extent to which local people’s livelihoods will be affected. Accessibility is measured by travel time to urban centers with at least 50’000 inhabitants. This measure can be considered to be an important proximate indicator for many key factors of rural development. On the one hand, it measures how easily produce can be brought from a given location to the nearest markets or to a processing plant. On the other, it represents ease of access to inputs such as fertilizers, pesticides, seeds, and machinery, and also to market information, extension services and policy-making processes. Figure 9 shows that the median

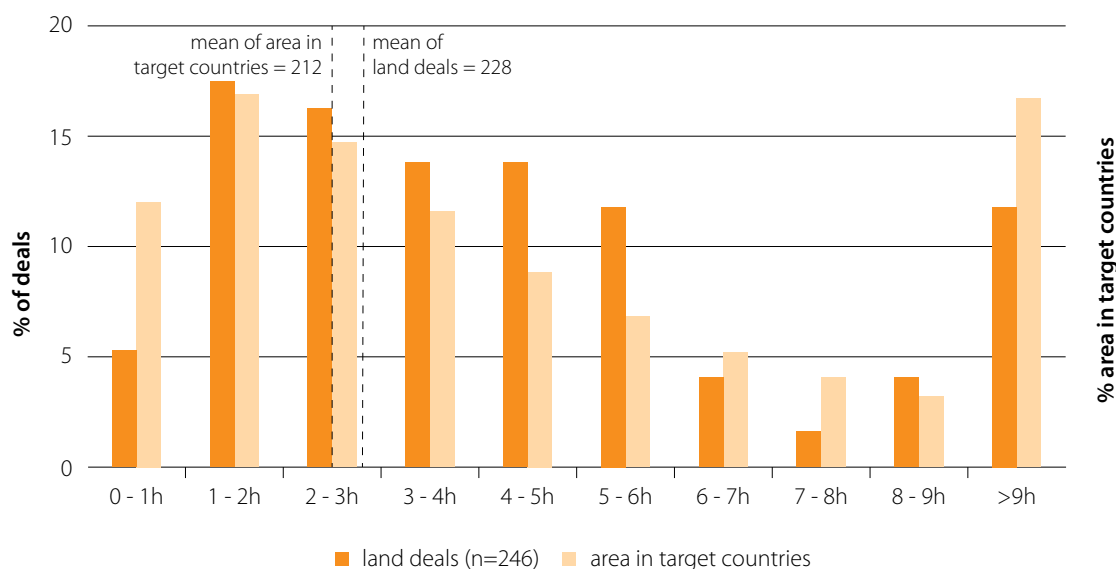
**Figure 8: Share of land acquisitions in different classes of yield gap in target countries**



Note: The vertical axis to the left represents the share of all agricultural land deals in a given yield gap class. The vertical axis on the right indicates what share of the combined area of all destination countries falls within the different yield gap classes. The mean yield gaps of the target countries' land area and the land targeted by land deals are provided.

Source: Authors' calculations based on the Land Matrix; IIASA/FAO (2010).

**Figure 9: The accessibility of land deal locations**



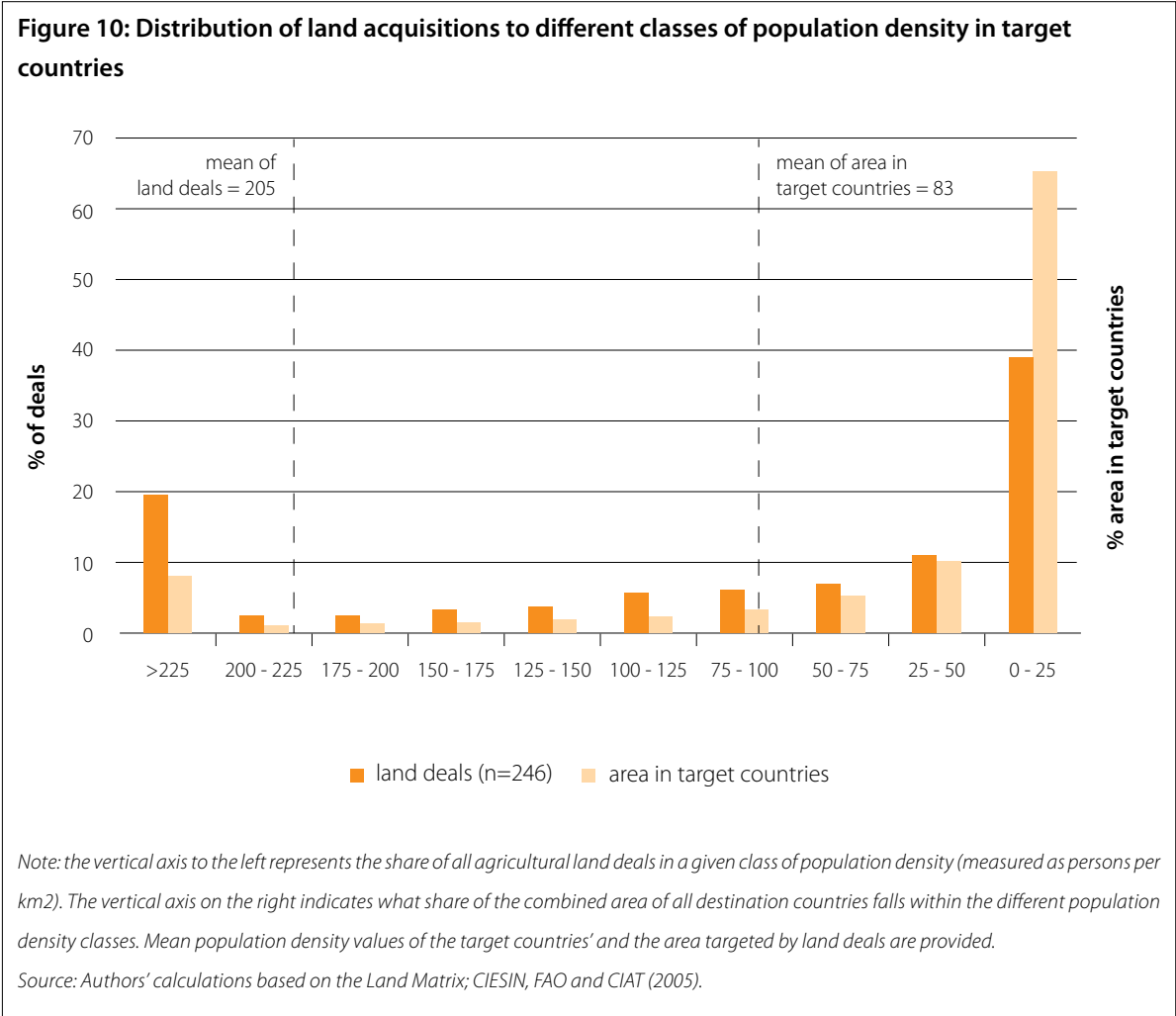
Note: the vertical axis to the left represents the share of all agricultural land deals in a given class of accessibility. The vertical axis on the right indicates what share of the combined area of all destination countries falls within the different accessibility classes. Median accessibility values of the target countries' land area and the land targeted by land deals are provided.

Source: Authors' calculations based on the Land Matrix; Nelson (2008).

accessibility of land deals corresponds approximately to the median of the respective target countries representing high to medium accessibility areas. Areas with 1 to 6 hours travel time are generally over-represented in terms of land acquisitions, whereas land deals in the best accessible (< 1 h) and the least accessible areas (>6 h) are under-represented. Given that one of the promises often associated with land deal relates to the establishment of road infrastructure, the insights that the majority of deals are for land less than a day trip away from the nearest city (< 3 h travel time one way) is disappointing.

In terms of *population density* large-scale land acquisitions fall into many different classes. Figure 10 shows that a large part of acquired land affects areas with population densities of less than 25 persons

per km<sup>2</sup>. This is in line with the considerable share of land deals that we have found to take place in forest-, shrub- and grasslands. Conversely – and probably more importantly – more than 60% of all land deals target areas with population densities of more than 25 persons per km<sup>2</sup>. This strengthens further the conclusion that land deals may often result in strong competition with local land users. In fact, the share of land deals in densely populated areas amounts to a remarkable 20%. This may again indicate that some investors target regions dominated by smallholder agriculture. A number of such areas with fertile land in East and West Africa as well as in South and South East Asia are characterized by very small farm sizes and high population densities. Furthermore, this class may also include land acquisitions in peri-urban areas.





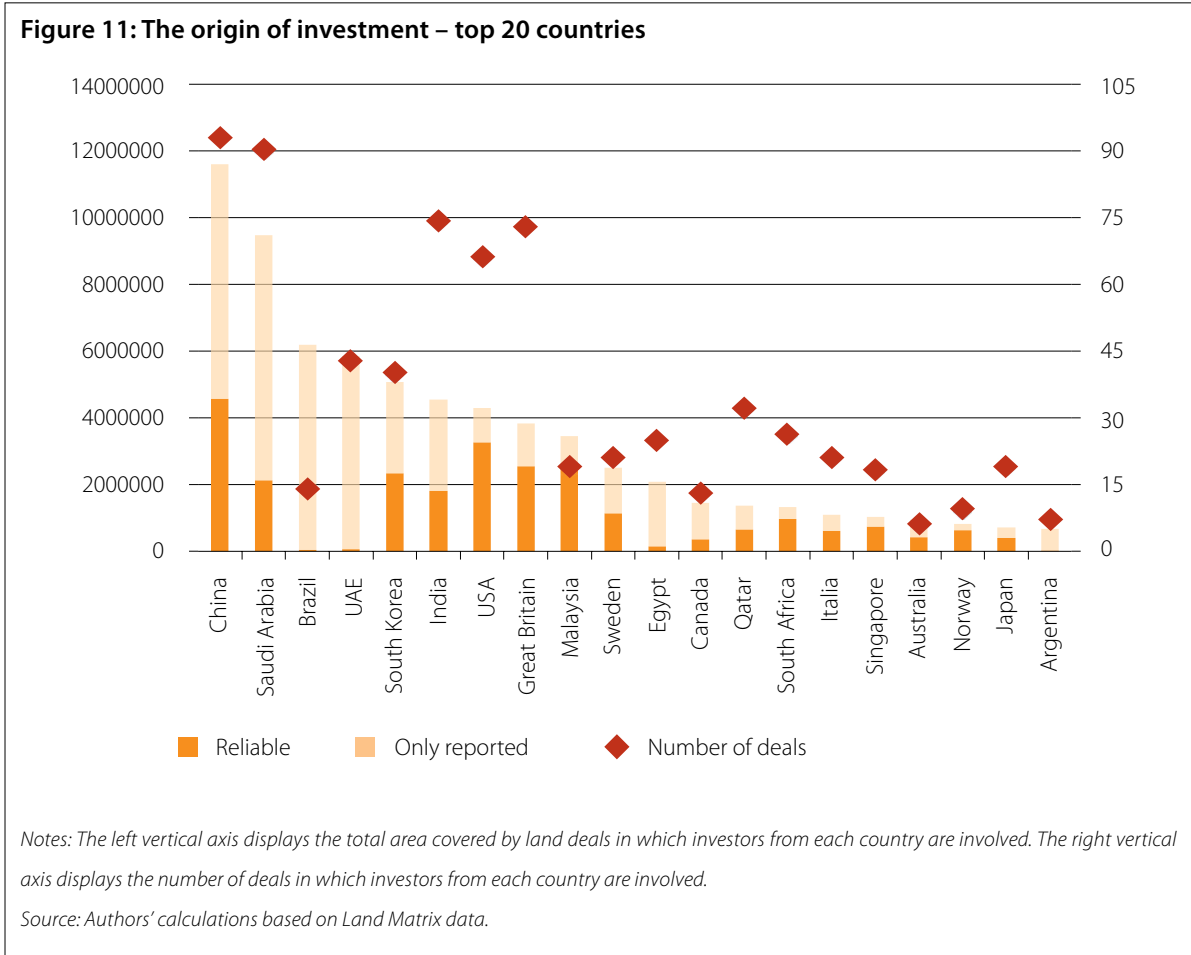
# 3. Investors and investor countries

## Where does the investment come from?

According to the Land Matrix results, three separate groups of investors origin countries can be identified: Emerging countries such as China, Brazil and South Africa; Gulf states such as Saudi Arabia; and countries from the Global North, such as USA and EU member states (Figure 11).

### Emerging countries

One of the most notable facts about the recent wave of large-scale land deals is the involvement of investors from emerging countries. This group gathers the BRICS countries (with the exception of Russia) and most of the emerging Asian countries. These countries are generally rich in capital but may possess relatively little arable land. Some of these countries are both the origin and target of investment flows (China, South Africa, Brazil, India).



Chinese and Brazilian investors appear to be the most active (11,6 million ha and 6,2 million ha respectively). Investors from South Korea (5.1 million ha) and India (4.5 million ha) are also significant players. However, Figure 11 shows us that information is not equally reliable for all origin countries. Interest in large-scale land acquisitions coming from China, South Korea and India is relatively reliably documented, but this is not the case for the activities of investors coming from Brazil. This is mainly due to the lack of information concerning Brazilian attempts to acquire land in Mozambique (Angolan investments, on the other hand, are well documented).

The massive involvement of investors from emerging countries illustrates a new trend towards regionalism characterized by South-South relationships. In Latin America, agri-business companies from Brazil and Argentina are seeking to expand internationally, but with a preference for countries within their immediate region (Rabobank International, 2011). Similarly, South African investors are involved in projects all over Africa, particularly in Eastern, Central and Southern Africa.

The Land Matrix reveals that 32% of deals involve investors coming from the same region as the target country. This result is driven particularly by investments in Asia, where 57% of deals involve investment of Asian origin. Cultural affinity and the reduction of transport and transaction costs may help to explain this trend. Likewise, South and North American investors are the main foreign actors in South America (31% of deals). This result contrasts with Africa in which European, North American and Gulf states investors are more active.

### **Gulf states**

The role of Gulf states countries such as Saudi Arabia, the United Arab Emirates and Qatar, have been emphasized in previous studies (Cotula & al, 2009; World Bank, 2011). The data from the Land Matrix confirms the active role played by actors from these

countries, and principally from Saudi Arabia and the United Arab Emirates (15.3 million ha in total). However, only 14% of these deals have led to projects that have begun implementation so far.

According to the Land Matrix data, investors from Gulfstates have acquired land mainly in Africa (113 deals) and South East Asia (53 deals). Gulf states investors tend to target locations where there is some cultural and religious affinity, such as Northern Africa and the Horn of Africa, as well as Asian countries with Muslim populations (Pakistan, the Philippines and Indonesia). In some cases, investors from these countries have invested in developed countries (e.g. Qatari investments in Australia).

### **The Global North**

Private companies from the United States and United Kingdom are the most active investors from countries in the Global North (4.3 and 3.8 million ha respectively). Actors from other European countries such as the Netherlands, Sweden and Italy also play a role. Investors from France and Germany also appear to play a more significant role if only the more reliable data are considered. North American and European investors have negotiated land deals mainly on the African continent, in South America and in Indonesia and the Philippines. This finding confirms the suggestion that such investors appear to preferentially target countries, such as former colonies, with which they already have connections (Arezki et al., 2011), drawing on established commercial and political networks.

### **Characteristics of investors' countries**

Investors' countries have a GDP per capita 4 times higher than target countries (Table 5). This difference is even higher when we exclude countries that are both the origin and target of investment flows. Investor countries also tend to be net importers of food, while target countries show a less clear picture. Target countries are average net food exporters, but if target countries that are also origin countries are

excluded, then the remaining “Target only” countries are on average net food importers.

The fact that target countries may be either net food importers or exporters shows the heterogeneity of countries targeted for large-scale land acquisitions. The net exporter characteristics of target countries can be explained by the presence of emerging countries, such as the BRICS countries, in this group. These countries already have a relatively well developed food sector. By contrast, the group of “target only” countries is made up of less developed countries which are known to be dependent on food imports. The figures for average food imports and exports (Table 5) show that the value of involvement in the world food market is much higher for origin countries than for target countries.

Data on governance suggest that institutional performance is significantly worse in target countries than in “origin only” countries (with the exception of investor protection).

**Table 5: Target countries and investment origin countries compared**

	Origin	Origin only	Target (a)	Target only (b)
No of observations (countries)	76	42	84	52
Basic socio-economic characteristics				
Population (2010, millions)	75.5	27.5	63.6	17.3
GDP per capita (2010, US\$ millions, 2005 PPP)	18,918	29,508	4'404***	3'497***
Food imports (2009, US\$ millions)	155,041	201,417	42'036***	9'952***
Food exports (2009, US\$ millions)	155,738	195,616	45'021***	9'096***
Institutional Variables				
Regulatory Quality Rank (%)	61.45	76.56	36.5***	33.35***
Voice Accountability Rank (%)	52.57	64.97	35.63***	35.22***
Political Stability Rank (%)	49.85	65.17	31.76***	33.00***
Government Effectiveness Rank (%)	61.84	77.81	35.77***	32.63***
Rule of Law Rank (%)	60.02	77.12	33.25***	30.59***
Control of Corruption Rank (%)	57.64	76.38	33.83***	34.32***
Investor Protection Rank (%)	5.42	5.4	5.03	4.79
Land tenure security Rank (%)	2.92	3.32	2.29***	2.16***

Notes: The table shows unweighted averages of country characteristics. It includes the 84 destination countries and the 76 origin countries registered in the Land Matrix.

\*\*\* denotes significance at the 1% level, \*\* at the 5% level and \* at the 10% level

(a) Significance of t-test for difference between averages in destination countries and “origin only” countries

(b) Significance of t-test for difference between averages in “destination only” countries and “origin” countries

Source: Authors' calculations based on the Land Matrix.

# Characteristics of investors

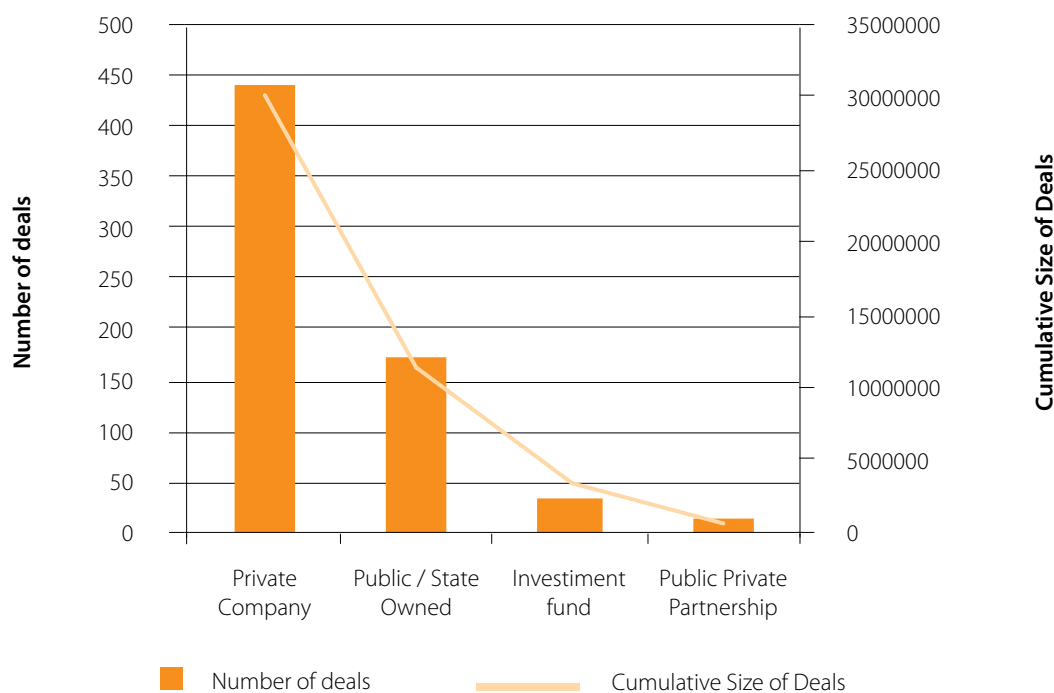
## Types of investors

There is a widespread consensus on the heterogeneity of investors involved in the rush for land in developing countries. According to the Land Matrix results, we identified four different types of investors: private companies; public or state owned companies; investment funds and private-public partnerships.

Evidence from the Land Matrix reveals that private companies constitute the most active category of investors (442 deals, 30.3 million ha). The state-owned sector (172 deals, 11.5 million ha) is also important. Investment funds (32 deals, 3.3 ha) and private-public partnerships (12 deals, 0.6 million ha) are comparatively less important (Figure 12).

Investors from North and South America and Europe are almost exclusively private companies. By contrast, public actors play a relatively important role in demand for land coming from other regions. Public agencies or state-owned companies are the main Gulf states actors (61 of the 130 projects for which this information is available), although Saudi Arabia is an exception (28 deals involving private companies against only 9 by public/state-owned companies). Public or state-owned companies from China and South Korea are also involved in a large share of the investment from these countries (27 of 71 deals and 10 of 29 deals respectively).

**Figure 12: Land acquisition by type of investor**



Notes: N = 658 deals. For 492 deals, the size of the investment is known.

Source: Authors' calculations based on the Land Matrix data.

The subset deals for which we have information on implementation reveals the same trend (Figure 13). Private companies have implemented a larger number of projects (195 deals) and a large majority of those projects are already in operation or at least in the start-up phase (154 of 195 deals). Public investors have also implemented some deals (mostly for food crop production), but these projects have not yet started production.

### Domestic partners

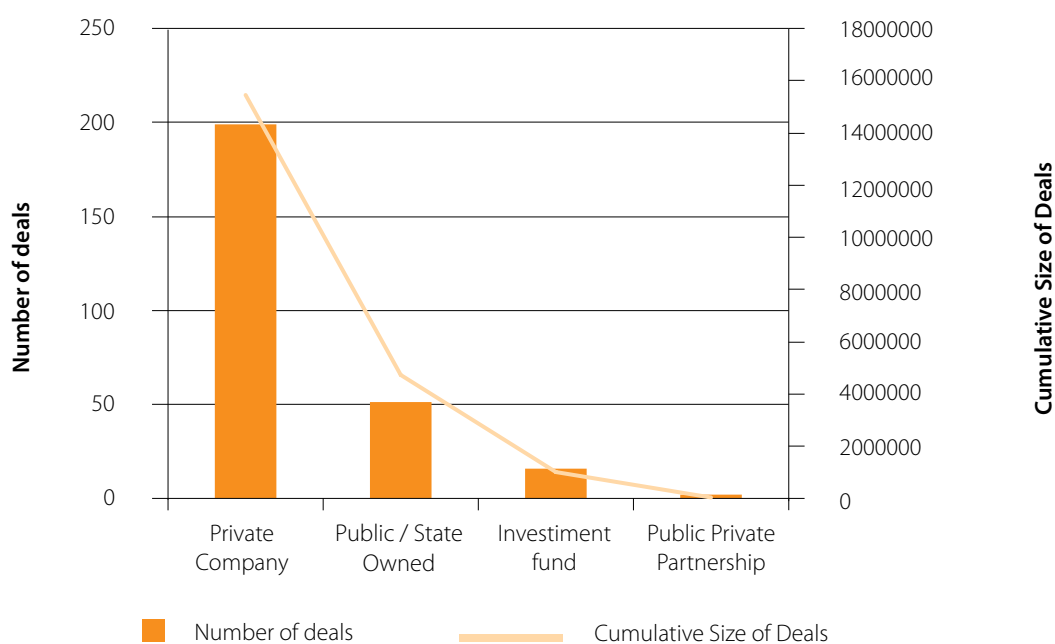
In some cases foreign investors build a partnership with a domestic company (12% of deals). This is mainly true for private investors who come mainly from China, Great Britain and USA. Such partnerships are formed regularly in Ethiopia, the Philippines and Tanzania. They may be motivated by a desire to reduce transaction costs caused by the complexity of administrative legislation, and may

be necessitated by legislation in some countries. State-owned companies are less likely to form partnerships with domestic private actors and more likely to enter into bilateral forms of cooperation

### Multiple investors

Investors are also forming partnerships with foreign investors from other countries, so that multiple foreign investors may be involved in a single deal. Thirty percent of the deals in which actors from the USA are involved are multiple investor projects, and the figures are similar for Great Britain (27%) and South Africa (30%). British actors are mainly using this strategy for jatropha production projects. South African investors tend to act as partners for other foreign investors aiming at producing food and flex crops all over Africa, and have developed a model of investments that involves an engineering firm selling its skills to other investors (Ducastel and Anseeuw, 2011).

**Figure 13: Land acquisition by type of investor on implemented projects**



Notes: N = 268 deals. For 230 deals the size of investment is known.  
Source: Authors' calculations based on the Land Matrix data

# 4. Learning more about the drivers

As mentioned above, the recent wave of large-scale farmland acquisition has been triggered primarily by the food price crisis of 2007-2008 (Anseeuw et al., 2012). But far from being a brief phenomenon, this land rush is likely to continue into the long term because of the trends that are driving it. Among the main drivers, we find population growth, growing consumption and market demand for food, biofuels, raw materials and timber and carbon sequestration, all of which drive speculation on long-term price rises for land and agricultural products.

This chapter will begin with a global overview of the different production sectors involved in, and driving, large-scale land acquisitions. Secondly, this chapter will examine the implications of these land deals for the geography of agricultural production and trade, and for the issue of food security.

## The agricultural drivers of large-scale land acquisitions – A global overview

It is very often difficult to determine the final use of the crops proposed to be grown as part of large-scale

### BOX 4:

#### Sectors affected - Mainly agriculture, but other land uses are important as well

Demand for food is not the only driver of the land rush, and it is not only about food security and a response to high food prices. It appears to be driven by a range of factors, all ultimately linked to rising levels of consumption by at least part of the world's growing population, in the context of finite natural resources and ecosystem services.

That said, agriculture is the objective of the great majority of the acquisitions (81% of all reported deals. Table 6). Forestry and carbon sequestration, mineral extraction, and tourism account for a combined 9% of

**Table 6: Sectors affected by land deals**

	All reported deals		Reliable data	
	Number of deals	Hectares (millions)	Number of deals	Hectares (millions)
Agriculture	1162	82.9	591	32.5
Forestry	78	3.1	65	2.2
Livestock only	55	0.4	34	0.2
Mining	91	3.9	51	1.6
Tourism	23	2.3	8	2.3
Industry	20	0.3	17	0.1
Conservation	2	0.3	2	0.3
No information	237	12.8	31	3.8
Total	1668	106.0	799	43.1

Source: Land Matrix data

reported deals. The purpose of 10% of the deals is still unknown.

Some of these sectors are probably underrepresented in the Land Matrix data, mainly because of lower media and academic attention. The case of mining explorations in Latin American countries (Peru, Colombia, Guatemala, Honduras, Brazil and Argentina), for example, is illustrative of the underestimation of the potential threat from international corporate activities on local populations' land rights. Data collected by the Partnership in six main Latin American countries shows that over 23,800 mineral exploration concessions have been granted for 70 million hectares since 2001. However, these are not included in the Land Matrix data, as the total exploration area will probably not be converted through exploitation. Nonetheless, the tenure security of people living in the whole concession becomes uncertain as the sites of eventual exploitation remain unknown. Exploration for subsoil resources has to be considered a significant aspect of a broader set of commercial pressures on land. However, they represent a rather different phenomenon from large scale land acquisitions for agriculture, and need to be analyzed separately.

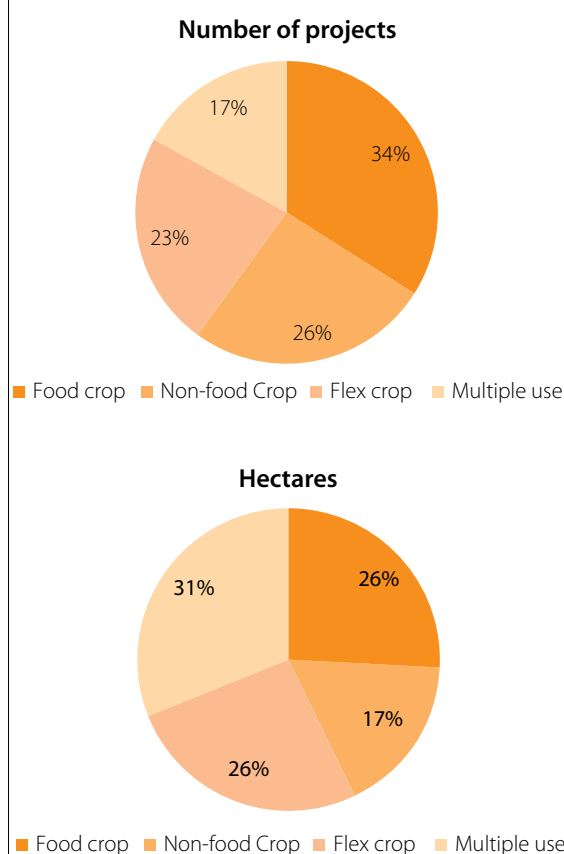
The focus of this report on the main sector affected by large-scale land acquisitions, namely agriculture.

land acquisitions. It can even be difficult to determine whether production will be for food or biofuel, and a significant number of deals are stated to be for multiple purposes. This is why we have not used a simple classification (food crop versus biofuel) but use four categories, in line with project classifications used by other recent studies (Borras et al., 2011). These are food crops, non-food crops, flex crops and multiple uses.

"Food crops" are crops that do not have a likely non-food usage, while "non-food crops" do not have a likely food use. "Flex crops" are those that are commonly used as both food and for biofuel production (Borras et al., 2011). The main ones are soybean, sugarcane and oil palm. Depending on different factors (world price, opportunity of commercialization) the investor can choose whether to sell his production on the food market or on the biofuel market. The final category, "multiple uses" refers to deals in which production for more than one purpose is proposed.

Figure 14 shows the relative importance of the different types of production in terms of their shares of the total number of deals, and the total surface area affected. Food production accounts for 34% of reported deals globally. By comparison, non-food crops account for 26% of deals, flex crops for 23%

**Figure 14: Land acquisitions by category of production**



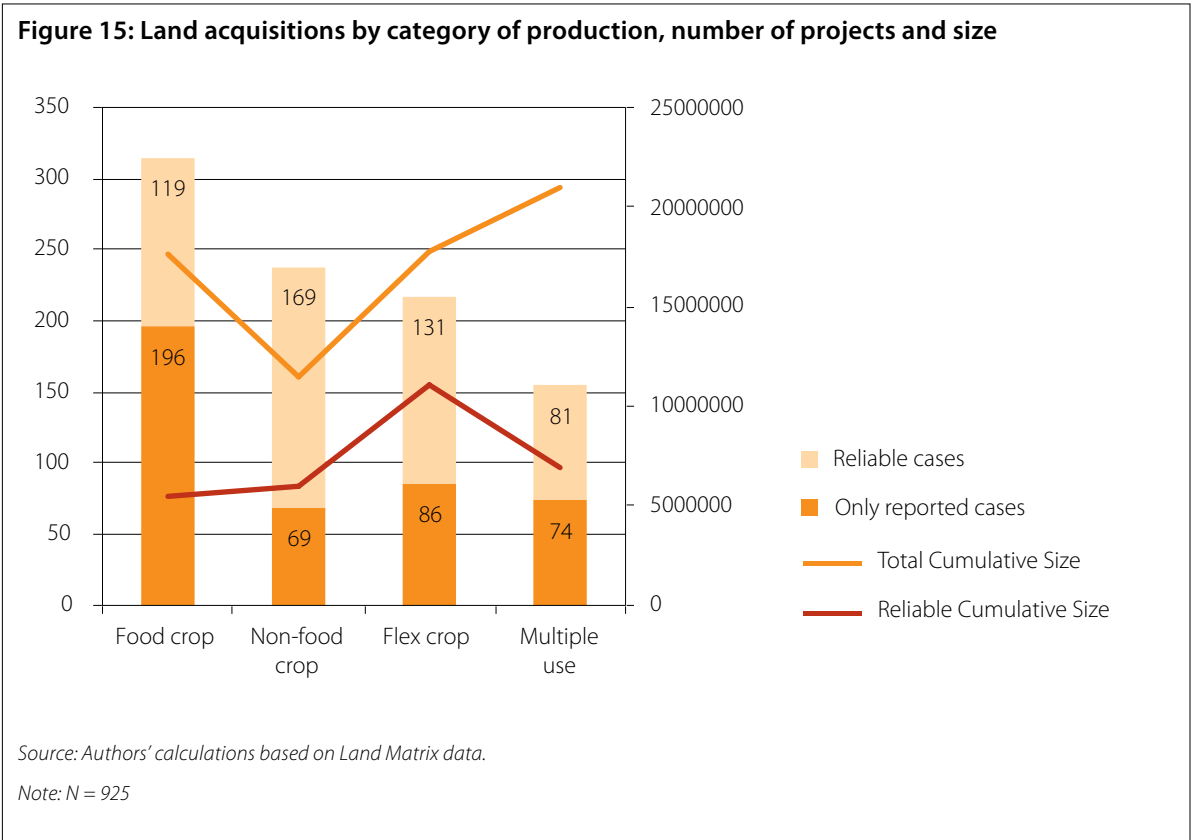
Source: Authors' calculations based on Land Matrix data.

and multiple uses for 17%. If the surface targeted is considered instead of the number of deals the proportions are different. The area targeted by foreign actors is mainly for multiple uses (31%). Food and flex crops appear to be important as well (26% each). The fact that the category “multiple uses” contains the largest share of hectares targeted demonstrates that one has to be cautious with the interpretation of those results.

The reduction of the sample to the more reliable observations (Figure 15) does little to clarify these results. Non-food crop production becomes the first reason for agricultural projects, representing 34% of deals. It is followed by flex crops (26%), food crops (24%) and multiple uses (16%). The fact that large-scale land acquisitions for flex crop production account for a larger surface than the other types of production indicates the important role played by these crops, as well as a research bias towards flex crops in general and biofuel production in particular.

The importance of non-food crops shows that the development of particular markets, such as biofuels and other traditional “high value crops”, attracts investors. On the other hand, the large share of projects presenting multiple productions or the production of flex crops can be interpreted as a strategy to mitigate risks such as price volatility, and to benefit from opportunities that arise.

The rush for land is therefore not only about food security, and is not only a response to high food prices. It appears to be driven by a range of factors, all ultimately linked to growing population and rising consumption in the context of a finite natural resource base.





## Food production

As emphasized in the report “Land Rights and the Rush for Land” (Anseeuw et al., 2012), demand for food as well as rising and increasingly volatile food prices are among the main drivers of the rush for land. However this category of projects also presents the highest proportion of cases only sourced by media reports<sup>3</sup>, which we classify as the least reliable source of data. Moreover, three quarters of those media reports have been published in 2008 and 2009. This means that the importance of global demand for food as a driver of acquisitions may have been overestimated thanks to speculation and considerable media interest. That said, the more reliable Land Matrix data confirms that demand for food is still one of the strong drivers of the phenomenon (deals with only food crop production represent 24% of the more reliable deals).

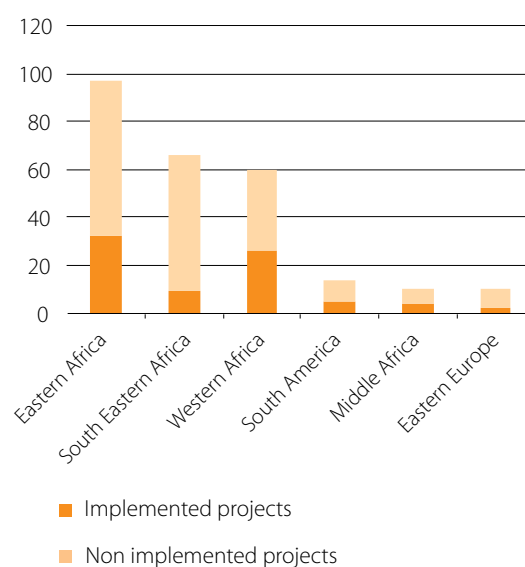
Large-scale land acquisitions for food crop production are mainly taking place in three regions: East and West Africa and South-East Asia. Figure 16 also emphasizes that the majority of implemented food production projects are in East and West Africa. Rice, corn and wheat are the main food crops involved.

This geographic localization of food crop projects can be explained by the agro-ecological advantages for cereals production in these regions, but also by the characteristics of investors mainly involved in these projects.

The demand for food is an important driver for investors coming from Middle East countries (the Gulf states). In Figure 17 one can see that investors from Middle East are the most interested in food crop production with a total of 100 reported projects of which 26 have been implemented. Investments in food crop production represent 66% of the demand for farming land by investors from Middle East. The Land Matrix data seems to confirm the theory that

<sup>3</sup> Of the 425 deals only sourced by media reports for which we have the information on the nature of the production, 196 concern food crops.

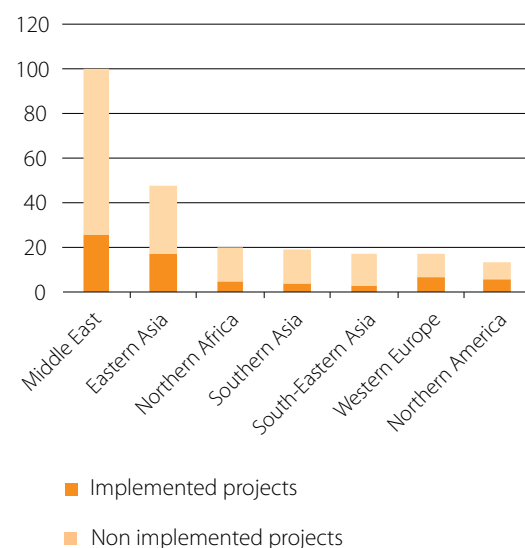
**Figure 16: Targeted regions for food production, number of projects**



Source: Authors' calculations based on the Land Matrix.

Notes: N = 315 (reported projects for food production)

**Figure 17: Region of origin of investors, food crop projects**



Source: Authors' calculations based on the Land Matrix.

Notes: N = 264 (food productions projects with information on origin country of investor)

governments or investment funds linked to public authorities from Middle East countries have seen this type of investment as a way of diminishing their dependency on the world food market. Egypt, as a Northern African country, follows the same strategy.

Eastern Asian investors, mainly from China and South Korea, also appear to follow a food security strategy. According to the Land Matrix data, Chinese and Korean land acquisitions for food production account for 42 projects mainly in South-Eastern Asia and East Africa, and are led by public or state-owned companies.

### **High value non-food crops – the search for alternative energy sources and fibre**

Demand for non-food crops such as rubber, fiber crops and jatropha is also an important driver of the large-scale land acquisitions. The demand for such crops has been a feature of economic relations between the global North and the global South since colonial times (Anseeuw et al., 2012). According to the Land Matrix data, 37 large-scale land acquisition projects concern rubber production. Almost all of them (33) are located in South East Asian countries (the Philippines, Indonesia and Cambodia) and are managed by Chinese and Vietnamese actors.

However, beyond this “old” driver a new one is gaining prominence, the demand for biofuels. Rising fuel consumption and oil prices, growing dependence on imported fossil fuels and the energy policies of some developed countries are driving the development of biofuel markets. Among the crops used to produce biofuels, one of the most developed is jatropha. A lot of studies have emphasized the role of biofuels, particularly jatropha, in large-scale land acquisitions in Africa and Asia (Cotula et al., 2009; Vermeulen et al., 2010; Borras et al., 2010). The Land Matrix data confirm that jatropha production is an important driver for large-scale land acquisitions in the world. A large majority of the “non-food” projects (73%) are exclusively dedicated to jatropha

production. Those projects represent a total of 5.5 million ha if we consider only reliable data, and 10.4 million ha if we consider all the observations.

If South-East Asian countries are concerned by the development of foreign demand for land for rubber production, the majority of large-scale land acquisition projects aiming at producing jatropha are located in Africa, particularly in East African countries (Ethiopia, Mozambique and Tanzania). Different kinds of investors are involved in these deals. Private companies registered in United Kingdom and The Netherlands are major actors involved in jatropha production. More surprisingly, South Korean companies are among the actors that have expressed a demand for land in this kind of project (10 projects in the sample of reliable information).

However, if we look only at deals where implementation has commenced, we find that these deals are mainly located in Eastern African countries and are managed by private companies registered in United Kingdom.

### **Flex crops and multiple land uses: a way of mitigating risks**

One of the main characteristics of the recent wave of large-scale land acquisitions is the central role of three crops: soybean, sugarcane and oil palm. This group is called “flex crops” as these crops have multiple and/or flexible uses, mainly food and biofuels. Confronted with the difficulty of obtaining information on the final destination of production, different studies have emphasized the particular importance of this group of crops (Borras et al., 2011). The importance of these crops (23% of deals are exclusively dedicated to the production of one of these three crops) can be explained by three different reasons:

- » These crops have been produced by very large farms for quite a long time. A large number of agribusiness firms already have a substantial

knowledge of this kind of production. In most cases, these firms already own large areas in their domestic countries and are willing to expand their activities abroad.

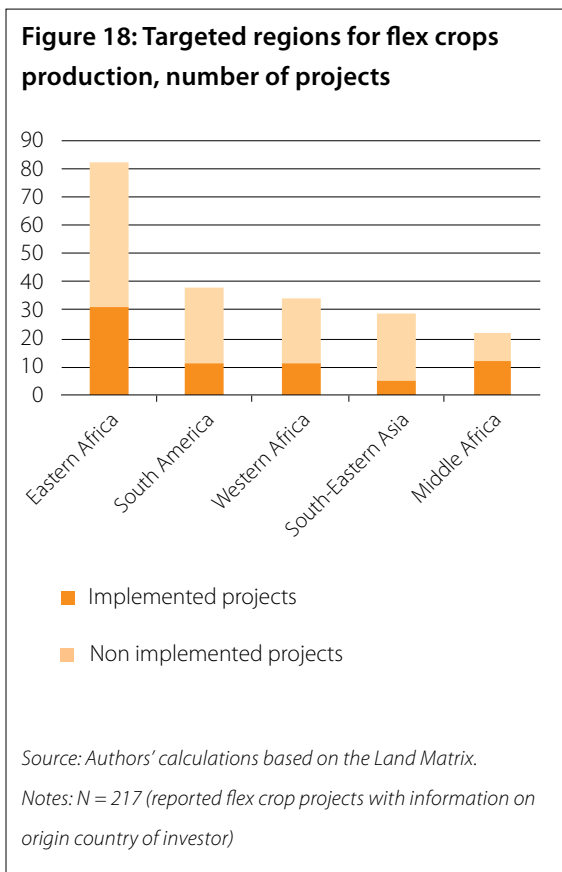
- » Companies from other sectors of the economy can benefit from the existing knowledge on the large-scale production of these crops. They either create partnerships with agribusiness companies or hire engineers specialized in this sector.
- » Flex crops present a fast and more secure return on investment than other farming crops. Investors can choose after the growing period if the production will be sold on the food or the biofuel market. This flexibility reduces the price volatility risk because investors will have the possibility to choose the best commercial channel.

Figure 18 shows that for flex crops, Eastern African countries are, once again, the main targets. South America is also one of the main target regions. In

both cases, the long-term development of plantation farming by domestic actors has created a strong base of agronomic and economic knowledge that can be used by foreign investors. The high number of projects in South-East Asia and Central Africa is largely driven by the expansion of oil palm plantations in countries with forest resources such as the Philippines, Indonesia and the Republic of Congo.

This geographical spread of projects that aim to produce flex crops illustrates why South African and South American (Argentine and Brazilian) actors are among the main actors involved in this particular aspect of the large-scale land acquisition phenomenon. Private companies account for 87% of the investors involved in deals for flex crop production.

The Land Matrix data also shows “multiple use” projects in all the targeted regions. For these deals, there appears to be no particular specialization in terms of actors involved or countries targeted. The reasons for which investors set up projects with multiple production goals are similar to the reasons for growing flex crops, namely food price volatility, risk management and uncertainty concerning the development of biofuels markets.



# Water as a driver: the role of water in large-scale land acquisitions

Water issues are gaining prominence in current “land grabbing” debates and it is repeatedly argued that large-scale land acquisitions are also about securing water rights for investors. The recent spike in such acquisitions may lead to a change in regional freshwater use patterns in both target and investor countries. Particularly in target countries, this may exacerbate water stress and aggravate land degradation, in turn impeding local people’s livelihoods and triggering conflicts.

In the following we display first insights as to whether land deals are indeed directly affecting freshwater use patterns in target countries and/or investors’ countries of origin. To this end, a total of 737 deals (equalling 116 million ha), and for which information is available on planned crops, were analysed to develop a hypothetical picture of the water-related effects of these deals.

## Hypothetical water savings in investor countries

A first descriptive analysis (see Table 7) of the twenty most important investor countries shows that in general, the countries with a high water scarcity index – such as Saudi Arabia, Qatar, and the United Arab Emirates – would heavily strain their domestic water balance if their investors’ overseas land acquisitions were to be implemented in their countries. However, a hypothetical water increase in Saudi Arabia and Qatar would only be the result of agricultural area expansion, as the average water consumption per hectare implied by land deals is almost identical to their current domestic average water consumption per hectare. This finding lends weight to the assumption that the land acquisitions of investors from Saudi Arabia and Qatar reflect local market needs, and that the agricultural produce is not intended for the world

### BOX 5:

#### Indicators for water balance changes in investors’ countries

To get an indication of whether investors’ motivation is to secure water rights and reducing water resource consumption in their countries, three indicators were developed (see Table 7).

The first is the water scarcity index which expresses the proportion of the “countries” renewable freshwater resources that are withdrawn (a figure of 1 indicates that all renewable resources are used).

Secondly, the theoretical water consumption intensity index compares the existing average agricultural water consumption per hectare (“water consumption intensity”) in investors’ countries, with the theoretical intensity of water consumption that would be implied by land deals, were they to be implemented in the investors’ countries.

Thirdly, the theoretical water consumption index compares the total theoretical agricultural water consumption in investors’ countries, with the theoretical demand for water that would be implied by land deals if these agricultural projects were to be implemented in the investors’ countries.

market. By contrast, while the United Arab Emirates has a similarly high water scarcity index, the average water consumption per hectare of the deals made by its investors is almost twice that of its domestic water consumption (1.71). This is a possible indicator for at least a partial world market orientation.

In addition to the aforementioned arid countries, there are other investor countries that have low to moderate freshwater stress but are also potentially safeguarding their water resources. A case in point is that of South Africa which is prominently involved in transnational land investments. It has a moderate water scarcity index of 0.25. If implemented in South Africa, the transnational projects of South African investors would double the country's domestic average agricultural water consumption per hectare, and increase almost six fold (5.8) its total agricultural

water consumption. In general, there are clear indications that land acquisitions particularly by investors originating from countries in humid and tropical climates (e.g. Malaysia) are going for water-intensive crops that correspond to their current domestic crop water intensity, and thus it can be assumed that their priority is to meet domestic demands. One hypothesis is that protecting stressed freshwater resources is a major motivation for transnational land investments, particularly of water-scarce nations. But there are clear indications

**Table 7: Water scarcity and water intensity of large-scale land acquisitions if implemented in investor countries**

Investor Country	Water scarcity index*	Theoretical water consumption intensity index**	Theoretical water consumption index***
United Arab Emirates	20.32	1.71	4.22
Saudi Arabia	9.43	1.10	11.78
Qatar	4.55	1.00	107.54
Egypt	1.20	2.30	0.245
India	0.40	0.93	0.05
South Korea	0.37	0.59	1.18
Singapore	0.32	1.17	1965.21
South Africa	0.25	2.07	5.80
Italia	0.24	1.31	0.21
Japan	0.21	0.82	0.27
China	0.20	0.82	0.084
USA	0.16	0.89	0.06
Great Britain	0.09	0.98	1.82
Australia	0.05	0.73	0.03
Argentina	0.04	0.88	0.14
Sweden	0.02	1.70	3.80
Canada	0.02	1.56	0.07
Malaysia	0.02	1.04	0.67
Brazil	0.01	1.20	0.08
Norway	0.01	1.00	4.99

Notes (see Box 5):

\* A value of 1 indicates 100% withdrawal of renewable freshwater resources (a value greater than 1 indicates non-renewable water use).

\*\* A value above 1 indicates that the intensity of water use implied by land deal is greater than the average domestic rate of use.

\*\*\* A value of 1 indicates that the magnitude of water use implied by land deals equals the magnitude of domestic use.

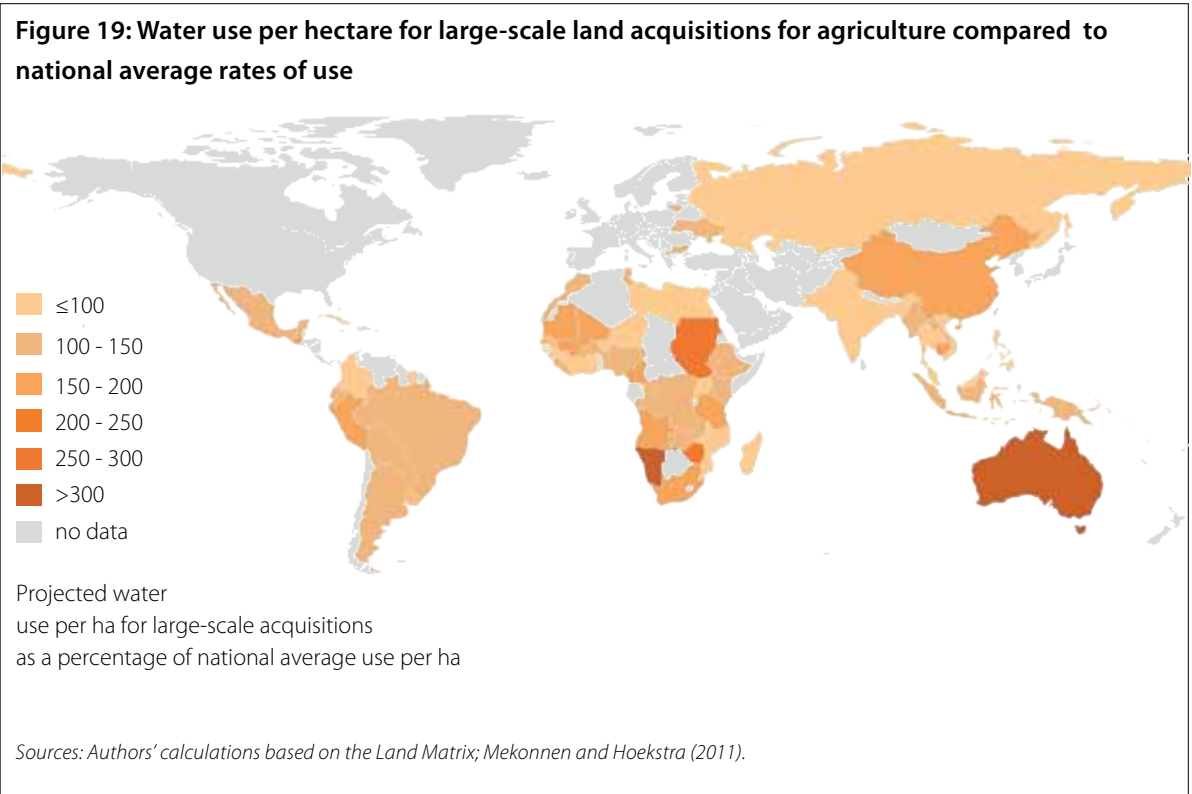
Sources: \*FAO Aquastat; \*\*Mekonnen and Hoekstra 2011; FAOSTAT.

that water stress alone does not explain the higher demand for water in crop production associated with transnational land deals. High water demand in land deals involving investors from countries in sub-humid to humid climates seems also to be driven by regional market demands and other factors.

**Effects on water balance in target countries**

Of the 69 countries analysed, 43 countries (62%) will have an increased intensity of water resource use following agricultural foreign investments compared to their current average agricultural water use per hectare. By contrast, in 25 countries the intensity of water resource use of foreign agricultural investments will on average be lower than the existing intensity of water consumption in the target countries. On average, the analysed land deals would increase water consumption in target countries by 12.7%. The overall additional water resource consumption in target countries corresponds to 161.9 km<sup>3</sup>. However, the above

figures do not take into account possible agricultural water consumption on the affected land area before the land acquisitions took effect. Despite this, there are clear indications that overall, large-scale land acquisitions have the potential to aggravate water stress, with consequences for livelihoods, ecosystem service provision, and water-related conflicts. The analysis also shows that the issue of impacts on water resources need to be considered in a manner that allows for regional differentiation, and that further detailed calculations are needed to determine the actual balance of water use consumption implied by land deals by taking into account the water usage of the land use system being replaced.

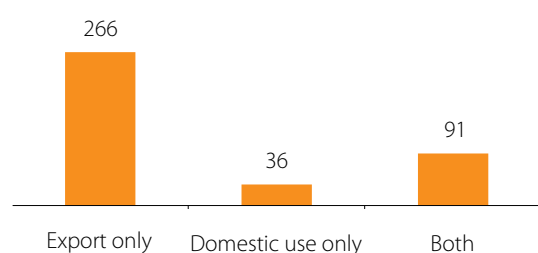


# The destination of production from large-scale land acquisitions for agriculture

This section analyses the production flux related to large-scale land acquisitions. As such, it sketches the renewed geography of world's agricultural production and trade flux. It does so through the analysis of the destination of the production. Representing only one variable, it contributes to the debate on whether large-scale land deals can be considered as land grabbing or development opportunities (Cotula, 2009). First, the evidence from the Land Matrix reflects the lack of transparency surrounding land deals. Out of the 1217 agricultural projects recorded in the Land Matrix, information on the final destination of production is missing for 894 projects. For the 393 cases for which we have that information, export is the principal aim of the production. A possible domestic use of the production is generally of marginal importance. Notably, production for domestic markets is not only for food, but is equally shared between the different sectors of production.

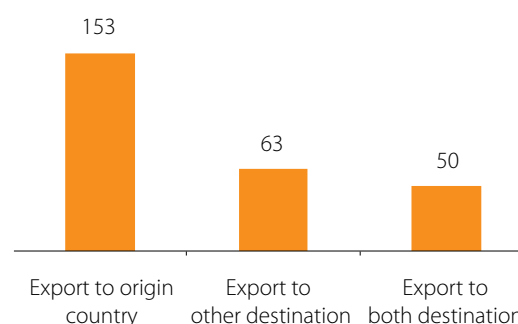
A focus on land deals that envisage the export of production demonstrates that 43% of them have the objective to send the production to the origin country of investors. These projects are mainly concerned with food crop production (42%), which supports, once again, the argument that food security is one of the drivers of the land rush.

**Figure 20: The destination of production from large-scale land deals**



Source: Authors' calculations based on Land Matrix data.  
Notes: N = 393

**Figure 21: Destination for projects exporting production**



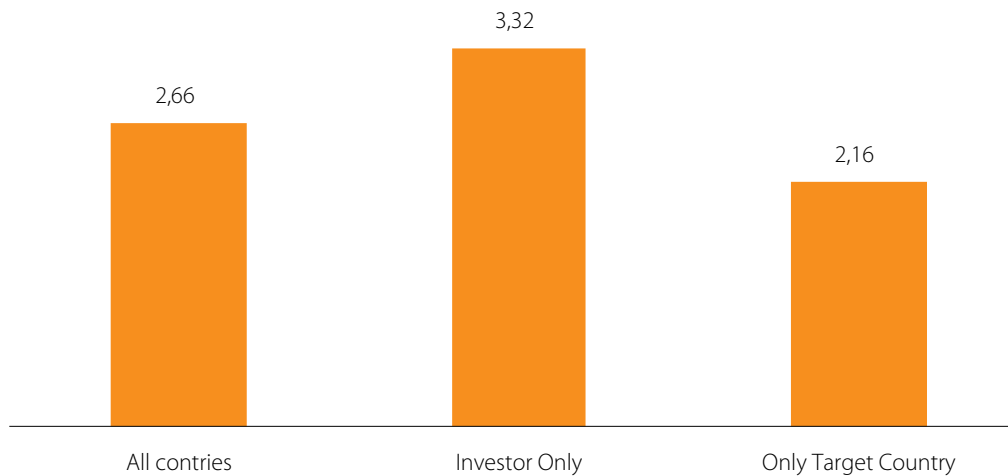
Source: Authors' calculations based on Land Matrix data  
Notes: N = 266

# 5. Processes and impacts: How land deals are implemented

This chapter is concerned with the processes related to land deals. More specifically, we seek to address the following set of issues: First, we investigate one of the key factors that shape the socio-economic outcomes of land acquisitions: land rights and land governance in target countries. In this context, we provide some insights on conflicting land claims and on how the land was used before the acquisition. Second, we assess contractual

arrangements, the transparency of the process and the involvement of local communities, as well as the key issues of compensation and eviction. Third, we examine whether we can find evidence for the potential positive effects of large-scale agricultural investments for local populations, such as improved access to public services or employment creation, possibly through contract farming.

**Figure 22: Land Tenure Security**



*Notes: All countries is calculated for 117 countries worldwide, Investor only is based on 34, and target only on 36 observations.  
Source: Authors' compilation based on Institutional Profiles Database 2009*



# Land rights and land governance in target countries

Recent studies point to the potential threat of investors exploiting weak land tenure systems to their advantage (World Bank, 2010, p. xiv; Arezki et al., 2011, p. 3). The argument is that investors choose target countries because of weak land tenure systems, so as to have easy and cheap access to land. On all accounts, land tenure systems are an important contextual factor with significant implications for the likely impact of land deals. The importance of land rights and land governance for the economic performance of agriculture has long been recognized. Particularly in phases of agricultural transition, for example from smaller to larger farms, well-functioning land markets with well-defined and enforceable land rights help to facilitate efficiency-improving structural changes.

However, many developing countries are known for having deficient land governance systems that cannot provide for secure land-related property rights. Land tenure systems, in particular in Sub-Saharan Africa, are often characterized by dual land tenure systems where customary land rights co-exist with formal property rights. Such dual systems, and the predominance of customary rights in many places, do not necessarily lead to inefficiencies, but they may become problematic with the advent of large-scale investment projects which fundamentally alter the rules of the game. In such contexts, the lack of formal recognition of customary rights may lead to local populations losing access to land without adequate compensation, and it may even be a trigger of conflict.

From a global perspective, it is possible to investigate whether investors really choose target countries with relatively weak land tenure systems. As a first approximation, Figure 22 displays the average land tenure security rank for different groups of countries.

The variable is defined between 1 and 4 with higher values indicating higher land tenure security and is computed from the Institutional Profiles Database (IPD) 2009.<sup>4</sup> In Figure 22 we consider three groups of countries: All countries, countries that are solely a source of investment, and countries that are only target countries. While most high-income countries have values close to 4, the world average stands at 2.66. When we distinguish between target and investor countries, we can clearly see that land tenure security is highest for those countries that are only investor countries (3.32), and lowest for only target countries (2.16). This supports the claim that investors prefer countries with weak land tenure systems.

Land tenure systems do not only influence the investor's choice to acquire land in a certain country. It is likely that the activities of investors have, in turn, repercussions on the (local) land tenure system. More specifically, the presence of an investor may alter the significance and role of formal land rights that are often held by the state, and sometimes by local actors. For instance, the position of a village chief can be transformed by increasing demand for land. While formal rights held by a village chief may have been of little importance as long as local communities have used the land for subsistence agriculture, the demand for land by the investor suddenly changes the power and influence of such a chief. The potential complexity of land tenure questions surrounding large-scale land acquisitions is illustrated by a case study from Western Kenya (Box 6), that shows how an investment project can encourage multiple competing claims.

---

<sup>4</sup> The variable B609 Security of land tenure rights consists of four indicators (B6090 – B6093) which have been aggregated using weighted means of the variable scores per country (Crombrughe et al., 2009, p. 15).

## BOX 6:

### **Conflicting land rights and land use in Western Kenya: The case of Dominion Farms**

The large-scale rice farm “Dominion Farms” in Western Kenya has aroused many critical reviews (e.g. FIAN 2010). The land in question is located in the area of Siaya and Bondo District in Nyanza province and is held in trust by the respective county councils. The swampland adjacent to Lake Victoria could formerly not be used intensively. The community used it for grazing animals, fishing, and agriculture in the dry season. Only very few people were living on the land because of seasonal flooding. There have been previous projects to develop the swampland for agriculture; however, all former projects have failed.

In 2003, Dominion signed a Memorandum of Understanding (MoU) with the County Council of Siaya and the County Council of Bondo. The local community was informed through church channels. Dominion was granted a lease of 6,900 hectares for 25 years with the possibility of renewal. Dominion negotiated with the legal trustees, according to proper legal procedure. However, heavy resistance from community members (see, for example, Ochieng, 2011) has been intensifying over recent years. While most blame Dominion, others hold the government responsible: “So it is worth saying that Dominion did not grab our land, but the government, because the government took our land and gave it to foreigners” (Farmer in Siaya County during focus group discussion, 22.09.2011).

For a foreign investor it is not easy to understand the multitude of land use conflicts which might arise from a leasehold negotiated with local authorities acting on behalf of the community. In the case of Dominion, the investor is now faced with a number of conflicting land claims:

The first problem is that the area was never clearly surveyed. Dominion is supposed to develop the land in two stages and successively reclaim land. They are still in phase I of the reclamation (3,700 hectares) but are approaching completion. A court case in 2011 tried to prevent Dominion from moving to area II. Many people dispute Dominion’s claim to particular pieces of land.

Then, there is a conflict between the county councils as to how much land belongs to which district. The MoU states that Siaya holds 86 % and Bondo 14 %, and that lease-fees will be paid accordingly. As Dominion is closer to moving to phase II, these figures have been challenged: A cartographer was sent to the area to review the land tenure claims. The repartition changed the claims to 32 % for Siaya and 68 % for Bondo. However, these figures are still disputed.

Also, the clearance and drainage of the land encourages more people to move into the now agriculturally exploitable areas, creating conflict when Dominion seeks to move ahead with implementation.

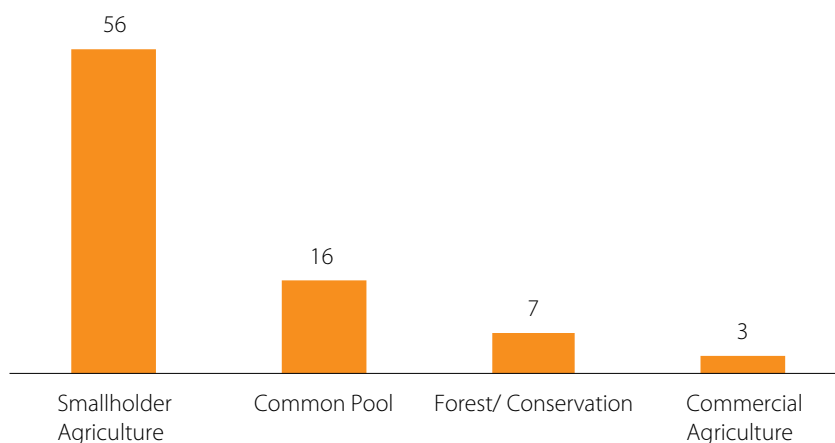
Clearly, former, or pre-existing, land use and land ownership are important determinants of the impacts of land acquisitions. The database offers some insights into these issues. Of the 82 cases in the database with information on former land use, most are reported to have been predominantly used by smallholders for cultivation (56) (Figure 23). The second most important former land use is communal use, typically for grazing animals. Only a minor fraction of the reported land acquisitions seem to affect land that was forest or under conservation (7). Former commercial agricultural use (3) is the exception.

As land users are not necessarily the same as land owners, our data base also reports the former land owner (Figure 24). The main vendor of land is clearly the state (51). Smallholders (14), private companies (11), and communities (14) all appear to be former owners to a similar extent.

The comparison of users and owners shows a discrepancy. Whereas smallholder agriculture is the predominant land use, smallholders with private property only account for a small fraction of the group of land owners. This discrepancy between users and formal owners implies that those who are selling or leasing land are not the ones who are actually using

it. This is a direct consequence of the diverse land tenure systems we have described above. While large amounts of land in many parts of the world, but particularly in Sub-Saharan Africa, are being used by smallholders on the basis of customary, and sometimes communal, use rights, these farmers often do not own the land formally.

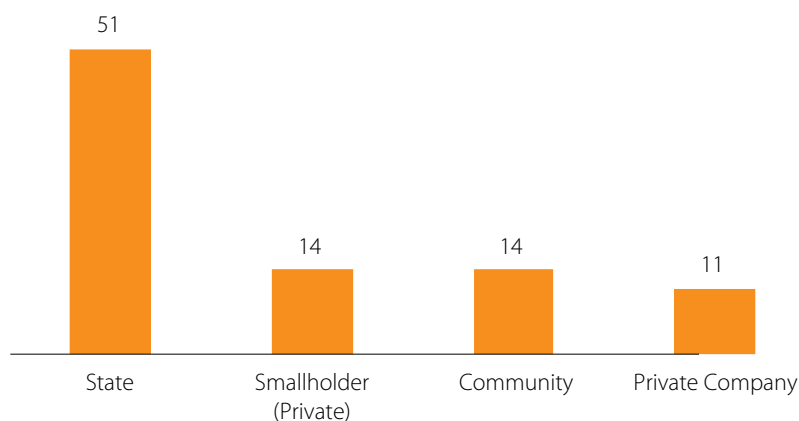
**Figure 23: Former land use**



Source: Authors' calculations based on Land Matrix data.

Note: 82 cases.

**Figure 24: Former Legal Land Owner**



Source: Authors' calculations based on Land Matrix data.

Note: 90 observations.

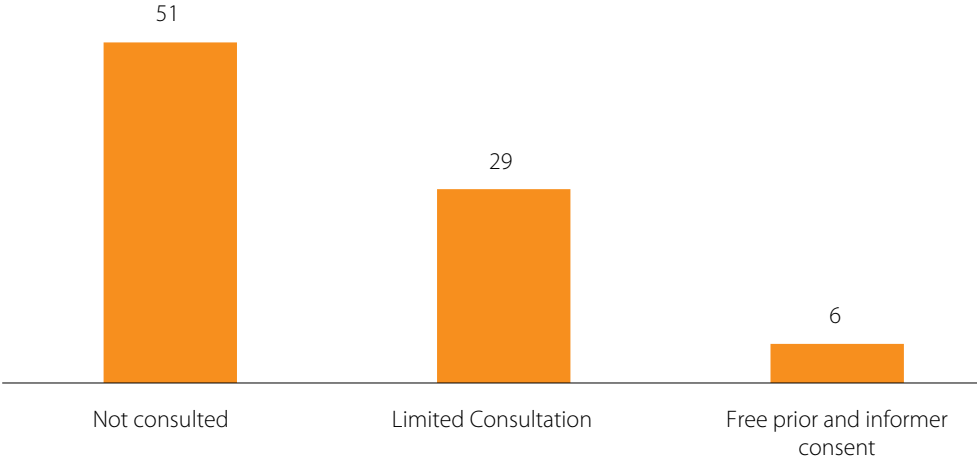
# Contracts, transparency and the involvement of local communities

There is a widespread perception that investors rarely discuss their intentions with members of the communities affected by the land acquisition. The evidence from the Land Matrix is limited, with information on community involvement recorded for only 86 cases. The possibility of bias in media reporting also cannot be ruled out. Nonetheless, it is striking that there are only six reports of prior and informed consent before the commencement of the project. In 29 cases the community was in some way involved, however the consultation process was described as "limited". In these cases, reports state, for instance, that communities were consulted but did not really understand what was going on, or that they were put under pressure from authorities. For the most part, an investment project comes as a surprise to local community members: more than half of the cases (51) recorded in Figure 25 show that there was no prior consultation or involvement

between investors and the local community members during the decision-making process.

Case study evidence from Zambia in Box 7 shows some typical features of the negotiation process that determines how land can change hands in this country's customary tenure areas. In the Zambian case, the meaningful involvement of women and men in decision-making over land is effectively at the discretion of traditional leaders. Zambia thus provides an example of a fairly strong and formally recognized role for traditional authorities that does not necessarily translate into strong community involvement. In such complex situations, it is difficult even for an investor with good intentions to initiate a transparent process of land acquisition.

**Figure 25: Involvement of the community**



Source: Authors' calculations based on Land Matrix data.  
Note: 86 observations, including non-agricultural deals.

## BOX 7:

### Communal land and the role of chiefs in Zambia

In Zambia, the ownership of all land is vested in the president. Land can also be categorised either as state land, which is titled, or as customary land held in trust by traditional authorities. Official figures state that 6% is state land and 94% customary land. However, these figures date back to 1964 and are likely to have changed since. This is due to the Land Act 1995, which allowed for the transformation of customary land to state land.

Chiefs, and to a limited extent village headmen, have the traditional rule over land. All land in their chiefdom is allocated to families in the area. Private investors can approach village headmen and chiefs directly in search of land. Either the chief or the village headman is supposed to verify that the land is available and that no one claims it. Then, the land is surveyed and the district council checks whether there are any conflicting claims before it makes a recommendation to the Commissioner of Lands. The Commissioner then gives out an official title for the land and the land is then transformed from customary land to state land. Once the title is given out, the private investor becomes the legal lessee of the land. Land can only be leased, usually for 99 years. Outright purchases are not possible.

By giving out land to investors, the traditional ruler's chiefdom is shrinking as the land is irrevocably transformed to state land. The rulers are – according to tradition and the Lands Act 1995 – obliged to consult the local community about any land alienation. If the local community does not consent, land alienations are not in compliance with the law. The local council is responsible for monitoring the chief's decision and verifies that the land given out to investors

is not used by any local person and that the alienation is agreed by the community. This crucial step, however, is rarely taken seriously.

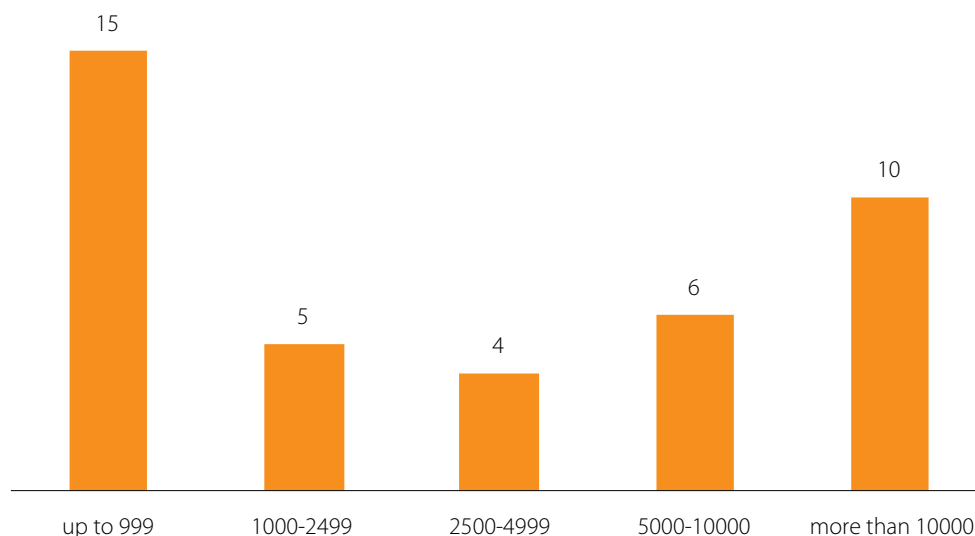
Chiefs can actually derive substantial personal benefit from making deals with investors without consulting locals. Some investors are said to be offering cash or valuable items such as cars to chiefs in exchange for land. A lack of transparency is further increased by a lack of price information, as deals are negotiated informally between the chief and the investor. The price can be anything: the promise to build a school or a hospital, an amount of money, or in kind payment. Some chiefs may negotiate for communal benefit, and others only for their personal benefit.

Source: Expert interviews by GIGA in Zambia in 2011, Metcalfe and Kepe (2008), and Brown (2005).

### Displacement and compensation

Even where communities may have been involved in the negotiation process, displacements are often the result of large-scale land acquisitions in developing countries. Analyzing the numbers of people displaced by projects is a key step in understanding the effects of such deals on local populations. Unfortunately, information on this sensitive issue is – probably not surprisingly – scarce. Our database has only 40 cases with information on displacements. In all other cases, displacement may or may not have occurred, but we have no information. It is hence difficult to draw any conclusions about how many deals result in displacements. Of the 40 cases in the Land Matrix database where displacement is reported (Figure 26) 25 are reported to have led to evictions of at least 1000 people, and ten of these to the eviction of more than 10,000 people. While it is difficult to judge how representative this sample is, it certainly gives cause for concern, particularly when considered in conjunction with the evidence that most land acquired by investors is at least partially used by local farmers. The evictions that may be caused can be

**Figure 26: Number of projects with reported evictions**



Source: Authors' calculations based on Land Matrix data.

Note: 40 cases, including non-agricultural cases.

substantial, as land demands by investors often sum up to land used by several thousand smallholders.

Compensation for local communities is one of the most-discussed but least documented issues with regard to large-scale land transactions. As discussed above, acquired land is often used by local populations (Figure 23) who then may face displacement (Figure 26). A major problem is that local populations may face difficulties in providing legal proof of ownership or title deeds. Customary land rights are not necessarily recognized by statutory laws (Alden Wily, 2011; Cotula, 2007). As discussed above, those using the land are not necessarily those in the position to sell it. Accordingly, it is not evident that those losing their livelihood base will necessarily be included in compensation payments. Compensation schemes offered by investors vary and largely depend on the target country legislation that addresses foreign investment, on the power of the former user, as well as on the investor.

In the Land Matrix there are 53 land deals with details on compensation schemes. For most cases, these refer

to stated intentions. Table 7 displays a selected subsample of cases. This list suggests that compensation arrangements take very different forms. They range from in-kind compensations to the community, such as building social or productive infrastructure, to cash-payments for affected individual farmers. One-time payments or compensations are frequent, but there are also regular payments that extend over the time of the lease (payment of royalties). Those payments vary widely between different deals. They range from a 7 US cents per ha to 100 US\$ per ha annually, which can be compared with lease fees per hectare in the USA and EU member states which can be much greater than US\$ 100.

The wide variation in royalties from land deals in developing contexts can be linked to the lack of functioning land markets and the lack of corresponding price signals in many affected regions. The very low land lease prices in some cases may be taken as an indication that some investors exploit this lack of markets and transparency to their advantage. It is, of course, difficult to say what a fair price in each single case would be. Compensation

**Table 8: Single Case Evidence on compensation**

Target Country (Region)	Investor home country	Size in hectares	Time frame of lease in years	Receiver of compensation	In Kind Compensation received	Cash compensation received (in USD)
Tanzania (Morogoro Kilembeta)	United Kingdom	5,818	99	Farmers involved in paddy and sugar cane cultivation.	Provision of seeds for the first season, equipment, land for resettlement, seeds and farming equipment, rice, and construction of 2 canals.	2 times US\$ 7.4 per ha to max. 150 villagers single cash payment (includes 1x plough costs).  US\$50 Million in grant annually; no information about payment modalities.
Sudan (Gwit)	Egypt	105,000	25	Local authorities on behalf of the community.	Construction of a health clinic for the local community.	None.
Sudan (Equatoria, Terekeka)	Norway	179,000	99	Local authorities on behalf of the community.	Assistance with development projects.	US\$0.07 per ha per year annually payment, in total: \$12 500 per year.
Philippines (Isabela)	Japan	11,000	10	Farmers involved in rice cultivation.	None.	US\$100 per ha per year.
Sudan (Western Equatoria)	India	8020	32	Local authorities on behalf of the community.	None.	US\$ 200 000 lump sum, deposit into a social fund; no information about payment modalities.  US\$10 per cubic meter of sawn teak board that the company exports.
Sudan (Lainya)	United States of America	600,000	49	Local authorities on behalf of the community.	None.	40 to 50 percent of company's net profits over the life of the lease are dedicated to the community.
Sierra Leone (Makeni)	Switzerland	10,000	50	Farmers involved in paddy cultivation.	Training program for smallholders on agriculture, saving, loans, health.	US\$ 12 per ha per year.
Tanzania (Mkuranga District)	United Kingdom	8,000	99	Approx. 250 000 Farmers involved in mango and cashew nuts cultivation.	None.	Max. US\$250 (based on planted trees, not on ha), once-off payment.
Tanzania (Lindi, Kilwa)	Netherlands	34,736	99	District (60%) and farmers involved in maize and fruit cultivation (40%).		US\$ 250 000 in total of which US\$ 150 000 are paid to district and US\$ 100 000 to farmers (in form of once-off payment, approx. US\$ 26.5 per ha to each farmer).

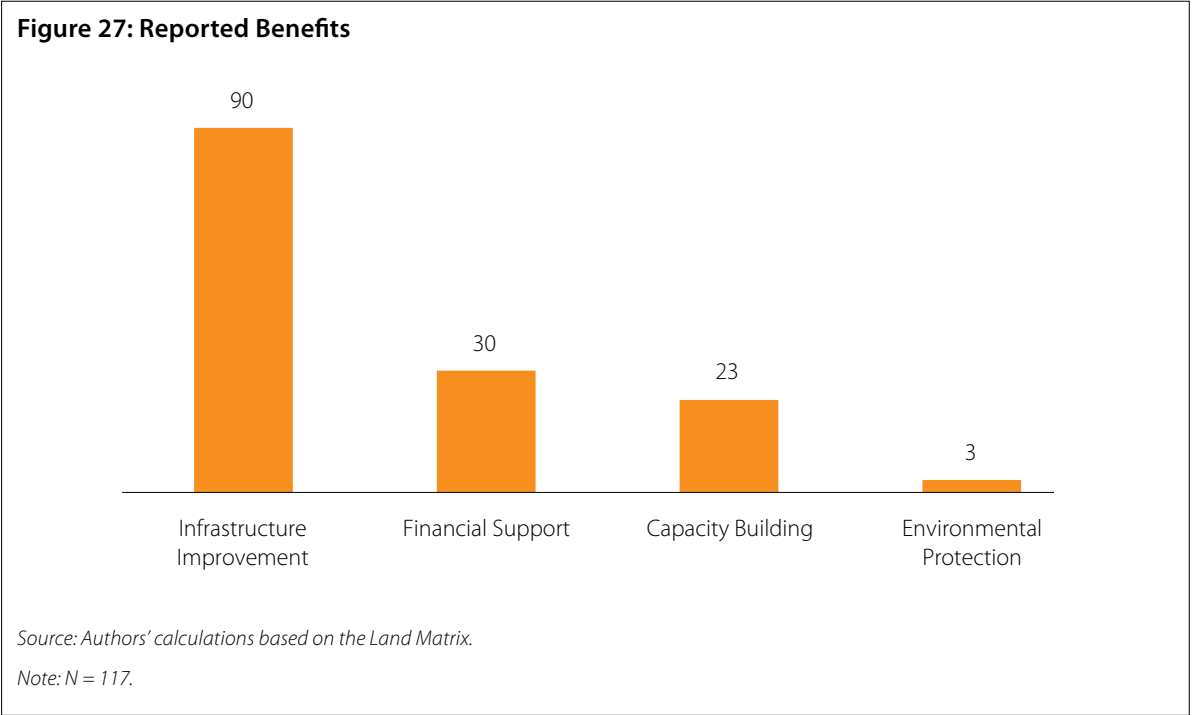
Source: Authors' compilation based on the Land Matrix.

or lease payments are often received by local authorities on behalf of the communities. Such arrangements, however, leave the allocation of these payments prone to nepotism. Some investors do take responsibility in mitigating adverse effects for local communities as stipulated by, for example, the World Bank’s Operational Policy on Involuntary Resettlement (World Bank, 2011, 4.12). Typical components of such mitigation and compensation packages include social infrastructure projects as well as the provision of extension services to farmers (not necessarily part of contract farming arrangements). The meager intended compensation by some investors, however, is very likely to leave local farmers worse-off after the project implementation.

**Potential benefits**

As with any other large investments, there may be potential benefits associated with large-scale agricultural acquisitions. Unfortunately, we cannot

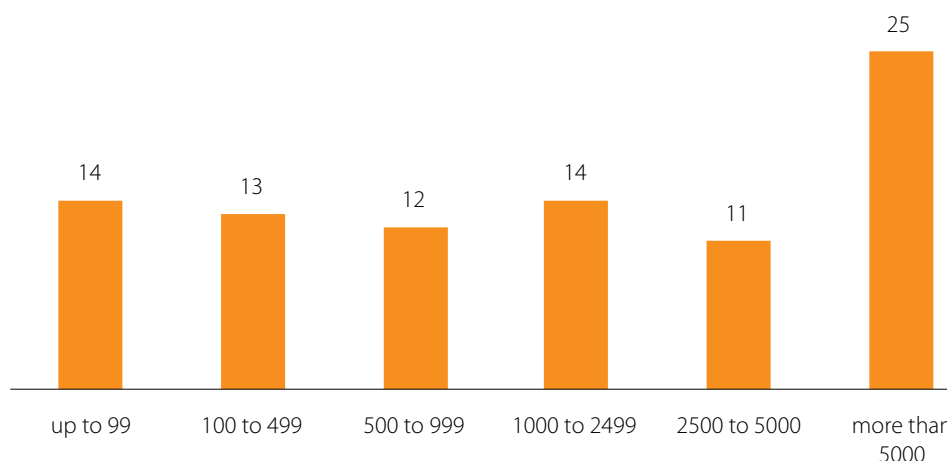
distinguish between cases with no information on benefits from those that actually do not entail any benefits. Therefore, we cannot provide any insights into the share of projects with and without benefits. Figure 27 provides an overview of benefits report in the Land Matrix. Drawing on 117 projects,<sup>5</sup> we find that an overwhelming majority report infrastructure improvements (90). Infrastructure includes health or education facilities, better access to markets and project infrastructure that can be used by the local population. Furthermore, financial support (30) and capacity building (23) play an important but less prominent role. Only few projects include environmental protection (3) as a benefit received through large-scale agricultural investments. Most reports on such benefits (56%) are reported for investors of Asian origin. As displayed above, in Asia we find mainly intraregional investments with possibly closer ties between investor and target country resulting in a greater commitment to contribute to local development of this group of investors.



<sup>5</sup> Please note that one project can report on several benefits, e.g. one project might create infrastructure and invest in capacity building at the same time. Therefore, the total number of benefits is not equal to the 117 cases.



**Figure 28: Projects with Reported Domestic Jobs Creation**



Source: Authors' calculations based on the Land Matrix.

Note: N = 89.

One of the most important potential benefits for the local community is employment creation. However, the type of jobs created is often criticized because of low wages and poor working conditions (see, for example, Fisseha, (2011, p. 27) who documents wages of USD15/month for night guards and USD60/month for skilled labourers in the 10,700ha Bechera investment in Ethiopia). Figure 28 illustrates the evidence on job creation we have in the Land Matrix (based on 89 cases). The majority of these cases are reported to have created more than 1000 jobs; 25 projects even report more than 5000 jobs created. These figures suggest that the number of jobs created can be substantial. Yet, the overall employment impact of the projects is difficult to judge with the data at hand. More so, as it is often difficult to differentiate between additional employment creation and job replacement, in particular when smallholders lose access to land. Furthermore, we do not have any information on the type of employment created. In agriculture, most jobs are seasonal and mainly for unskilled labourers.

In addition, the above figures may sometimes confound employment creation with contract

farming, a subject on which the database provides little information. While contract farming may be considered a particular type of employment creation, it often merely entails the contracting of existing farmers, creating no additional employment. In fact, if investments imply the implementation of large contracting schemes, employment effects will not only hinge on the creation of additional contracted farms, but also on the labour intensity of the new cultivated crop. There is no rule of thumb to say whether crops brought in by investors are generally more or less labour intensive than formerly grown crops. Finally, it can be noted that the creation of jobs for foreign workers is noted for only eleven projects. Despite the fear of a massive influx of workers from investor countries, we cannot find supporting evidence in the Land Matrix for this.

# Bibliography

- Alden Wily, L. (2011), "The Law is to Blame: The Vulnerable Status of Common Property Rights in Sub-Saharan Africa", *Development and Change* 42 (3): 733–757.
- Andrianirina-Ratsialonana, R., L. Ramarojohn, P. Burnod, and A. Teyssier (2011), "After Daewoo? Current status and perspectives of large-scale land acquisitions in Madagascar", *Observatoire du Foncier/CIRAD contribution to ILC Collaborative Research Project on Commercial Pressures on Land*, Rome.
- Anseeuw, W., L. Alden Wily, L. Cotula and M. Taylor (2012), "Land Rights and the Rush for Land: Findings of the Global Commercial Pressures on Land Research Project". ILC, Rome.
- Arezki, R., K. Deininger and H. Selod (2011), "What drives the global land rush?", *IMF Working Paper* (251).
- Borras, S. Jr, P. McMichael and I. Scoones (2010), "The Politics of Biofuels, land and agrarian change: editor's introduction", *Journal of Peasant Studies*, 37 (4): 575-592.
- Borras, S. Jr, J. Franco, C. Kay and M. Spoor (2011), "Land grabbing in Latin America and the Caribbean viewed from broader international perspectives", seminar: "Dinámicas en el mercado de la tierra en América Latina y el Caribe", *FAO Regional Office, Santiago, Chile*, 14-15 November.
- Brautigam, D. and T. Xiaoyang (2011), "African Shenzhen: China's special economic zones in Africa", *Cambridge: CUP*.
- Brown, T. (2005), "Contestation, confusion and corruption: Market-based land reform in Zambia", in S. Evers, M. Spierenburg, and H. Wels (eds.), *Competing jurisdictions. Settling land claims in Africa*, Leiden, Boston: Brill.
- Center for International Earth Science Information Network (CIESIN), Columbia University; United Nations Food and Agriculture Programme (FAO); and Centro Internacional de Agricultura Tropical (CIAT) (2005), "Gridded Population of the World: Future Estimates (GPWFE)", Palisades, NY: Socioeconomic Data and Applications Center (SEDAC), Columbia University. Available at <http://sedac.ciesin.columbia.edu/gpw> (accessed 10.01.2012).
- Cochet H. and M. Merlet (2011), "Land grabbing and share of the value added in agricultural processes. A new look at the distribution of land revenues", *International Academic Conference "Global Land Grabbing"*, Brighton, UK, April.
- Collier P., and A. Venables (2011), "Land deals in Africa: pioneers and speculators", *discussion paper, Centre for Economic Policy Research, Oxford*.
- Cotula, L. (ed.), (2007), *Changes in "customary" land tenure systems in Africa*, London, Rome: IIED, FAO.
- Cotula, L., S. Vermeulen, R. Leonard and J. Keeley (2009), "Land grab or development opportunity? Agricultural investment and international land deals in Africa", *London, Rome: IIED, FAO, IFAD*.
- de Crombrughe, D., K. Farla, N. Meisel, C. de Neubourg, J. Ould Aoudia and A. Szirmai (2009), "Institutional Profiles Database III", *presentation of the Institutional Profiles Database 2009 (IPD 2009)*, AFD Working Paper No. 89, Paris: Agence Française de Développement.
- Deininger, K. and D. Byerlee (2011), "Rising global interest in farmland: can it yield sustainable and equitable benefits?", *Washington D.C.: World Bank*.

- Deininger K. and D. Byerlee (2012), "The Rise of Large Farms in Land Abundant Countries: Do They Have a Future?" *World Development*, 40(4): 701–714.
- Dominion Farms, County Council of Bondo and the County Council of Siaya (2003), "Memorandum of Understanding". Nairobi.
- Ducastel, A. and W. Anseeuw (2011), "La libéralisation agricole post-apartheid en Afrique du Sud: Nouveaux modèles de production et d'investissement", *Afrique contemporaine*, 1(237): 57-70.
- European Space Agency (2010), *GlobCover 2.3: GlobCover Land Cover*, Paris: European Space Agency.
- FAO (Food and Agriculture Organisation of the United Nations), FAOSTAT. Data from 2009.
- FIAN (2010), "Land grabbing in Kenya and Mozambique. A report on two research missions – and a human rights analysis of land grabbing", Heidelberg: FIAN.
- Fischer G., M. Shah, H. van Velthuizen, F. Nachtergaele (2002), "Global agro-ecological assessment for agriculture in the 21st century", Rome/Laxenburg: Food and Agriculture Organization of the United Nations (FAO), International Institute for Applied Systems Analysis (IIASA).
- Fisseha, M. (2011), "A case study of the Bechera agricultural development project, Ethiopia", contribution to ILC Collaborative Research Project on Commercial Pressures on Land, Rome.
- IFPRI (2011), "Global Hunger Index 2011", Washington, D.C.: International Food Policy Research Institute. Available at [www.ifpri.org/book-8018/node/8058](http://www.ifpri.org/book-8018/node/8058) (accessed on 10.01.2012).
- IIASA and FAO (2010), "Global Agro-ecological Zones (GAEZ v3.0)", Rome/Laxenburg: Food and Agriculture Organization of the United Nations (FAO), International Institute for Applied Systems Analysis (IIASA).
- Mekonnen, M. and A. Hoekstra (2011), "The green, blue and grey water footprint of crops and derived crop products", *Hydrology and Earth System Sciences*, 15(5): 1577-1600.
- Metcalf, S. and T. Kepe (2008), "Dealing Land in the Midst of Poverty: Commercial Access to Communal Land in Zambia", *African and Asian Studies*, 7(2-3): 235–257.
- Nelson, A. (2008) "Estimated travel time to the nearest city of 50,000 or more people in year 2000", Global Environment Monitoring Unit - Joint Research Centre of the European Commission, Ispra Italy. Available at <http://bioval.jrc.ec.europa.eu/products/gam/> (accessed 10.01.2012).
- Oakland Institute (2011), "Understanding land investment deals in Africa, Country reports for Mali, Madagascar", Oakland: Oakland Institute.
- Ochieng, J. (2011), "Kenya: Dominion Farms Chief Fears for His Life", *Nairobi Star*, 30.08.2011. Online at <http://allafrica.com/stories/201108310229.html>.
- Rabobank International (2011), "New Models of Farming in Argentina", Rabobank Industry Note.
- Vermeulen, S. and L. Cotula (2010), "Over the heads of local people: consultation, consent, and recompense in large-scale land deals for biofuels projects in Africa", *Journal of Peasant Studies*, 37(4): 899-916.
- World Bank, Development Data Group (2008), "2008 World Development Indicators", Washington, DC: The World Bank. Available at [www.worldbank.org/U0FSM7AQ40](http://www.worldbank.org/U0FSM7AQ40) (accessed 10.01.2012).
- World Bank (2010), "Rising Global Interest in Farmland. Can It Yield Sustainable and Equitable Benefits?", Washington D.C..
- World Bank (2011), "Operational Policy 4.12 Involuntary Resettlement", Washington D.C..

# Appendix 1: Land Matrix Methodology

## Criteria for inclusion of transactions into the Land Matrix

The Land Matrix database comprises records of potential and enacted land transactions throughout the world. To be included into the database, transactions need to:

- » entail a transfer of rights to use, control or own land through sale, lease or concession;
- » have been concluded since 2000;
- » cover an area of 200 hectares or more (each);
- » involve the conversion of land from local community use or important ecosystem service provision to commercial production; and
- » are international in nature, i.e. that they involve a foreign investor. This definition includes joint ventures of foreign investors with domestic actors but excludes purely domestic acquisitions.

## Sources

The data comes from a variety of sources that include media reports, reports by international

organizations and NGOS as well as academic research including field-based research projects. These sources are mainly accessed through the two most active internet portals dealing with land transactions, [www.commercialpressuresonland.org](http://www.commercialpressuresonland.org) of the Land Portal operated by the International Land Coalition (ILC) and [www.farmlandgrab.org](http://www.farmlandgrab.org) operated by the NGO GRAIN. Sources that are found outside these two major internet portals – mainly through research focusing on a particular host country – are included after making sure that they do not refer to transactions already contained in the database (“duplication check”).

## Reliability

When entering the data from the above mentioned sources into the relevant fields of the Land Matrix database, each record is also assigned a reliability code ranging from 0 to 3. These are defined as follows:

Since a reliability rank of 2 is only given to transactions that have been checked by the Land Matrix partnership in the host country, the initial reliability

**Table 9: Reliability Codes**

0 “only reported”	Land transactions that have been reported by the press or other sources (typically from the internet) that have not undergone any process of verification.
1 “reliable”	Land transactions reported in sources that we judge reliable, including for example: research papers based on empirical evidence through field research, company websites (delivering information on the main columns, such as size, produce, or year), government records.
2 “reliable” (confirmed)	Land transactions that have been checked by the Land Matrix Partnership through questionnaires submitted to organizations working in the host country.
3 “reliable” (confirmed with publicly available contract)	Land transactions of which contractual agreements have been made publicly available.

ranking of each entry can be 0, 1, or 3. The upgrade in terms of reliability from level “0” or “1” to level “2” is reached once an additional check is executed by one of the 274 host country contacts. The exact process for in-country checking varies from country to country. It includes personal interviews or direct personal knowledge of the transaction as well as access to research that has not yet been published. Furthermore, records can receive higher reliability ranks if additional information suggests this. Last but not least, a minimum reliability ranking of “1” is the prerequisite for any transaction to be included in the public database.

### **Note**

Although based on a solid methodology, the data included in the Land Matrix should be treated with caution. Regarding the reported deals, certain investors or hosts have received more media attention than others and might thus be overrepresented in the database. By contrast, other countries might be underrepresented, simply because they do not get similar levels of media attention. The database may also suffer from biases that are due to systematically higher or lower reliability of reporting. Certain countries may be recorded as having larger numbers of reliable deals simply because of greater transparency. This is evident for Peru, for example, whose transparency laws allow access to information on all large-scale land acquisitions. Large-scale acquisitions tend to be less well-reported or researched in Congo Basin states and yet it is believed that many thousands of hectares are being allocated regularly by governments to foreign and local enterprises in these countries. The lack of transparency thus provides obstacles to objective verification in many countries, and in some cases even confirmed deals have since been nullified or changed. Furthermore, some errors in the data may still remain due to human error. We apologize for these and are happy to correct them whenever this comes to our attention.



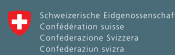
# Acknowledgments

The LAND Matrix partnership would like to thank the German Ministry of Education and Research (BMBF) for their support to the GIGA project “Large-scale agricultural investments and sustainable development”, the German Ministry for Economic Cooperation and Development (BMZ) for their support through the GIZ sector project “Land policies and land management”, and NCCR North-South for the support to this report.

A special thanks also goes to Mirjam Harteisen, Julia Petersen and Kacana Sipangule (GIGA) for their excellent research assistance, Matthias Engesser (CDE) for GIS analysis, Silvia Forno (ILC) for the key role played in the coordination and development of the LAND Matrix, and Andrea Fiorenza and Michael Taylor (ILC) for their support in producing this report.

Last but not least, the LAND Matrix partners wish to express their gratitude to all members of their networks who have significantly contributed to the data collection.

The Land Matrix is partly financed by the internal resources of the partners organisations. The additional support of Oxfam, SDC, Netherlands Ministry of Foreign Affairs, BMZ and European Commission is greatly appreciated.



On behalf of



---

The opinions expressed in this report are those of the authors and can in no way be taken to reflect the official views of any of the LAND Matrix partners, nor of their members, partners or donors.



**Land Matrix**  
[landportal.info/landmatrix](http://landportal.info/landmatrix)

GHA 

MAR 

ARG 

BRA 

RUS 