

Monika Krukowska¹

Department of Political Studies
Warsaw School of Economics

European Investors and Land Acquisitions in Sub-Saharan Africa

Abstract. The article examines the European share in large-scale land acquisitions in Sub-Saharan Africa. The paper aims to identify correlation between biofuels policy and large-scale land acquisitions in Sub-Saharan Africa and the consequences of this phenomenon. It first identifies the backgrounds that caused the increased interest in biofuel production and, consequently, African land acquisition in recent years. Then, it examines growth in the number of land transactions that take place on the continent. Finally, the paper investigates the share of European capital in land transactions. The last section outlines the consequences of this phenomenon and provides a set of recommendations to address land policies in African developing countries.

Key words: European Union, Africa, large-scale land acquisitions, agriculture, investment, biofuels

Introduction

Within the last decade Sub-Saharan Africa has witnessed numerous large-scale land acquisitions. Foreign investors, attracted by cheap and fertile land, simple and short acquisition procedures, high political risk notwithstanding, have been buying huge land areas in developing states of Sub-Saharan Africa. The land acquired is used to cultivate food and industry crops, depending on investors' needs. The largest buyers come from the European Union, the United States, as well as from the Gulf States of the Middle East. Though there are many reports and analyses of the issue, the exact scale of this activity remains unknown due to lack of information and aggregate data.

Within the last decades rising oil prices combined with shrinking resources of fossil fuels, as well as policies of promoting biofuel use, have led to growing demand and consumption of biofuels (esp. ethanol and biodiesel), which is projected to increase in the next decade. Due to limited land conversion possibilities in Europe, this expansion in demand may be covered only by considerable biofuels feedstock imports.

Large-scale land transactions in developing countries have attracted widespread attention. According to the World Bank estimates, in 2009 foreign investors acquired 32 million hectares (ha) of land in Africa, out of the total of 45 million ha purchased worldwide [Rising... 2011]. The International Food Policy Research Institute (IFPRI) evaluated in 2008, that from 15 to 20 million ha had been involved in purchases and lease transactions in recent years [Land... 2009]. Estimates of the Worldwatch Institute posit, that in the period of 2000-2012 about 70.2 million ha of agricultural land worldwide was sold or leased by public or private investors [Scherer 2012]. According to the Land Matrix, the most complete public database existing, in 2012 the number of land transactions made by foreign investors reached 1,217 deals, covering 83.2 million ha. [Transnational... 2012].

¹ PhD, e-mail: monika_krukowska@wp.pl

The objective of this paper is to analyse the reasons, scope, methods and consequences of European large-scale land acquisitions in Sub-Saharan Africa. The comparative analysis of available databases should allow an estimate of the share of European investors in this phenomenon and its geographic distribution. The paper aims to present possible economic, environmental and social consequences of biofuel-linked European investments in African developing countries, as well as identify negative and positive effects on African agriculture. The paper concludes with a summary of the major findings as well as possible improvements in this area.

Biofuels and Large-Scale Land Acquisitions in Africa

For the needs of this essay large-scale land acquisitions are purchases or leases of agricultural land on a scale disproportionate in size when compared to average land holdings in the region [Land... 2010]. Due to its high specificity, land deals differ in size (usually at least 200 ha [Transnational... 2012]) and legal structure (purchase or lease), duration and other contract details. A large number of intended transactions is not finalised, and in many cases investors are granted only a small share of what they applied for.

The exact number and value of land transactions worldwide remains unknown as there is no aggregate and reliable data provided by host governments or investors, and the estimates of research agencies and institutes vary significantly. Lack of transparency is one of the biggest problems of land deals, especially with regard to the actual implementation status of the contracts. Even more challenging is the attempt of determining the actual use of land acquired, as investors tend to report the cultivation of crops for multiple uses (for food or biofuels production). Evidence suggests that only 20% of investments that have been announced are actually being followed with agricultural production on the ground [Rising... 2011].

Foreign investors are interested in African land due to rising fossil fuel prices, shrinking land resources at home and rising global demand for food, food commodities and biofuels feedstock. In less than one decade, world biofuel production has increased five times, from less than 20 billion litres/year in 2001 to over 100 billion litres/year in 2011 [Biofuels... 2013]. International organisations, such as the International Energy Agency (IEA), Organisation for Economic Co-Operation and Development (OECD) or Food and Agriculture Organisation of the United Nations (FAO) share the conviction that global biofuel demand will increase significantly within the next decade [Technology... 2012, OECD-FAO 2013], pointing to the EU as the biggest biodiesel producer and consumer, and the third ethanol market after the US and Brazil. Within the next decade the EU is supposed to reach a 7% share in world ethanol production and 10% share in consumption. As regards biodiesel production and use, the EU is leading in both: it is expected to reach a 45% share in world production and 51% share in consumption by the year 2022 [OECD-FAO 2013].

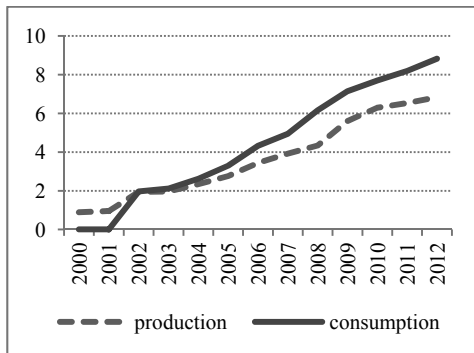


Fig.1. EU ethanol production and consumption in 2000-2012 (bnl)

Source: data from OECD-FAO Agricultural Outlook 2013-2022

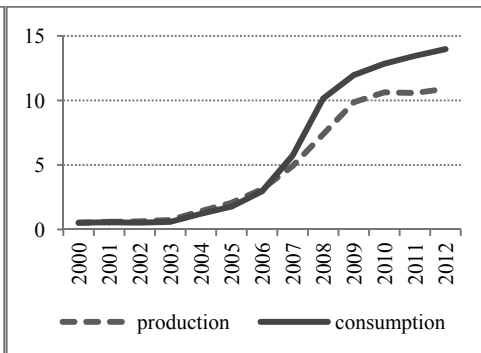


Fig.2. EU biodiesel production and consumption in 2000-2012 (bnl)

Source: data from OECD-FAO Agricultural Outlook 2013-2022

Africa's biofuel production is insignificant in global supply. In 2011, the whole African continent produced less than 23,000 tons of oil equivalent of biofuels, constituting 0.04% of the total global supply [BP 2013]. In Africa most biofuel crops are exported for processing, meaning little value added is captured locally [Land... 2011].

Bioethanol production in the EU is based mostly on sugar beet derivatives, wheat, and corn but also on barley and rye. Biodiesel feedstock is rapeseed oil (2/3), as well as soybean and palm oil. EU imports ethanol mainly from Brazil [Renewable...] and some share is expected to be supplied through preferential trade measures (GSP), mainly from Guatemala, Peru and Pakistan [EU... 2013]. Other suppliers are: Nicaragua, Bolivia and Costa Rica. Only very small amounts of ethanol are shipped from Congo, South Africa, Swaziland, and Zimbabwe [Assessing... 2013]. European biodiesel imports come mostly from Argentina, Indonesia and Malaysia.

The European demand for biofuels is driven by policy and renewable energy targets accepted by the European Union. Under Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport, EU established the goal of reaching a 5.75% share of renewable energy in transport fuel by 2010 [Directive... 2003]. In 2009 the Renewable Energy Directive 2009/28/EC (RED) put on member states obligation to achieve a 20% share of energy from renewable resources in total energy consumption, and a 10% share in the transport sector by the year of 2020. Considering net GHG emissions and food security, the RED called for GHG reduction a minimum of 35% and in new plants in 2018 by 60 % [Directive... 2009]. Thus, to achieve biofuels targets, European countries strengthen cooperation with important biofuels producers, increase the biofuels feedstock yield levels, target prospective partners in Sub-Saharan Africa and buy land so as to produce biofuels by themselves. The EU estimates that 20-30 million hectares is needed to meet its target of 10% biofuel use by 2020. It expects 60% of its supplies will be grown outside its borders [Land... 2011, Assumptions... 2010].

The European Investment in African Land

Africa is a natural direction of European expansion due to its proximity, fertile land, water resources, favourable weather conditions, and historic relations connecting European and African states. There are many factors that distinguish Africa as good prospective investment place. Of utmost importance is stable political and economic environment in the majority of African countries, making foreign companies prone to invest. The accessibility of African markets is also very important. Host governments are usually eager to cooperate, possible objections from local communities are of minor importance, as foreign investors have supremacy over the rights of individual landowners. This is possible as land tenure systems in many African countries are flexible enough to allow sometimes dubious procedures of acquisition [Land... 2011].

Land deals are very difficult to trace due to their specific nature and the subject they refer to. Often the agreements are signed but not implemented due to different reasons. The area actually ceded to investors may be smaller or bigger than the one mentioned in the contract. Investors usually secure the rights to acquire more land in the unspecified future, so in consequence there is no absolute certainty about the real number of hectares handed over to new owners. Information about signing the deal is usually made public, while there is no follow up about the implementation of the contracts. Furthermore both investors and host governments are usually unwilling to reveal the details of the contracts [Cotula 2011]. This inaccuracy undermines the reliability of existing records and makes them difficult to compare.

The Land Matrix

The most thorough and aggregate data about land transactions is provided by the Land Matrix, an online public database created by The International Land Coalition (ILC), The Centre for Development and Environment (CDE), CIRAD, the GIGA German Institute of Global and Area Studies, as well as The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). The Land Matrix report defines detailed criteria for inclusion into the database: transactions need to entail a transfer of rights to use, control or own land through sale, lease or concession, 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 be international in nature (involve a foreign investor). Only transactions that have been concluded since 2000 are taken into account [Transnational... 2012].

According to the Land Matrix data, in 2000-2013 (June 2013) the European investors concluded² 150 land contracts with Sub-Saharan countries for the area of 5,659,745 ha (out of 47,915,235 ha of global land purchases). Investors seem to concentrate on two African regions with huge agricultural advantages and potential: Western and Eastern Africa, with only minor contracts in central parts of the continent. Specificity of agricultural investments (need of fertile land, water resources, etc.) restrains investors to look for the best deals no matter where they are located, though there are some tendencies to restrain to traditional partners (e.g. Portugal investing in former colonies: Angola and Mozambique). European land investments concentrate in seven countries (Mozambique, Sierra Leone, Liberia, Madagascar, Ethiopia, Tanzania and Mali), which account for 77% of the total area

² In my estimates I took into account only concluded transactions (oral agreement or contract signed). Data used for calculations are real contract sizes, not intended size of purchase.

acquired. Mozambique is the most popular place of investment, as 34 purchases for the amount of 1,206,952 ha were concluded, followed by Sierra Leone (836,295 ha) and Liberia (693,820 ha).

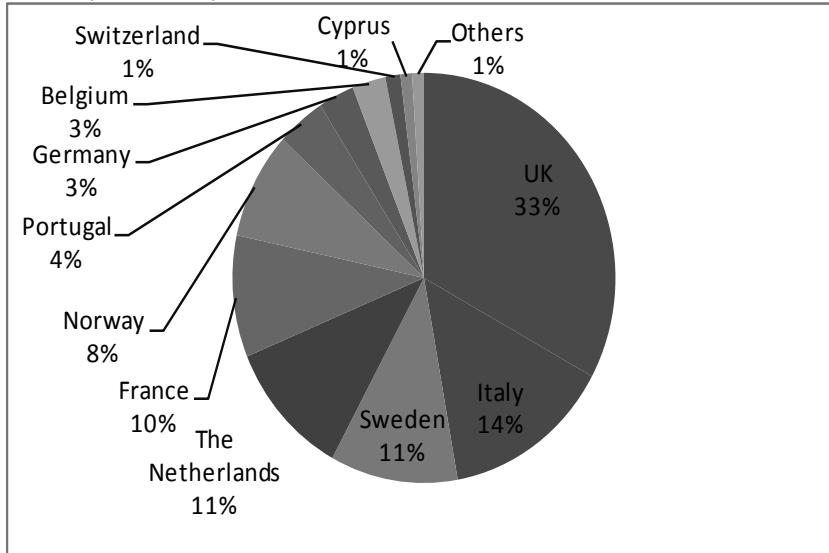


Fig.3. Sub-Saharan land acquired by European investors in 2000-2013 (ha).

Source: data from the Land Matrix.

The United Kingdom is the major European investor, accounting for 33% of all investments in the region. Its deals are evenly spread across the whole continent, where it has concluded 44 contracts for the amount of 1,863,757 ha. British investments concentrate on biofuels feedstock production (jatropha, oil palm, maize, sugar cane, sorghum), which covers the area of 1,011,211 ha (57% of UK investments). The most important European investors, beside the UK, are Italy (14.2%), Sweden (10.8%), the Netherlands (10.8%), France (9.5%) and Norway (8.4%). Altogether 6 biggest investors account for 86.8% of European investments in Sub-Saharan Africa. British supremacy was also confirmed by other sources, e.g. the Guardian investigation [Carrington 2011].

Following the British example, biofuels feedstock constitutes important share in European production in Africa, especially in case of Portugal (93%), Belgium (84%), Germany (78%), the Netherlands (56%), and France (50%). Small countries, like Cyprus or Denmark give full attention to biofuels feedstock production. Investment in forestry is another important area, especially in case of Italy (60% of total land area), Norway (56%), Sweden (55%) and the Netherlands (43%).

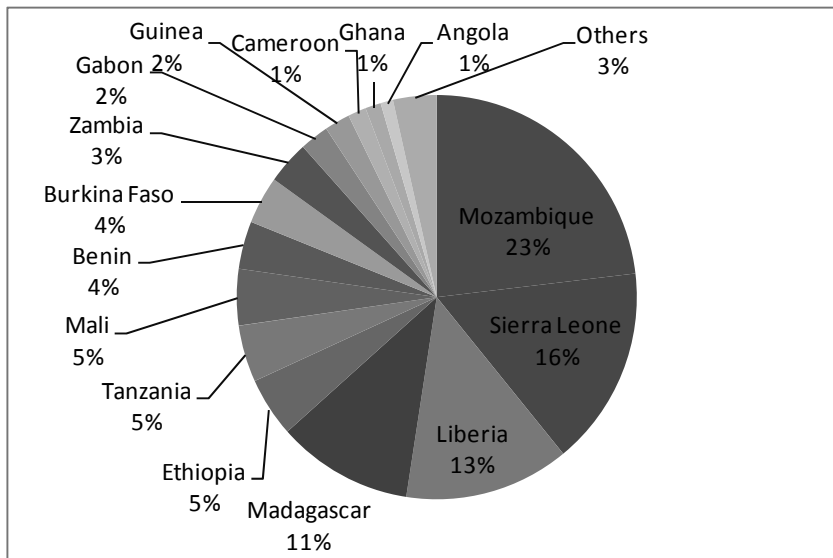


Fig.4. European Land Investments in SSA in 2000-2012 (%).

Source: data from the Land Matrix.

According to the Land Matrix statistics, European investors have the biggest share in land deals in Sub-Saharan Africa (22%), though American investments are not much smaller (20%). Taking into consideration the number of European countries involved, their share is not significant.

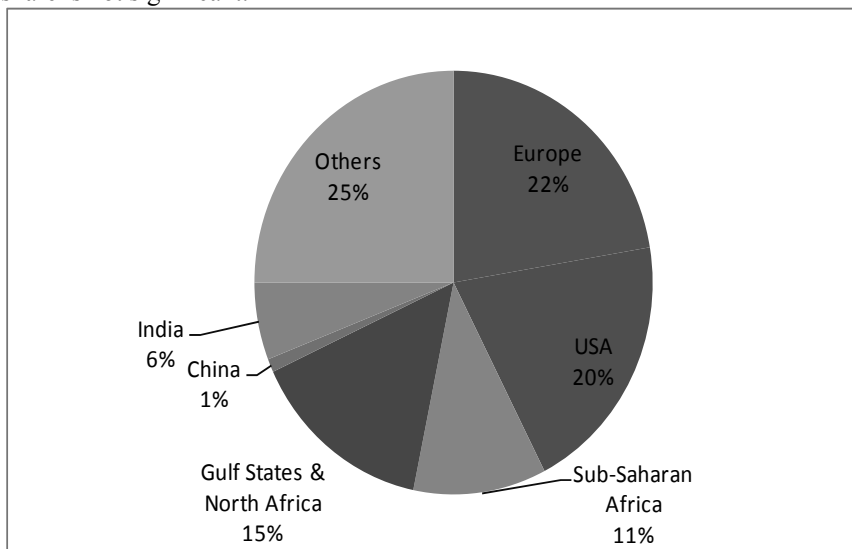


Fig.5. Purchases of land in Sub-Saharan Africa in 2000-2012: breakdown by area (%)

Source: data from the Land Matrix.

European investment in land reached a peak in 2010 and then considerably decreased. After only one transaction in 2012, there should be no expectation of future significant investments from Europe.

Grain

Grain, a non-profit organisation, gathers information about transnational land investments for biofuel feedstock production. As in case of the Land Matrix, the data is reliable only partly. According to Grain, the size of land acquisitions for biofuels in Africa should be estimated at 7,551,056 ha, and total world land transactions for biofuels close with the amount of 17,179,423 ha. Grain estimates confirm the preponderance of European investors, standing behind 3,925,441 ha in Africa only, with an additional 415,700 ha in Latin America (Brazil, Argentina, Guatemala), 61,600 ha in Europe (Ukraine), and 775,000 ha in Asia (Philippines, Indonesia and Malaysia) [<http://www.grain.org/>].

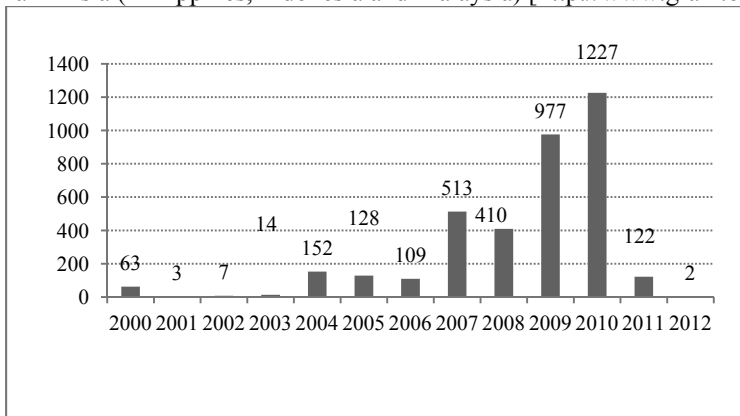


Fig.6. European land purchases in Sub-Saharan Africa (2000-2012) thousands of ha
Source: data from the Land Matrix.

According to Grain, European investments are concentrated in Eastern and Western Africa, as well as in central parts of the continent (e.g. Angola and Cameroon). Investments from Italy dominate in Africa, totalling 1,545,592 ha. According to Grain data, only one company *Nuove Iniziative Industriali SRL* cultivates jatropha in four countries: Guinea (700,000 ha), Ethiopia (30,000 ha), Kenya (50,000 ha), and Senegal (50,000 ha). Other Italian companies, e.g. *Fri-El* and *ENI* grow oil palm in Congo, Angola, Ethiopia and Nigeria [<http://www.grain.org/>].

A second European investor, the United Kingdom, controls 1,005,148 ha. British companies are present in eight countries: Ethiopia, Ghana, Liberia, Madagascar, Sierra Leone, Tanzania, Zambia, with special focus on Mozambique, where they have sugar cane plantations of *CAMEC* (30,000 ha), and *Principal Capital* (18,000 ha), as well as jatropha plantations of *DI Oils* (5,348 ha), *Sociedade Inveragro SARL (ESV Group)* (11,000 ha), and *Viridesco* (1,000 ha) [<http://www.grain.org/>]. One of the biggest British investments belonged to *Crest Global Green Energy*, which established large jatropha and pongamia plantations of 900,000 ha in Mali, Guinea and Senegal. However the company was dissolved in 2012 [<https://www.duedil.com/company/06858479/crest-global-green-energy-limited>].

French investments reported by Grain are considerably smaller, equalling 49,805 ha. However Grain's listing has no data about the French *Group Bolloré*, one of the most important global agribusiness investors, with purchases in 43 African states. *Group Bolloré* has shares in other companies, such as Belgian *Group Socfin* (38.7% of shares), also active in the African land market. The group reported its African land possessions in 2012: oil palm and rubber plantations in Cameroon (8,800 ha), Nigeria (16,400 ha), Ivory Coast (23,000 ha), as well as an oil palm plantation in Cameroon (33,900 ha) with a refining unit Ferme Suisse [Résultats... 2013].

Portuguese investments total 259,734 ha and concentrate in Mozambique and Angola. Portuguese *Quifel Agribusiness* is the largest foreign agricultural investor of Sierra Leone, where it has 130,000 ha in three sites. In Angola *Quifel* grows oil seeds (10,000 ha), and in Mozambique *Quifel Agricola* owns 23,000 ha of oil seeds and sunflower [http://www.gleinol.pt/401.html; Quifel... 2011].

Grain identifies eight Dutch investments in Africa, all cultivating jatropha, totalling 28,312 ha. The area covered by single investment is rather small, between 1,000-3,500 ha, with the exception of Madagascar plantation (15,000 ha). Other European countries have single agribusiness investments in Sub-Saharan Africa. There are only two Norwegian projects, both in Ghana, and their combined size is very modest: 11,550 ha. Swedish-owned sugar cane plantation of 200,000 ha is located in Tanzania. Cyprus has reportedly acquired 50,000 ha in Ethiopia (*F.E.P.E Amero Bio-Oil*) and Spain possesses *Biocongo Global* in Democratic Republic of the Congo (60,000 ha) – these are the only African land investments of these countries. Romanian *Ovidiu Tender* has land in Gambia (30,000 ha) and Senegal (100,000 ha). Danish *I.D.C Investment* possesses 15,000 ha of jatropha plantation in Ethiopia and 1,000 ha in Mali (*MFC Nyetaa*).

Oakland Institute

An American policy think tank, Oakland Institute (OI), has prepared very thorough analyses of foreign investments in land in five African countries (Mali, Sierra Leone, Tanzania, Mozambique and South Sudan). The choice is very interesting, as the previous estimates show that Sierra Leone and Mozambique are very popular among European investors. However OI estimates differ significantly from the previous analyses, which seem to be much overestimated.

Table 1. European investments in land for biofuels (ha)

	Mali	Sierra Leone	Tanzania	Mozambique	South Sudan
The Land Matrix	236,700	836,295	237,980	1,206,952	20,490
Grain	45,817	307,200	652,835	469,332	600,000
Oakland Institute	22,600	214,475	150,287	52,920	na

Source: [http://www.grain.org/, Understanding... 2011].

The difference in this table proves the inaccuracy in possible listings of land deals due to lack of public records, restricted information, and the reluctance of entities engaged in transactions to reveal not only the details, but also the basic data from the contracts. European investors are present in the continent, but their acquisitions are comparable with purchases of investors from the US or the Gulf States.

The Consequences of Investments

The effects of European large-scale land deals are diverse. Of utmost importance is its indisputable negative impact on African farmers and pastoralists. Although the land sold or leased to foreign investors is considered abundant, in most cases it is cultivated by individuals or the whole communities. As the land tenure system in Africa is very unclear, and in many countries the land is a public good, host governments may dispose of it without consent of local communities. As foreign investors have much better levers than poor farmers, the latter are forced to move to new locations to allow the government to lease or sell the land. Displaced people settle in assigned, sometimes remote places, often deprived of all basic services and, most surely, with much less fertile land. In consequence their living standard deteriorates and some of them decide to migrate abroad.

Very important, yet underestimated, is the situation of African women. Lack of land equals lack of food and the possibility of earning money and feeding children. Even though women usually cultivate the land, they are not the owners, and cannot get any compensation for the land taken. In all cases the compensation received from foreign investors is usually small.

Influx of European money may reinforce negative autocratic tendencies in some African countries. Host governments may also use foreign investments as excuses to reach questionable political goals (e.g. European land acquisitions are linked with the new villagisation programme of reallocation of 1.5 million rural families in Ethiopia [Chonghaile 2013]).

There are also positive consequences of investments. Under contract provisions, investors finance social commitments, e.g. construction and maintenance of hospitals and schools. Foreign companies improve local employment possibilities, both permanent and seasonal, and acquaint African workers with modern agriculture. Transfer of technology and know-how is specifically included in transaction agreements, as Africa has still the capacity to improve and develop farmland productivity. Thanks to foreign investment, local farmers reduce their vulnerability to price fluctuations and increase financial stability by switching to new product (e.g. jatropha) in areas dominated by traditional crops.

Economic development is fostered due to institutional and regulatory reforms implemented by host governments. Modern registration and cadastre systems are introduced, business regulatory practices improved (e.g. trade procedures, property registration). Within the last years African governments have made considerable efforts, as in 2012 alone Sub-Saharan countries have introduced more than 9 reforms on average [Doing... 2013].

Possible consequences depend also on the crops cultivated by foreign companies. Increased cultivation of biofuels feedstock affects the global food market, as smaller production of subsistence crops may cause supply problems that cannot be solved without adapting new territories or increased productivity on available land, both not easy to resolve. Land conversion decreases environment diversity (e.g. deforestation, draining wetlands) and causes greenhouse gas (GHG) emission growth when carbon locked in the soil is emitted to the atmosphere. Hence, expectations that thanks to increased production of biofuels feedstock the carbon emissions will be reduced have also turned out to be false. There is widespread disagreement whether countries with food shortages should sell or lease land for biofuel production, as shrinking production of subsistence crops raises the price of alimentary products, already high after the 2007-08 growth [Rising... 2011].

European gains of land transactions are much more evident. Investors get access to land and its crops, and processing them at home increases job creation. The transactions are of minor risk and the gains are certain. Of utmost importance is the impact that European investment exerts on its African partners [Biofuels... 2008]. As financial incentives shared by foreign investors are very difficult, if not impossible, to overcome, international aid and environmental organisations call for reducing the limits of biofuels required, to prevent the rise of food feedstock prices and attain food security. Following the demands, in October 2012 the EU Commission (EC) reconsidered the requirements concerning the use of biofuels produced from food crops, and published a proposal to limit the 10% renewable energy target to 5% [Proposal... 2012]. The EC declared it would also take into account the extra carbon emitted when farmers switch from growing crops for food to growing crops for fuel. The proposal still has a long way ahead until being accepted and implemented (probably not before 2015), but the situation should improve, as investors attentively follow the EC policy.

Conclusions

Growing interest in African land has made public opinion aware of the continent's food security concerns. Widespread debate over the outcomes of this phenomenon was strengthened by its dubious character stemming from lack of reliable information.

Due to incomplete data even now we cannot assess this process in full. Yet available numbers show the preponderance of European investors encouraged by the biofuel limits introduced, as well as the Common Agricultural Policy making biofuel production in Europe too expensive. European demand for land is likely to continue, although not on the 2009-10 levels. As land sales can be detrimental to food security and economic development of the world's poorest countries, some countermeasures should be adopted. The European Commission should reduce the biofuel targets, as well as exert pressure on foreign companies operating in Africa to assure decent compensation for displaced people and to dedicate some output to cover the demands of African internal markets. African governments should develop domestic processing capabilities and motivate foreign investors to move their processing facilities to Africa. They should also better protect their citizens' rights by introducing stronger legal protection of people, land and resources, and they should adopt a more pro-citizen attitude, to better serve the public interest. Prudent and limited foreign investment may be a fruitful enterprise for both sides.

References

- Assessing the impact of biofuels production on developing countries from the point of view of Policy Coherence for Development, Contract N° 2012/299193, FWC COM 2011 - Lot 1 – Studies and Technical Assistance in all Sectors, Final report. [2013]: European Commission. Brussels. p.71.
- Assumptions in the European Union biofuels policy: frictions with experiences in Germany, Brazil and Mozambique. [2010]. Franco J., Levidow L., Fig D., Goldfarb L., Hönicke M., Mendonça M.L. *Journal of Peasant Studies*, 37(4), p. 661–698.
- Biofuels and food security. [2013]: A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome 2013. HLPE. p.

Biofuels for all? Understanding the Global Impacts of Multinational Mandates. [2008]. Hertel T.W. (ed.), Tyner W.E., Birur D.K. GTAP Working Paper No. 51. Center for Global Trade Analysis. Department of Agricultural Economics. Purdue University. p. 27-28.

BP [2013]: Statistical Review of World Energy. <http://www.bp.com/statisticalreview>. Retrieved April 2, 2013.

Carrington D., Valentino S. [2011]: Biofuels boom in Africa as British firms lead rush on land for plantations. *The Guardian*. <http://www.theguardian.com/environment/2011/may/31/biofuel-plantations-africa-british-firms>. [Retrieved October 29, 2013].

Chonghaile C.N. [2013]: Ethiopia's resettlement scheme leaves lives shattered and UK facing questions. *The Guardian*.

Cotula L. [2011]: Land deals in Africa: What is in the contracts? IIED. London. p. 1.

Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable resources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC. [2009]: European Parliament. p. 28-36.

Directive 2003/30/EC of the European Parliament and of the Council of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport. [2003]: European Parliament. p. 45.

Doing Business 2013. Smarter Regulations for SME. [2013]: World Bank.

EU Biofuels Annual 2013. [2013]. Flach B., Bendz K., Krautgartner R. and Lieberz S. GAIN. p.18.

Land Grab study. [2010]. Graham A., Aubry S., Künnemann R., Monsalve Suárez S. FIAN. p. 17.

Land Grab? The Race for the World's Farmland. [2009]. Kugelmann M., Levenstein S.L. IFPRI. p. 1.

Land tenure and international investments in agriculture. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security. [2011]: HLPE. Rome. p.20.

Land Matrix database. <http://landportal.info/landmatrix/get-the-detail/by-target-region>. Retrieved April 2, 2013.

OECD-FAO Agricultural Outlook 2013. [2013]: OECD Publishing.

Proposal for a Directive of the European Parliament and of the Council amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources. COM(2012) 595 final. [2012]: European Commission. Brussels. p. 14.

Quifel International Holdings in Sierra Leone. Understanding land investment deals in Africa. [2011]: Oakland Institute.

Renewable Ethanol in the European Union. ePURE. Brussels. p.2.

Résultats 2012. [2013]: Bolloré.

Rising Global Interest in Farmland: Can it yield equitable and sustainable benefits? [2011]. Deininger K., Byerlee D., Lindsay J., Norton A., Selod H. and Stickler M. The World Bank. P. XXV.

Scherer C. [2012]: Despite Drop from 2009 Peak, Agricultural Land Grabs Still Remain Above Pre-2005 Levels. Worldwatch Institute. http://blogs.worldwatch.org/nourishingtheplanet/wp-content/uploads/2012/08/Land-Grabs-VSO-Press-Release_FINAL.pdf. [Retrieved October 21, 2013]. p.1.

Technology Roadmap. Bioenergy for Heat and Power. [2012]: International Energy Agency.

Transnational Land Deals for Agriculture in the Global South. Analytical report based on the Land Matrix Database. [2012]. Anseeuw W., Boche M., Breu T., Giger M., Lay J., Messerli P. and Nolte K. Bern/Montpellier/Hamburg. p. 19.

Understanding land investment deals in Africa. Country reports: Mali, Tanzania, Sierra Leone, Mozambique, South Sudan. [2011]: Oakland Institute.

Internet sources

<http://www.duedil.com/company/06858479/crest-global-green-energy-limited>. [Retrieved April 10, 2013.]

<http://www.gleinol.pt/401.html>. [Retrieved March 10, 2013.]

<http://www.grain.org/>. [Retrieved April 10, 2013.]