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Food security and land use: The Ethiopian case

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Abstract

From the financial crisis of 2008, international investors have addressed their attention to new investment and expansion opportunities and have acquired millions of hectares of land in various parts of the world. Developing Countries are the main target for such Large-Scale Land Acquisition (LSLA). While the adverse effects of these land grab are well known, their implications on food security have been less studied. In the context of an increasing disequilibrium between local food needs and international investors goals, the examining the potential adverse effects of LSLA on food security become an increasingly pressing matter. The paper illustrates an in-depth analysis on the impacts of LSLA on food security in Ethiopia. The results indicate that if the entire area of the acquired land is assumed to be used for domestic food production, it could feed around 7.1 million people.

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Introduction

In the past decade, the number of transnational land deals has put the phrase land grab on the headlines of international news. Some scholar even speaks of a new scramble for Africa (Onoja & Achike, 2015). This expression rings a bell that most people associate with images of international investors forcefully taking land away from a poor rural community, linked to neo-colonialism and violation of human rights. Officially, however, the phenomenon is called agricultural investment (World Bank, 2010). This term refers to Large-Scale Land Acquisition (LSLA) by private or public, national, or international, investors and agribusinesses that buy farmland or lease it on a long-term basis to produce agricultural commodities. Such acquisitions are praised to yield sustainable and equitable benefits for both parties. Both interpretations and titles do not do complete justice to the phenomenon, which remains a heavily discussed and complex topic. Land grabbing or investment in the 21st century occurs in a variety of ways and can be interpreted from multiple perspectives. In particular, land grabbing is not just a North-South dynamic but also takes place in a South-South context and sub-national context large scale land transfer being a tool to promote wealth redistribution across regional and ethnic lines within a country. Furthermore, the impulse for a land grab does not always come from the acquiring party. Although the dominant narrative is that of investors targeting weak countries where buyers exploit corrupt or indebted governments, destination countries may explicitly seek to attract investments.

Land grab as a transnational phenomenon has raised several pressing legal, economical, political, and philosophical questions.

The transnational phenomenon of land grab or investment can thus be studied to a variety of issues such as climate change, demographics, or global financial markets.

This paper aims to illustrate a small component of this diverse and complex phenomenon, setting aside some of the larger underlying questions.

In particular, the paper examines the impacts of LSLA on local food and water security.

While wage work in large-scale agriculture is not always impoverishing, there are without doubt also effects of LSLA on the food and water security of the local population. There is a vast literature showing that LSLA can complicate food and water insecurity. It is well understood that LSLA is not only an acquisition of land by foreign investors but also an appropriation of domestic food and freshwater resources (Rulli & D'Odorico, 2014; Johansson *et al.*, 2016). While this linkage has already been addressed by the current literature and associated effects have been thoroughly analysed in theory (Behnassi *et al.* 2011), the magnitude of this adverse correlation remains

largely unknown and unclear on the country-level. The effects of foreign land acquisitions on local food and water security are poorly quantified.

This paper investigates the topic using a quantitative assessment in Ethiopia. We focus on Ethiopia as an example of global hotspots for LSLA which is furthermore both highly affected by severe food risks and water shortage. Also, in this country already limited land available for African farmers is diminishing in the face of lingering hunger and poverty.

The paper investigates the appropriation of domestic food and freshwater resources through LSLA. More precisely, we quantified the blue water consumption of biofuel production from foreign land deals in the country; further estimated the potential amount of food that could be produced on the acquired land; and finally derived the number of people that could be nourished by it. Naturally, food insecurity can never be attributed univocally to one variable and the paper does not intend to establish any causal relationships. Also, hunger and the number of people suffering from it are difficult to measure. Nevertheless, this paper highlights the worrisome potential consequences of weak land policies for the target country. The quantification is a hypothetical one, where we attempt to calculate the potential burden of LSLA on local food security.

The paper is structured as follows. In chapter 1 we will provide a literature review including the analysis of the most relevant references of LSLA; we will also highlight the controversial definitions of land grabbing and the main channels through which LSLA affects food security. In the following chapters, we will analyse the effect of land grabbing on the food security situation of Ethiopia. Using data from the Land Matrix Database and referring to the literature and analytical report we will then conduct a quantitative assessment where we estimate the potential food and water appropriation of LSLA in Ethiopia. The paper will also consider an overview of the challenges for governance mechanisms that are arising and the response that have been drafted [proposed?] so far. The analysis is focused on the effect of LSLA on food and water availability without considering other dimensions of food security such as food access, food utility, and food stability. The analysis assumes also that farmland acquired by foreign investors is fully cultivated with the crops indicated by the Land Matrix data, neglecting the fact that some parts have not been put under production or might be temporarily uncultivated.

The motivation for the paper is to help clarify the effects of LSLA on food security; we also provide policy implications.

The novelty of the contribution is the quantitative assessment of the implications of LSLA on local food and water security by analysing the situation in Ethiopia.

The use of quantitative data is important to understand the magnitude of this correlation and could have a positive influence on the definition of the

substantially qualitative and controversial assessments that have emerged from the literature review.

1. Literature Review

The theme of land grabbing or LSLA has been addressed by numerous researchers over time.

This issue is particularly sensitive in the countries of the African continent.

Available pieces of evidence have shown that there is a global rush for LSLA and the demand for Africa's land has increased over time (Kareem, 2018).

A general definition of land grabbing is the purchase or long-term lease of vast tracts of land from mostly poor, developing countries by wealthier, food-secure nations as well as private entities to produce agricultural commodities for export (Shepard & Mittal, 2009). This definition serves as a starting point and can provide a first theoretical classification of the phenomena.

Despite this, the most cited definition is that used by Borras (Borras *et al.*, 2012).

Borras describes contemporary land grabbing as achieving control on relatively vast tracts of land and other natural resources through a variety of mechanisms and forms. This normally involves large-scale capital that often shifts resource use orientation into extractive character, whether for international or domestic purposes, as capital's response to the convergence of food, energy and financial crises, climate change mitigation imperatives, and demands for resources from newer hubs of global capital.

However, these definitions do not reflect all aspects of LSLA. Defining land grabbing involves a variety of elements such as land ownership, land acquisition, and land use.

Land ownership can be summarized under the following three categories: private land ownership; communal land ownership; state land ownership (FAO, 2002).

The legal land ownership regime of the country determines the ways of transferring land. For land grabbing, the land ownership system is particularly relevant, since it determines who has the right to sell or lease the land to the investor party. If the government is transferring or redistributing land ownership, this may happen via a unilateral legal provision by the authorities. Lease or concessions are common in countries where land is owned by the state as in Ethiopia.

LSLA are typically contractual agreements between two parties that define the terms of an investment project and the way risks, costs, and benefits are distributed (Cotula, 2011).

The parties involved in the contract and the exact terms of the land acquisition can have different repercussions for agriculture and food security in recipient countries.

Concepts of food security have evolved in the last thirty years to reflect changes in official policy thinking. The term first originated in the mid-1970s when the World Food Conference (1974) defined food security in terms of food supply – assuring the availability and price stability of basic foodstuffs at the international and national level.

The widely accepted World Food Summit of 1996 definition affirms that food security exists when all people, always have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

The issue of the effects of LSLA on food security has become the subject of numerous media reports since the global food crisis worsened in 2008 and this has led to the rise of many scientific studies concerning this subject (Shepard & Mittal, 2009; Borras *et al.*, 2011; Santangelo, 2018; Petrescu *et al.*, 2019).

Despite this today almost a billion people across the world experience the effects of food insecurity and about 850 million people are undernourished. According to demographic forecasts of International Organisations, in 2025 the Earth will be inhabited by 7.4 billion people, and in 2050 9.1 billion people. This makes food security a global issue to be solved.

The importance of the topic is underlined by the fact that one of the biggest challenges that governments and people must face to achieve food security includes land use and land availability for agricultural production.

The seriousness of the matter is clear when we consider that the average amount of cropland per capita in 1970 was 0.4 hectares and by 2010 this had decreased to 0.2 hectares (FAOSTAT, 2013).

Essential to the end of this question are the theses carried out by different and authoritative authors.

Several scholars have described the negative consequences of LSLA in general terms.

The societal and environmental implications resulting from the adoption of LSLA raise sustainability concerns. The phenomenon of land grabbing entails a shift from traditional, local, small-scale systems of production to large, intensive, commercially oriented agricultural models (Dell'Angelo *et al.*, 2017).

The LSLA phenomenon leads to an abrupt change in land use and this transition leads to rapid environmental transformations (Lazarus, 2014).

Farmlands are being stripped from their long-time owners by large corporations, destroying cultural ties, traditional agriculture, and ancestral grounds along the way (Bisbing, 2015).

LSLA provokes different manifestations of inequality: unequal distribution of environmental risks and economic benefits, structural inequalities of access to resources (including food) and control over their allocation and use, and knowledge asymmetries that translate into a variety of unequal power relations (Dietz, 2014).

In addition to this Giovanetti & Ticci (2016) affirmed that biofuel development in Sub Saharian countries through LSLA is driven by factors that have little to do with the interests of local populations.

De Schutter (2009) elaborates a set of principles and measures to deal with the issue of human rights in the land acquisition context including the right to adequate food, the rights of land users (specifically of indigenous peoples, and farm workers).

FAO (2012), states that a lack of respect for the rights of the poor contributes to tenure insecurity, which in turn can hamper human development, more people in poverty, and contribute to food insecurity.

Oxfam (2016) put evidence on the fact that countries where hunger and food scarcity is an issue, producing food for countries where is not.

Climate change could amplify food insecurity risks mainly through intensified extreme weather events and shifting rainfall patterns (Pidcock *et al.*, 2017). In a changing climate, precipitation becomes less regular and therefore less predictable (Good *et al.*, 2016). In regions where the majority of local farmers rely on rain-fed agriculture, domestic food production is highly sensitive towards these climatic changes with associated risks for local food availability. In East Africa, climate shocks are already the main driver of food insecurity (FAO, 2017). This in turn can increasingly force food-insecure countries to acquire productive farmland abroad. At the same time, climate change has raised the interest in the cultivation and production of biofuels. Increased land demand may have been triggered by the implementation of the Kyoto Protocol's Clean Development Mechanisms, which give countries credit in their carbon accounts if they invest in reforestation in other countries, as a report by the IHDP/GLP assesses (Friis & Reenberg, 2010).

The authors (Rulli & D'Odorico, 2014, Deininger *et al.*, 2011) and Institutions (World Bank, 2010) that try to underline the positive effects of LSLA argue that this phenomenon is welcomed by the local governments and highlight the potential opportunities for the agricultural sector, in terms of labor demand, technology, and know-how import. Apart from the monetary payment of lease rental, there are several other reasons for countries to encourage LSLA in their territory. Most notably, agricultural investments may spur development by creating jobs and contributing to infrastructure installations. To benefit more from this, some LSLA contracts contain provisions that require at least part of the processing to be done locally. This can help the host country move up the value chain – from the low value-

added, primary sector towards the secondary sector (Cotula, 2011). The point of view of Deininger revolves around three key considerations.

The first one is that the large size of the parcels of land which may change ownership and their concentration in a limited number of countries with weak governance implies that there are significant risks for investors in terms of the guarantee of invested capital. The second one is that the Institutional challenges influence the interest of investors and this leads to increased opportunities.

The third consideration regards the impacts of LSLA considered as a global responsibility of the international institution.

Some scholars (Cotula *et al.*, 2009; Hallam, 2010) suggest that governments should work towards minimizing the negative consequences of foreign land deals with policies that would increase the potential benefits of LSLA and investments from foreign countries and companies.

The study of World Bank (2010) aimed to investigate how the growth in the acquisition of arable land could contribute to the fight against poverty and food insecurity.

The study addressed the theme using a neutral dialectic and acknowledges the risks (actual) and benefits (potential) resulting from acquisitions of large-scale land, claiming the need for more regulation through seven Principles called Responsible Agricultural Investments (PRAI).

2. Materials and methods

We draw the number and areas of LSLA contracts issued from the Land Matrix database. We accessed the database on December 2019, and included data for 2017, and queries on outright purchase; lease; concession; and exploitation permits.

Yield values for aggregated cereal crops, mean nutritive values of cereal crops, and consumption rates of plant and animal food come from FAOSTAT database. We then adopted the average dietary energy requirement estimated from Roser & Ritchie (2017). We built up on Johansson *et al.* (2016) for the country-specific blue water index for crops defining the share of blue water demand. We adopted the mean annual crop water requirement as in Brouwer & Heibloem (1986) and Garg *et al.* (2013). Finally, the minimum water requirement per person for healthy conditions is defined by Institute Water for Africa (2018).

Few caveats hold for our analysis.

In our simulation, we assume that only staple food (i.e. cereal crops) is cultivated; we recognize that this does not cover all nutritional requirements of a balanced diet.

We also assume that acquired farmland is fully employed on food production. We recognize that alternative use might exist, but for the sake of simplicity, we are not adopting in this analysis.

We assume that crop yields in the analyzed regions most likely differ from the country average values adopted. However, and in line with current literature (e.g. Rulli & D'Odorico, 2012) we think a simplified model is still informative.

We assume homogeneity of gender, age, and employment of population. In other words, we do not take into consideration the real demographic distribution of the country, when calculating the potential beneficiaries of the food production achieved by redistributed LSLA.

We assume linear correspondence between the amount of water employed in biofuel production and that potentially provided for human consumption. In other words, we do not assume any intermediate and/or alternative use for water. This, to associate LSLA and water appropriation.

Finally, the data employed are cross-section. This limits our capacity to detect changes over-time. However, we still consider as a valid prospect of the potential use of the acquired land. Nevertheless, it is important to mention that deals are normally signed for long-time periods, if not for several decades. This of course will translate into greater damage for future generations.

For measuring the impact of LSLA on local food production, we build on existing literature. Following Mueller *et al.* (2012) and Rulli & D'Odorico (2014) we multiply the land area by country-specific values of crop yields; we multiply the result by the corresponding caloric content of cereal crops; and finally we divide the result by the amount of vegetal calories required (on average) by a human being.

For measuring the impact of LSLA on local water, we largely build up on Breu *et al.* (2016). We assume that acquired land is employed in the biofuel production. We then estimate the water footprint, i.e. the volume of water consumed per unit of crop (Mekonnen & Hoekstra, 2011; Mekonnen *et al.*, 2012). We therefore converted water footprints from m³/t to standardized water consumption per unit area (m³/ha*year). These figures have been then multiplied with the number of LSLA contracts. Alternative methods exist (such as Bossio *et al.*, 2012; Williams *et al.*, 2012) which however address slightly different purposes.

3. The case study

In Ethiopia, the agricultural sector accounts for 37 percent of GDP, one of the highest shares in sub-Saharan Africa, as well as 83.9 percent of exports. Moreover, the sector employs around 72 percent of the total

population. About 74 percent of the countries' farmers are small family farmers (FAO, 2018).

Ethiopia is affected by chronic food insecurity with 28% of the population currently being undernourished (FAOSTAT, 2017).

All this even though Ethiopia is one of the countries with the largest amount of underutilized land of all the land available for cropland expansion in Sub-Saharan Africa (Chamberlin *et al.*, 2014).

Notwithstanding the considerations on availability of unutilized cultivable lands, findings show that land is already, especially in some regions, under the pressure of demands for several purposes (Teklemariama *et al.*, 2017).

At the same time according to FAO (2010), Ethiopia loses approximately one billion tons of topsoil annually, is faced with a high rate of nutrient loss in the soil, and 30,000 hectares are lost to water erosion each year.

Climate hazards have been the main driver of food insecurity in Ethiopia during recent years (FAO, 2017). Since 2015, the country has been hit by a series of severe droughts, which caused heavy harvest failures and water shortages. Local farmers experienced crop losses of between 50 and 90 percent due to the El Nino drought in 2015/16, leaving 10.2 million people in need of emergency food and nutrition aid (World Food Programme, 2016). Such extreme conditions are projected to become more frequent and more intense in the future (Pidcock *et al.*, 2017), posing a growing pressure on domestic food supply in vulnerable regions as Ethiopia. Persistent dryness has significantly undermined food security and threatened the livelihood of numerous households (FAO, 2017). As of 2017, about 18 million people (17%) were food-insecure of which 8 million are in urgent need of immediate emergency food and water aid (FAO, 2017). Large parts of the country are arid regions where water is a scarce resource. Today, only 57% of the population has access to improved water sources (FAOSTAT, 2017). The long-lasting drought conditions over the past years have caused a regional water crisis throughout the entire Horn of Africa.

In parallel with this Ethiopia is among the top ten target countries of LSLA globally (Land Matrix, 2016). The actual amount of land deals remains unclear, as primary, and secondary data on land acquisitions in Ethiopia is scarce. This is why we here refer to the number of land deals that have been registered by the Land Matrix Global Observatory (Land Matrix, 2017). By 2017, the Land Matrix database has documented 67 international concluded land deals in Ethiopia. The agricultural land acquired by foreign investors (i.e. total contract size) covers an area of around 996,000 ha. (Hectares) which makes about 6.6% of the country's arable land (Land Matrix, 2017). Teklemariam *et al.* (2017) adopt a mixed method (qualitative and quantitative) to indicate that in 2005-2015, the government leased nearly 2.47 million ha of the country's approximate total 114 million ha area and offered 11.5 million

ha of cultivable land to domestic and transnational investors. The biggest investor countries in terms of contract size are Saudi Arabia, India, and the United Kingdom of Great Britain.

What makes the race to the Ethiopic land particularly attractive to these investors is the low cost. The annual rent of one hectare of land ranges approximately from 1 to 5 euros. Also, all contracts allow you to start paying after 3-6 years, allowing the accumulation and subsequent installment of the rent of the first 5 years. Another important benefit for the investors is the formulation of the price of contracts in Birr, the national currency, thus being able to benefit from the devaluation of the currency. Therefore the practice of negotiation of the terms and conditions of the contracts has been a point of acute criticisms in Ethiopia.

These contracts are largely unregulated by a transnational or supranational entity and little is known about the exact terms of agreements. Furthermore, while some land acquisition contracts are long and detailed, others are a mere three pages, with poorly specified investor obligations (FAO, 2018).

Contractual agreements are often not publicly available. Thus, there is a huge lack of transparency and no sensitivity towards the issue of food security – on the contrary, food security risk assessments are rarely applied before striking a deal.

More than half of the acquired land is intended to be used for non-food crop production of which biofuels take the biggest share (36%) while only 39% of the land area is to be used for food production (Land Matrix, 2017).

Concerning land ownership according to Article 40 of the Ethiopian Constitution "... The right to ownership of rural land and urban land, as well as all-natural resources, is exclusively vested in the state and the people of Ethiopia. The land is a common property of the Nation, Nationalities, and Peoples of Ethiopia and shall not be subject to sale or other means of transfer..." (Vhughen *et al.*, 2013). The Constitution further declares the right for private investments in land and the state's right to expropriate private property for public use in exchange of "adequate compensation" (Rural & Administration Proclamation, 1997; Behailu, 2016). Since 2014, the federal organ Agricultural Investment Land Administration Agency is responsible for all land deals in the country through the effective identification of the plot takes place at the regional and *woreda* level (Vhughen & Gebru, 2013; Fana Gebresenbet, 2016). It is being criticized that decision-making processes of international land acquisitions are often lacking transparency and adequate compensation especially for pastoral communities that are not recognized by the formal law (Vhughen *et al.*, 2013). Another related concern is the fact that the Ethiopian government has exempted investors from paying any export- or other taxes on commodities intended for export (OI, 2011).

4. Results and discussion

If the entire acquired land was cropped with domestic food (i.e. staple crop), and under the assumption that a balanced diet in the East African region requires, on average, a daily nutritional energy intake of around 2,200 kcal per capita, this would have fed 7.1 million people in Ethiopia (Table 1).

Table 1 - Ethiopian nutritional potential of food production in acquired land

		Mean energy content of cereal (Kcal /kg)	Total energy content of potential annual cereal production in acquired land (Kcal)	Total amount of vegetal calories for balanced diet (Kcal/ per capita/ per year)	People that could be fed by potential food production in acquired land (capita)
Total Area of Acquired Land (Ha)	995.709				
Mean yield of cereals (kg/Ha)	2484				
Potential cereal production (kg)	2.473.341.156	3290	8.137.292.400.000	1.140.260	7.136.348

Source: Our elaboration on FAOSTAT data base, 2018.

This number raises concern regarding the fact that most of this agricultural output from acquired farmland is being exported and therefore remains not available for the local population. This is confirmed from the literature when it is affirmed that the main concern regarding LSLA is the fact that most transnational land deals are highly following export-oriented agriculture. Whether it is for commercial purposes or for securing the food supply in investor countries, food commodities produced in the acquired land are typically exported abroad, even if target countries exhibit high levels of malnourishment (Rulli & D’Odorico, 2014). Due to the prioritization of export profits and foreign interests in foreign land deals, local communities in Ethiopia do not benefit from the food production on the acquired land. Instead, LSLA can even have negative impacts on domestic food availability. The underlying problem is often associated to a lack of adequate export regulations in transnational land deals (Alemu, 2011). On the contrary, many land acquisition contracts even offer incentives to foreign investors to export their products.

These considerations confirm that LSLA normally does not contribute to local food security – instead, they can have negative impacts on local food

and water supply in target countries through the large-scale appropriation of domestic fresh water and food resources by foreign investors.

Also, it is confirmed that in regions as Ethiopia with unstable food and water systems, LSLA poses an enhanced pressure on the domestic food and fresh water supply, especially when adequate land policies are missing (IFPRI, 2012).

A second concern regarding the effects of LSLA on food security is the fact that the main objective of LSLA in Ethiopia is the cultivation of non-food crops while food production is only a secondary intention.

As mentioned before foreign land deals have caused a large-scale shift of agricultural production from food crops to non-food commodities.

The fact that most of the land is not destined for food crops shows that the potential availability of food previously indicated to ensure the food security of 7.1 million people does not, however, correspond to the real one given the cultivation investments made.

This is why there are no formal or informal obligations on the part of investment projects to contribute to the food security needs of the country (Rahmato, 2011).

Ethiopia is both a food-insecure country and net food importers, making agricultural land a vital food resource. If used for domestic food production instead of foreign cash crop production and food exports, these land areas could make a significant contribution to local food availability.

Concerning water, the analysis has investigated the freshwater appropriation considering blue water demand of biofuel crops cultivated in acquired land. Bluewater refers to surface and groundwater used for irrigation which is extracted from renewable and non-renewable sources such as rivers, dams, aquifers, and lakes (Johansson *et al.*, 2016). Biofuel production is one of the main drivers of LSLA and captures an important share of the acquired land area in the country. While it requires a considerable amount of local freshwater input, it does not contribute to local food security and is mostly fully intended for export – with an associated transfer of virtual water.

The obtained results have demonstrated that the blue water demand of annual biofuel production from land acquired by foreign investors is 1.8 billion m³ in Ethiopia. This equals the annual water requirement for healthy conditions of around 97 million people in Ethiopia. Such a significant amount of water exhibits potential risks of increased competition over freshwater use in the target country. The results confirm (Breu *et al.*, 2016) that Ethiopia is affected by a significant increase in water consumption intensity through LSLA, posing enhanced pressure on the local water balance. It is also important to add that freshwater access must be considered as a possible driver of land acquisitions, also referred to as “water grabbing” through virtual water trade (Mehta *et al.*, 2012; Land Matrix, 2016). This is why freshwater access and use rights are insufficiently addressed in foreign land investment contracts

or when investors did have to apply for water rights or adhere to extraction limits, at the project approval stage, there was no subsequent monitoring of adherence to the agreements made (Mbengue & Waltman, 2015).

5. Policy implications

Having examined the potential adverse effects of LSLA on local food and water security, it is important to examine how the international community is (re)acting in the light of this development.

Scholars have acknowledged that land grabbing is an important and urgent topic for global governance; NGOs and civil society have been fighting for more stringent international regulations on the issue. Global alliances such as the International Land Coalition push for secure access to land, and thus for the availability of water and food resources for the local population. However, transnational initiatives are still young and often remain informal. In fact, throughout the 1990s, the land question was kept out of formal international governance institutions and practices (Margulis *et al.*, 2012). Nevertheless, since the 2008 Global Financial Crisis and the rush on land, the topic is increasingly appearing on the agenda of international organizations and institutions. Multilateral institutions are slowly emerging as key sites for addressing the major policy challenges of land grabbing. One important player is the Food and Agriculture Organization of the United Nations (FAO), which organized a conference on Agrarian Reforms and Rural Development for the first time in 2006. In 2012, as a result of intensive NGO lobbying during the negotiations within the Committee on World Food Security(CFS), the FAO-Voluntary Guidelines on the Governance of Tenure were presented (FAO, 2012). This is considered to be the first global standard addressing problems of land-grabbing within the overarching goal of achieving food security. The guidelines are intended to provide governments, investors, and civil society with rules on how to protect, document, and administer legitimate rights; how to organize a change of land ownership, and how to define public priorities and goals for land use. In particular, the FAO document insists on “meaningful prior consultations” of local communities before the conclusion of an LSLA agreement. Similarly, a report published by a civil society and academia alliance called “Dealing with Disclosure” made recommendations regarding the need for inclusion and transparency when LSLA deals are made (Global Witness *et al.*, 2012). The report welcomes initiatives such as the Roundtable on Sustainable Biofuels. The High-Level Panel of Experts on Food Security established in 2010 also recommended that states report annually to the CFS on the alignment of foreign investment with food security objectives. Overall, most transnational policy initiatives so

far acknowledge that to provide adequate protection of food security interests, measures must be implemented throughout the LSLA process.

This includes recognizing existing land and resource rights, setting up inclusive negotiation mechanisms, an effective monitoring system, and post-project transparency.

Apart from these concrete measures, both FAO and CFS are global policy institutions that have been much more open to exploring and incorporating food sovereignty as an alternative paradigm for global agricultural policy. Therefore, global civil society and transnational rural movements rely strongly on the FAO and the CFS to serve as a comprehensive arena for emergent global land governance on agricultural investment (Margulis *et al.*, 2013).

At the same time, investor countries have enrolled the World Bank as their preferred arena for the creation and implementation of emergent global land governance. For them, the World Bank represents the leading authority in this new sphere of global land governance. While the World Bank does promote good practice standards for investing in developing or emerging markets and requires projects implemented through its funding to apply several safeguards, its official policy supports LSLA as a means of improving agricultural productivity and economic growth. The World Bank as well as major investor countries favour private standards and certification mechanisms to tackle the issue.

The World Bank also elaborated the Principles for Responsible Agricultural Investment (PRAI), which is essentially a corporate self-regulatory instrument. Non-state actors are powerful agents that can play an important role in governing transnational financial transactions and economic flows, often through self-regulation.

These principles were voluntary and have not been accompanied by policy proposals that could make them binding on the actors involved in the acquisition of land and to be so effective on a practical level in the regulation of this phenomenon by now widespread and full of shadows.

With the concept of Corporate Social Responsibility gaining momentum, this role may be further enhanced. However, Fortin and Richardson argue that these private schemes fall short of ensuring the necessary protection and guarantee of food security (2013).

Cotula (2011) also highlighted that although investors do regularly conduct feasibility studies, governments often lack the will or the capacity to properly assess such studies. Considering the central role of the host state in the land allocation process, state-led, multilateral regulations are indispensable.

Unfortunately, none of these transnational governance mechanisms are legally binding international treaties. With five years having passed since the Voluntary Guidelines were presented, monitoring, and reporting of the

phenomenon is still largely done by private initiatives, risk assessments are rare, and post-project transparency is also still lacking.

Furthermore, the issue of water highly relevant but particularly tricky for global policymakers. It is necessary to consider the specificities of water as a resource that is variable over time and moves across political boundaries (Breu *et al.*, 2016). So far, few of them directly addressed these challenges. A suggestion could be that in the contract, local authorities and/or the providing party could oblige investors to include water management strategies (such as crop rotation, or floodwater harvesting) in their endeavour – a response to the fact that technologies employed on the affected land often negatively impact the livelihood of people nearby, diminishing the availability of fresh water for the local population. This measure could be a promising step to limit off-site adverse effects.

The major challenge that remains is to find an appropriate, comprehensive governance mechanism for investments in agricultural land. These mechanisms must be able to deal with varied interests of local farmers, NGOs, multinationals, and government, as well as incorporate the specific characteristics of water issues.

In any case of primary importance for the fallout, it entails is the theme of land ownership. As we have seen the land ownership has important repercussions on the size of the LSLA phenomenon. State ownership favours the conclusion of LSLA contracts. From this point of view, it is desirable how much-developing countries have undertaken reform policies concerning this aspect. While state ownership was very common throughout the past decades, many governments have now updated their land legislation to clarify rights over land and natural resources.

For the future, it is desirable to strengthen these reform policies together with the activation of the LSLA process that is effectively in line with transnational food security policies.

The activation of these policies seems particularly urgent in countries such as Ethiopia where the negative effects produced by domestic legislation on land ownership and use are accompanied by increasing phenomena of food insecurity that have become a chronic critical issue. Policies for the redistribution of land would be the first step towards satisfying at least the pillar of availability within the framework of the food security policies pursued.

Finally, it should be emphasized that the choices of investors that we have seen to give priority to the production of biofuels are reflected in the incentive policies pursued at the international level starting from the EU (European Union).

This consideration indirectly confirms the role of EU member states in the International land-grabbing scenario (Carroccio *et al.*, 2016).

This points to the need for a change of course in incentive policies for the production of biofuels. In particular, international Institutions should take on initiatives to discourage or prohibit the production of biofuels in countries with food deficits such as Ethiopia.

Food security and poverty alleviation will be achieved if the land is firstly prioritized to people's needs and is then catered to biofuel industries (Sekoai & Yoro, 2016). A key element in countering the production of biofuels by investors may be the effective activation of the Ethiopic Growth and Transformation Plan, which, in addition to increasing the productivity of small farmers, involves promoting investment in medium and large commercial farms, to increase the production and availability of raw materials for food purposes.

Conclusions

The issue of land grabbing and agricultural investment remains polarising. In particular, the tension between those who view land grabbing as a clear violation of human rights and the environment, and those who see a large development potential continues to be unresolved. To find a solution where these two contrasting positions might be reconciled, a more evidence-based approach to specific challenges is necessary. We tried to provide a small insight into such a challenge, by quantifying the food and water potential of acquired land in Ethiopia. While the calculation is hypothetical, it attempts to exemplify the magnitude of the phenomenon. The large size of the areas involved, over which the population would have little agency if the food security situation worsens, represents a looming danger regarding the food and water security situation in the country. Or, expressed in less negative terms, there is a large potential to nourish the population and possibly diminish food insecurity – but this potential is negatively influenced due to LSLA. The results do not imply that 7.1million people in Ethiopia are suffering from food insecurity due to LSLA. As you know, food security depends on availability, accessibility, stability, and use of food. Therefore the achievement of food security in Ethiopia depends on a cross-sectoral approach which leads to satisfying all the four pillars of food security. At the same time, we could affirm that the main obstacle for food security which can be affected by LSLA is linked to the pillar of availability in terms of priority to solve.

The paper rather intends to emphasize with the calculation that if LSLA remains unregulated, up to 7.1 million in Ethiopia could be considered deprived of availability to food and water resources since the land is under control of a non-local/foreign entity. This is a potentially worrisome scenario, especially if we consider that climate change might exacerbate the situation

in the future. These developments call for international land and agricultural policies that specifically address the challenge of food and water security. National governments and global institutions need to tailor their strategies to incorporate food and water security implications on the various levels in which LSLA is conducted. Generally speaking, not every LSLA leads to an aggravation of food and water security situation in the host country, but only stringent regulations, applicable for both private and state actors, can make sure that the risks of food and water insecurity are properly assessed. This imposes the revision of the Ethiopian legislation through addressing the many challenges mentioned in this paper. Efforts to empower local communities to be part of the decision-making process with regards to the use of their land and natural resources are recommended to ensure results that are mutually beneficial both to investors and the local population.

At the same time, the Ethiopian agricultural policy must be effectively addressed promoting small farmers and breeders, with services, support, and credit activities aimed at the growth of this sector, which remains by far the first in several employees. This is also because the agricultural territorial context is made up almost entirely of small farmers whose common feature is tending to sell food crops only after meeting household food needs.

Therefore, through the reform of land ownership and the involvement of small farmers, it is considered possible to meet the needs of food security in terms of availability, at least as far as family farms are concerned. The reform of land ownership should also lead to a smaller expansion of the LSLA due to the reduced presence of the state as a landowner. The revision of contractual forms will, however, make it possible to reduce the potential negative influences of LSLA on food security quantified by this study.

The revision of the contracts should also involve a revision of the rents currently charged. The current rents could be taken as a benchmark in the case of renting land to small farmers as a result of land reform.

Furthermore, agricultural investments and land grabbing is not just an issue that concerns developing countries in the global South; the phenomena can increasingly be observed in Europe too. Transnational institutional arrangements that regulate global agricultural investments are thus borne to be part of our future. To achieve institutional arrangements that fulfil these requirements, more information is required. In the past decade, a lot has been already achieved. A prominent example is the Land Matrix a highly successful global initiative that aims at making the LSLA-phenomenon more transparent to the public. However, more evidence is necessary especially on the local scale, highlighting the need for further research and monitoring assessments. After all, it becomes clear that how we manage and interact with the land is increasingly important for the livelihood of the future generation.

References

- Alemu, G. (2011). Rural land policy, rural transformation and recent trends in large-scale rural land acquisitions in Ethiopia. European Report on Development. Overseas Development Institute (ODI), Deutsches Institut für Entwicklungspolitik (DIE) European Centre for Development Policy Management (ECDPM).
- Behailu, D. (2016). Large-Scale Land Acquisition in Ethiopia- Towards Attracting Foreign Direct Investment. *Journal of Land Administration in Eastern Africa*, 3(1), 279-295.
- Behnassi, M., Shahid, S.A. & Da Silva, J., (2011). *Sustainable agricultural development – recent approaches- resources management and environmentally balanced production enhancement*. New York: Springer, doi: 10.1007/978-94-007-0519-7.
- Bisbing, H. (2015) Land Grabbing: Modern Day Imperialism, Perspectives on the Environment. -- Available at <https://sites.psu.edu/perspectivesontheenvironment/2015/04/08/land-grabbing-modern-day-imperialism/> (Accessed January 2020).
- Borras, S. Jr, Cristobal, K., Sergio, G. & John, W. (2012), Land grabbing and global capitalist accumulation: key features in Latin America. *Canadian Journal of development studies*, 33(4), 402-416, doi: 10.1080/02255189.2012.745394.
- Bossio, D., Erkossa, T., Dile, Y., McCartney, M., Killiches, F. & Hoff, H. (2012). Water implications of foreign direct investment in Ethiopia's agricultural sector. *Water Alternatives*, 5(2), 223-242.
- Breu, T., Bader, C., Messerli, P., Heinimann, A., Rist, S., Eckert, S.(2016). Large-Scale Land Acquisition and Its Effects on the Water Balance in Investor and Host Countries. *PLoS ONE*, 11(3), e0150901, doi: 10.1371/journal.pone.0150901.
- Brouwer, C. & Heibloem, M. (1986). *Irrigation Water Management: Irrigation Water Needs*. Rome: FAO.
- Carroccio, A., Crescimanno, M., Galati, A. & Tulone, A. (2016). The land grabbing in the international scenario: the role of the EU in land grabbing. *Agricultural and Food Economics*, 4(1), 12, doi: 10.1186/s40100-016-0056-7.
- Chamberlin, J., Jayne, T.S., Headey, D. (2014). Scarcity amidst abundance? Reassessing the potential for cropland expansion in Africa. *Food Policy*, 48, 51-65, doi: 10.1016/j.foodpol.2014.05.002.
- Cotula, L., Vermeulen, S., Leonard, R. & Keeley, J. (2009). *Land Grab or Development Opportunity? Agricultural Investment and International Land Deals in Africa*. FAO, IIED, and IFAD.
- Cotula, L. (2011). *Land deals in Africa: What is in the contracts?*. London: International Institute for Environment and development.
- Deininger, K., Byerlee, D., Lindsay, J., Norton, A., Selod, H. & Stickler, M. (2011). *Rising global interest in farmland: can it yield sustainable and equitable benefits?*. Washington DC: World Bank, doi: 10.1596/978-0-8213-8591-3.
- Dell'Angelo, J., D'Odorico, P. & Rulli, M.C. (2017). Threats to sustainable development posed by land and water grabbing. *Current Opinion in Environmental Sustainability*, 26-27, 120-128, doi: 10.1016/j.cosust.2017.07.007.
- De Schutter, O. (2009). *Large-scale land acquisitions and leases: A set of core principles and measures to address the human rights challenge*. New York: United Nations.

- Dietz, K. (2014) Researching Inequalities from a Socio-ecological Perspective, Working Paper No. 74, 2014, p. 8. -- Available at <https://refubium.fu-berlin.de/bitstream/handle/fub188/19740/74-WP-Dietz-Online.pdf?sequence=1> (Accessed January 2020).
- Good, P., Booth, B.B., Chadwick, R., Hawkins, E., Jonko, A. & Lowe, J.A. (2016). Large differences in regional precipitation change between a first and second 2 K of global warming. *Nature Communications*, 7, 1-8, doi: 10.1038/ncomms13667.
- IFPRI (2012). *Global hunger index*. Bonn/Washington, DC/Dublin: IFPRI, doi: 10.2499/9780896299429.
- FAO (2002). *Land Tenure Studies 3: Land Tenure and rural development*. Rome: FAO.
- FAO (2010). *Ethiopia: Extent and Impact of Land Degradation. A Pilot Study in Seven Countries*. Rome: FAO
- FAO (2012). *Voluntary Guidelines on the Responsible Governance of Tenure on Land, Fisheries, and Forests in the Context of Food Security*. Rome: FAO.
- FAO (2018). *Small family farms country factsheet: Ethiopia*. Rome: FAO.
- FAOSTAT (2013). *FAOSTAT Statistics Database*. Rome: FAO.
- FAOSTAT (2018). *FAOSTAT Statistics Database*. Rome: FAO.
- Fana Gebrensebet (2016). Land acquisitions, the politics of dispossession, and state re-making in Gambella, western Ethiopia. *Africa Spectrum*, 51(1), 5-28, doi: 10.1177/000203971605100102.
- Food Security Information Network (2017). *Global Report on Food Crises 2017*. Rome: FAO.
- Friis, C. & Reenberg, A. (2010). *Land grab in Africa: Emerging land system drivers in a teleconnected world*. GLP Report No. 1. Copenhagen: GLP-IPO.
- Garg, K., Wani, S. & Rao, A. (2013). Crop coefficients of *Jatropha* (*Jatropha curcas*) and *Pongamia* (*Pongamia pinnata*) using water balance approach. *WIREs Energy and Development*, 3(3), 301-309, doi: 10.1002/wene.88.
- Giovinetti, G. & Ticci, E. (2016). Determinants of biofuel-oriented land acquisitions in Sub-Saharan Africa. *Renewable and Sustainable Energy Reviews*, 54, 678-687.
- Global Witness, The Oakland Institute, International Land Coalition Secretariat (2012). *Dealing with Disclosure: Improving Transparency in decision-making over large-scale land acquisitions, allocations, and investments*. London/Oakland/Rome: Global Witness/The Oakland Institute/International Land Coalition Secretariat.
- Hallam, D. (2010) International Investment in Developing Country Agriculture Issues and Challenges. *Agriregionieuropa*, 6, 20.
- Institute Water for Africa (2018). Water Use. -- Available at <https://water-for-africa.org> (Accessed January 2019).
- Johansson, E., Fader, M., Seaquist, J.W. & Nicholas, K.A. (2016). Green and blue water demand from large-scale land acquisitions in Africa. *PNAS*, 113(41), 11471-11476, doi: 10.1073/pnas.1524741113.
- Kareem, O. (2018). The Determinants of Large-Scale Land Investment in Africa, *Land Use Policy*, 75, 180-190, doi: 10.1016/j.landusepol.2018.03.039.
- Land Matrix (2016). *International Land Deals for Agriculture*. Land Matrix Analytical Report. -- Available at <https://landmatrix.org> (Accessed 10 December 2019).

- Land Matrix (2017). The Land Matrix Database -- Available at <https://landmatrix.org> (Accessed 10 December 2019).
- Lazarus Eli, D. (2014), *Land grabbing as a driver of environmental change*, Area, 46(1), 74-82.
- Margulis, M., McKeon N. & Borras, S. (2013). Land Grabbing and Global Governance: Critical Perspectives. *Globalizations*, 10, 1-23, doi: 10.1080/14747731.2013.764151.
- Mbengue, M.M. & Waltman, S. (2015). *Farmland investments and water rights: The legal regimes at stake*. Geneva: IISD.
- McDonnell, S. (2017). Urban Land Grabbing by Political Elites: Exploring the Political Economy of Land and the Challenges of Regulation. In McDonnell, Allen, Filer (Ed.). *Kastom property and ideology*. Canberra: ANU Press, doi: 10.22459/kpi.03.2017.09.
- Mekonnen, M.M. & Hoekstra, A.Y. (2011). *National water footprint accounts: The green, blue and grey water footprint of production and consumption*. Volume 1: Main Report.
- Mekonnen, M.M., Hoekstra, A.Y. & Becht, R. (2012). Mitigating the water footprint of export cut flowers from the Lake Naivasha Basin, Kenya. *Water resources management*, 26(13), 3725-3742.
- Mehta, L., Veldwisch, G.J. & Franco, J. (2012). Introduction to the special issue: water grabbing? Focus on the (re)appropriation of finite water resources. *Water Alternatives*, 5(2), 193-207.
- Mueller N.D. *et al.* (2012). Closing yield gaps through nutrient and water management. *Nature*, 490, 254-7.
- OI-The Oakland Institute (2011). *Understanding Land Investment Deals in Africa. Country report: Ethiopia*. Oakland: The Oakland Institute.
- Onoja, A. & Achike, A. (2015). Large-Scale Land Acquisitions by Foreign Investors in West Africa Learning Points. *Consilience*, 14, 173-188.
- Oxfam, International Land Coalition, Rights and Resources Initiative (2016). *Common Ground. Securing Land Rights and Safeguarding the Earth*. Oxford: Oxfam.
- Petrescu-Mag, R., Petrescu, D., Reti, K. (2019). My land is my food: Exploring the social function of large land deals using food security – land deals relation in five Eastern European countries. *Land Use Policy*, 82, 729-741, doi: 10.1016/j.landusepol.2019.01.003.
- Pidcock, R., Pearce, R. & McSweeney, R. (2017). How climate change affects extreme weather around the world. -- Available at www.carbonbrief.org/mapped-how-climate-change-affects-extreme-weather-around-the-world (Accessed 15 October 2019).
- Rahmato, D. (2011). *Land to Investors: Large-Scale Land Transfers in Ethiopia*. Addis Ababa: Forum for Social Studies.
- Roser, M. & Ritchie, H. (2017). *Food expenditure per Person*. -- Available at: <https://ourworldindata.org> (Accessed 19 November 2019).
- Rulli, M.C. & D'Odorico, P. (2014). Food appropriation through large-scale land acquisitions. *Environmental Research Letters*, 9(6), p. 064030.
- Santangelo, G. (2018). The impact of FDI inland in agriculture in developing countries on host country food security. *Journal of World Business*, 53, 75-84.

- Shepard, D. & Mittal, A. (2009). *The Great Land Grab. Rush for the world's farmland threatens food security for the poor*. Oakland: The Oakland Institute.
- Schneider, A.E. (2011). What shall we do without our land? Land grabs and resistance in rural Cambodia. *International Conference on Global Land-Grabbing*, April 6-8, 2011, University of Sussex.
- Sekoai, P.T. & Yoro K.O. (2016). Biofuel Development Initiatives in Sub-Saharan Africa: Opportunities and Challenges. *Climate*, 4(33), doi: 10.3390/cli4020033.
- Teklemariam, D., Nyssena, J., Azadia, H., Hailee, M., Lanckrieta, S., Taherif, F., Witlox, F. (2017). Commercial land deals and the interactions between investors and local people: Evidence from western Ethiopia. *Land Use Policy*, 63, 312-323.
- Vhughen, D., Gebru, A. & Behailu (2013). Large Scale Acquisitions of land in Ethiopia. -- Available at <https://focusonland.com> (Accessed 20 September 2019).
- Williams, T.O., Gyampoh, B., Kizito, F. & Namara, R. (2012). Water implications of large-scale land acquisitions in Ghana. *Water Alternatives*, 5(2), 243.
- WFP – World Food Programme (2016). *Ethiopia – wfp El Nino response 2016*. Rome: WFP.
- World Bank (2010). *Rising global interest in farmland: can it yield sustainable and equitable benefits?*. Washington, DC: World Bank.

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