The Environmental and the Sustainable Land Use Effects of Large-Scale Land Investment in Africa: An Impact Analysis from the Global Large-Scale Land Investment

Abstract

The attainment of sustainable development goals (SDGs) in Africa will depend in part on its endowment, productivity and management of the land resource. Thus, due to the multipurpose usage of the land, there is more interest in its acquisition and usage, which often lead to competition among investors. More so, the intensive use of land for economic activities often impacts on environmental sustainability. This has implication for the target countries' sustainable development. It is on this basis that this study investigates the effects of large-scale land investments on environmental and sustainable land use. The study adopts the sample selection model to find that at the decision to invest, there is the tendency the environment gets more deplorable while the foreign investors sustainably use the land and this is not the case for domestic investors. At the actual large-scale land investment level, the foreign large-scale land investment has adverse effects on the environment but they maintain sustainable use of land, while the domestic large-scale investment negatively impacted on both the environment and the sustainable land use. Climate change impeded the availability of large-scale land. Thus, although the large-scale land investments could mitigate the challenges of national food insecurity, there should be intense efforts by the government to continuously monitor and regulate the activities of these investors to conform with global environmental best practices.

1. Introduction

The economic potentials of countries in part depend on their natural resources' endowment and productive utilization. Land ownership or otherwise indicates the status of an economic agent in society. More so, the attainment of SDGs by developing countries, particularly Africa will depend in part on their endowment, productivity and management of land resource. More than half of SDGs target goals are directly related to this natural resource. Hence, the importance of land to the sustainable development aspirations of countries, particularly resource endowed, cannot be overemphasized. Land remains an invaluable natural resource that is precious to man, but it is non-renewable. The non-renewability of land and the scarcity of fertile land led to its increasing demand. More so, the multipurpose usage of the land enhances interest in its acquisition. Moreover, owing to the effects of mineral exploration, urbanization, environmental degradation, etc, the availability of fertile and arable land becomes increasingly difficult. This has implication for sustainable development, especially for the vulnerable people in the rural areas, since they depend largely on land for their livelihood. Many people in Africa depend on land for their economic activities and/or livelihood. This is due to the fact that it is from it that food is provided, shelters are constructed, infrastructures are laid and other valuable minerals are found. Kareem (2014) finds that 52% of the total employment in Africa is in the agricultural sector. Thus, access to land has become more competitive among large-scale land investors in Africa, while the availability of fertile and productive land is becoming increasingly difficult owing to the influx of large-scale land investors to Africa.

Many of the plantation investments caused environmental degradation without tangible rural development. This led to limited access to fertile land which necessitated frequent

struggle for the acquisition of arable land and conflicts over the best usage. Moreover, the large-scale land investments could lead to acrimony and crisis between the investors and landowners, communities and smallholder farmers. There are great possibilities that these acquisitions could crowd-out subsistence farmers that often make use of fallow land. To prevent these problems, the government regulates and manages land acquisitions to ensure sustainable use of the precious resource. Besides, government institutions are strengthened to monitor and evaluate these acquisitions to ensure the best environmental practices and standards across the board. Available evidence indicates that there are a lot of challenges to land governance, while the preponderance of controversies, public outcry, crowding-out and welfare depletion due to the land investments is worrisome.

Furthermore, the recent economic events, particularly the commodity crisis of 2007-2008, have shown that there had been increasing demand for land in the global south, especially in Africa, which affected the availability of fertile land. Evidence has shown that the demand for land has increased over time and the trend is expected to continue in the future, especially for Africa that has about 5% of its total agricultural areas invested, which is like the territory of Kenya (Kareem, 2018). Although some African countries promote agricultural investment, the Comprehensive Africa Agricultural Development Programme of the African Union Commission specifically enjoined national agricultural investment as part of its programme – at least 10% of the national budget (Kareem, 2016a). This cannot be the main reason for the volume of land investments. Other factors could have accounted for the investments exogenously, in which external agents such as the foreign investors are deeply involved, especially during the spike in global commodity prices – foreignization of space (Zoomers, 2010).

Studies in this area of research often focus on the effects of land deals, acquisition, transaction, ownership, tenure and reform on both micro and macroeconomic variables without determining the sustainability of the land investments and its environmental impact (Deininger et al., 2015; Deininger and Byerlee, 2012). A segment of the literature examines the effects of ownership of land and land grab on development in developing countries and normatively reflect on the drivers of the land investment (Cotula, 2012). Similarly, in the context of Africa, some studies evaluate agricultural investments and international land deals in Africa to determine whether the investment is a land grab or development opportunity (Schoneveld, 2014; Kareem, 2016b). There are studies that have econometrically determines the impact of foreign land deals in Africa on agricultural trade (Kareem, 2018; Arezki et al., 2015). Thus, a critical review of the literature indicates that only scanty empirical studies exist on the effects of large-scale land investments on the environment and sustainable land use. Majority of the related literature either apply normative, qualitative or descriptive analysis (Di Matteo and Schoneveld, 2016).

It is on this basis that this study investigates the extent to which large-scale land investments impacts on the environment and sustainable land use by both domestic and foreign investors in Africa using an augmented Helpman, Melitz and Rubenstein model. This study uses data from the Land Matrix for the large-scale land investments and got other data from the World Development Indicators of the World Bank. This model is a selection bias model with firms' heterogeneity which uses a Poisson.

Apart from this introductory section that conceptualizes the research issue, the context of the study is given in the second section. The third section presents the empirical strategy, while the fourth section deals with the results and discussion. The fifth section concludes the study.

2. The Context: Large-Scale Investments in Africa

There had been a tremendous increase in the number and value of global large-scale land investment since the 2008 spike in food prices. Statistics from Land matrix show that the total global concluded large-scale land investments' deals were 755 in June 2013, which later grew by about 27% to 956 in 2014 (Kareem, 2016b). As of September 2015, global large-scale deals have risen to 1075, which is a 12% growth rate to the preceding year and got to 1632 on June 2019, a growth of about 52%. Furthermore, the land matrix presents the direction of these investments, which shows that the global south countries are the main destinations, and Africa got the largest land investments. Although, Africa is certainty the hotspot, other regions such as South and Central America, South and Southeast Asia as well as former Soviet Eurasia got their shares. In 2013, African destinations got about 72% of the total concluded deals, which are 541 deals. The number of these deals increased to 606, a 63% of the total global concluded deals in 2014; but declined to 465 deals in 2015, which is just a little below half of the global figure (table 1). As of June 2019, the number concluded in Africa had risen 562 deals, which is 34% of the total global concluded deals. The statistics on the concluded land deals indicates that Africa's concluded land deals are increasing at a decreasing rate.

Table 1: The Destinations of Concluded Global Large – Scale Land Investments

Land Investment	June 2013	September 2014	September 2015	June 2019
World	755	956	1075	1632
Africa	541	606	465	562
Others	214	350	610	1070

Source: Compiled from Land Matrix Newsletter (Several Years)

The sectoral distribution of the large-scale land investments across Africa and its sub-regions shows that agriculture, forestry, conservation, renewable energy, industry and tourism are the sectors of destination with a total of 465 concluded transactions. East Africa got the highest concluded land transactions with 236 deals, which is more than 50% of the total of Africa's land deals. The deals are in agriculture, forestry, conservation, industry and tourism. The intentions for West Africa's large-scale land investments are for agriculture, forestry, conservation, industry and renewable energy purposes, which has 138 concluded land deals. The lowest of these investments went to Southern Africa with 8 concluded land transactions that cut across agriculture and forestry sectors.

Table 2: Africa's Large –Scale Land Investment and the Intentions

	Intention	Concluded Investment
Africa	Agriculture, Forestry, Conservation, Renewable Energy, Industry, Tourism	465
Central Africa	Agriculture, Forestry, Conservation, Renewable Energy	38

Eastern Africa	Agriculture, Forestry, Conservation, Industry, Tourism	236
Northern Africa	Agriculture, Forestry, Conservation, Renewable Energy	45
Southern Africa	Agriculture, Forestry	8
Western Africa	Agriculture, Forestry, Conservation, Industry, Renewable Energy	138

Source: Compiled from Land Matrix Database (Assessed on 14th December 2015)

3. The Empirical Strategy

The study's methodological framework is derived from Helpman, Malitz and Rubinstein (2008) – hereafter called HMR - selection model that includes firm heterogeneity and correct for sample selection bias and specification error with nonrandom zero[1]. This study departs from previous studies by adopting the HMR model to the bilateral investments' framework. Large-scale land investments are carried out with different outcomes; there are land transactions that are concluded, failed deals, some under negotiations, and there are expressions of interest. In all the transaction outcomes, only those that have been concluded are the actual and positive investments, however, others have no value of the outcome and thereby at present no investment, but in the future, the transaction might be concluded especially for those under negotiation. Consideration of only the concluded transactions (positive investment) will lead to selection bias. Thus, the HMR is adopted to control for both the sample selection bias and the investors' countries heterogeneity bias with adequate consideration for bilateral zero investment flows in a two-step estimation procedure. First-step estimates a binary equation (probit regression) for the probability of large-scale land investment at the heterogeneous firm/country level, which is the extensive margin of investment – the decision to invest. The second step involves a count model of investment estimated in its logarithm form and entails using the predicted probabilities obtained in the first step to estimate the effects on large-scale land investments' sustainable environmental land use (intensive margin of investment). The model is specified as follows:

$$T_{ijt} = \beta_1 + \gamma_{it} + \rho_{jt} + C_{ij}\vartheta + \pi E_{ijt} + \varepsilon_{ijt} \qquad (1)$$

where T_{ijt} is a binary variable that equals 1 if the number of land deals from country i to j at time t is nonzero; otherwise, it is 0. The intercept is β_1; the investor and target countries fixed effects are γ_{it} and ρ_{jt}, respectively; C_{ij} is a vector of pair-varying control variables such as distance, language, arable land, institutions and governance variables as well as others included. E_{ijt} is the exclusion variable[2] that does not enter the second – stage regression.

The second-stage equation relies on a standard count model represented in a general form of a conditional probability function as:

[1] See Kareem and Kareem (2014) and Helpman, et al. (2008) for a comprehensive description of the model
[2] For further reading on exclusion variable see Kareem (2016a)

$$\Pr(Y_{ijpt} = y_{ijt} \mid x_i) = \frac{\exp(-\exp(x_{ijt}^{'} ß))\exp(y_{itj} x_{ijt}^{'} ß)}{y_{ijt}!} \quad (2)$$

where subscripts *i, j, p* and *t* denote investor, target country, intention/sector and time respectively; *y* is the count variable, in this case, the available fertile land owing to the environmental large-scale land degradation in Africa; *x* is the vector of independent variables of the model and β is the vector of the associated parameters. The model is specified as:

$$Fertile\_land_{ijpk} = \beta_0 + \beta_1 Land\_deals_{ij} + \beta_1 Demographic_j + \beta_2 Economic\_size_{ij} + \beta_3 Trade_j + \beta_4 Pr\,o\,duction_j + \beta_5 Institution_j + \beta_6 Governance_j + \beta_7 Natural\_resources_{jt} + \beta_8 Energy_j + \beta_8 Security\_safety_j + \pi_{ij} + \delta_i + \delta_j + \delta_s + \mu_{ijpt}) \quad (3)$$

From equation 3, the dependent variable is the available fertile land, a measure of the environment, owing to the degradation of the environment from the activities of the large-scale land investors. The parameres δ_i, δ_j and δ_s are the investor country, target country and sector/intention of investment fixed effects. The investor and target countries fixed effects stand for the multilateral investment resistance variables as posited by Anderson and van Wincoop (2003). Finally, π_{ij} is the inverse Mill ratio that is derived from the first-step regression, which is used in the second step. The inverse Mill ratio is the ratio of the probability density function (PDF) and the cumulative density function (CDF) of the normal distribution, which is evaluated at the predicted outcomes divided by the standard error of the probit estimation. A Poisson estimator is employed based on the fact that the assumption of equi-dispersion of the Poisson estimator is unlikely to hold (Martinez-Zarzoso, 2013; Santos Silva and Tenreyro, 2006).

The Land Matrix provided the data used in the background and more specifically the model's land investment contract size. These data contain 702 land investment deals that cut across the period of 2000 to 2015. Other sources of data are the World Development Indicators of the World Bank, World Integrated Trade Solution database of the World Bank, and time and date website for bilateral distance.

4. Empirical Results

4.1 Extensive Margin of Large-Scale Land Investment

The estimates of the pool regression (foreign and domestic land investments) indicate that the probability of the large-scale land investors to intensively apply fertilizer on the land would have significant adverse effects on the environment such that a unit increase in fertilizer application adversely affects the environment by 0.6%. The intensity of fertilizer application, especially the chemical fertilizers, tends to hardened the soil and

thereby strengthened pesticides as well as pollute water and air and thus, release greenhouse gases that are hazardous to human health and the environment. Similar effects are obtained for the domestic and foreign large-scale land investments but the foreign investments are insignificant. The energy intensity would significantly and negatively impact on the environment at this margin of land investment such that a percent increase in the energy intensity would probably make the environment deplorable by 1.5% for pool estimates while 0.6% and 0.4% are the foreign and domestic land investments, respectively. The volume of farm yields which shows the land fertility often propel large-scale investors to such destinations, which in turn have effects on the soil's nutrients and greenhouse gas emission. The pooled estimate indicates the farm yields, measured by cereal yields, does not adversely impact on the environment (-1.5), however, this is not the case for a foreign estimate as their farm yields lead to the deplorable state of the environment. The implies that the tendency to apply modern technologies on the farm would have adverse effects on the soil composition and the environment. Precipitation, a measure of the climatic condition, which ought to increase the fertility of the land have a significant adverse effect on the environment for both the pool and foreign estimates while the domestic estimate is insignificant. The implication of this is that large-scale land investors, especially the foreign, would always invest in the environment where there is a good climatic condition for their production – agriculture – in which the intensity of their activities impact on land fertility owing to extensive application chemicals that destroy the nutrients in the soil.

The trading activities of these large-scale land investors – foreign, domestic and the pooled investor – significantly would not lead to environmental degradation, especially the investors using their land acquisitions for manufacturing and other allied purposes. Institutions, measures by the business regulatory environment, tend to contribute to the deplorable state of the environment in Africa. Since, the land regulatory agencies and governance in Africa are weak (see Kareem, 2018), this would lead to an inadequate contract and standard enforcement and thereby propelling large-scale land investments that utilize the land in such a way that would affect the environment and land sustainability – against global best practices. The population density tends to reduce environmental degradation such that for every percent increase in population density there would be 1.3% environment-friendly and sustainable land use by the foreign investor, 0.5% for the pool investors while the domestic investors tend to adversely affect the environment by 1.7%.

Table 3: Extensive Margin Probit Estimations

Variable	Foreign	Domestic	Foreign & Domestic
Fertilizer	0.0927 (0.1024)	0.4826[b] (0.2304)	0.5885[a] (0.1510)
Energy intensity	0.6617[a] (0.1705)	0.4265[b] (0.2143)	1.5137[b] (0.6577)
Cereals	1.1114[b] (0.5318)	-0.2682 (0.6926)	-1.4588[a] (0.2618)
Precipitation	2.8520[a] (0.7823)	-0.2112 (0.5327)	1.9069[a] (0.2598)
Distance	0.0140 (0.0425)		-0.0448[a] (0.0045)

Export industry	-1.2435[a] (0.3132)	0.0672 (0.2347)	-0.0002[a] (0.0000)
Export agriculture	-0.4427[a] (0.1115)	0.0237 (0.2524)	0.0553 (0.2069)
Import agriculture	2.0433[a] (0.5327)	0.5244[a] (0.1088)	0.0286 (0.0569)
Import industry	0.6818[c] (0.3871)	-1.9260[a] (0.0259)	-1.9791[a] (0.0279)
Time export	0.0158[b] (0.0083)	-0.0167 (0.0208)	-0.0245 (0.0284)
Bribe	-0.0179 (0.0117)	0.0411[b] (0.0225)	-0.0235[a] (0.0037)
Regulations	0.0181 (0.0148)	-0.0262 (0.0192)	-0.0571 (0.0422)
Time import	0.0158[b] (0.0083)	0.0396[a] (0.0136)	0.0401 (0.0260)
Business regulatory environment	1.2099[a] (0.2466)	1.2275[b] (0.6226)	2.1955[a] (0.5793)
Time property	-0.0325[a] (0.0075)	0.0039 (0.0066)	-0.0031 (0.0023)
GDP investor country	-0.0145 (0.0243)		-0.0164[b] (0.0054)
Population density	-1.3472[a] (0.4325)	1.7220[a] (0.2553)	-0.4929[a] (0.0957)
GDP target country	-0.4881[b] (0.2310)	0.5908[a] (0.0958)	0.2222[a] (0.0663)
Language	-0.0360 (0.0969)		-0.0946[a] (0.0250)
Area		2.1376[a] (0.3655)	
Constant	-27.7381[a] (7.2248)	-5.6324 (1.4586)	-7.2987[a] (2.3565)
Observation	21,357	5,473	18,244
Wald Chi2	100.36 (0.0000)	14354.40 (0.0000)	2183.87 (0.0000)
Pseudo R2	0.1219	0.1225	0.1011
Target country fixed effect	Yes	Yes	Yes
Investor country fixed effect	Yes	Yes	Yes

Source: Computed. Note that a, b and c stand for 1, 5 and 10% significant levels. The figures in parentheses are the robust standard errors. All variables are in log form except the dummy variables.

4.2 Intensive Margin of the Large-Scale Land Investment

In terms of the actual large-scale land investments, the intensiveness of the use of fertilizers significantly did not adversely affect the environment, which implies that chemical fertilizers and other environmental damaging chemical were not applied to the land. Hence, the fertilizers usage tends to nourish the soil such that a percent increase in

fertilizers application by all the investors (pool estimate) improve the soil nutrient by 0.4% and the magnitude of the impact is same for all categories of land investors. However, the energy intensity significantly leads to environmental degradation with the largest impact magnitude from the domestic land investors (0.6) compared to 0.3 for other investors. The farm yields, measured by the cereal yields, significantly lead to the deplorable environment because as more yields are harvested there is a tendency to further cultivate the land and other exploration which might reduce the land nutrients and fertility and thereby make the environment deplorable. The magnitude of the deplorability of the environment due to farm yield is more pronounced in the domestic land investment (0.6) than the foreign which is 0.2. Furthermore, the climatic condition, measured by precipitation, significantly did not make the large-scale land investment at this margin to be environment degradable. The more the precipitation the higher environment sustainability by all categories of large-scale land investors.

The trade activities of these investors did significantly and adversely affect the environment. The implication of this is that as the investors are motivated by the drive to trade in their produced goods, there will be extensive and intensive land use which adversely affect soil composition and the ecosystem. The institutions are significant and tend to protect the environment for sustainable land utilization. The business regulatory environment indicates that despite the inadequate institutional capacity in Africa, contract enforcement and land governance is such that sustainable land use and environmental protection is ensured. In addition, the population density in the target countries ensured environmental protection and sustainable land use. The population density tends to ensure sustainable land use such that a percent rise in the population density protects the environment by 0.03% for foreign investors and 0.07% for domestic investors while it is 0.3% for all the investors. The implication of this is that the environment is protected in densely populated areas than thinly populated areas. The economic size of the foreign investors increases environmental protection by 0.4% for every percent rise in GDP, however, the reverse is the case for domestic investors such that there is environment degradation by 0.5% for every percent increase in GDP. This implies that as the target countries' economic grow, they tend to make more use of land for construction, urbanization, etc. which adversely affects the environment.

Table 4: Intensive Margin Poisson Estimation

Variable	Foreign	Domestic	Foreign & Domestic
Fertilizer	-0.3996[a] (0.0043)	-0.4352[a] (0.0858)	-0.3993[a] (0.0047)
Energy intensity	0.2762[a] (0.0101)	0.6261[a] (0.0582)	0.3501[a] (0.0115)
Yield cereals	0.1796[a] (0.0168)	0.6279[a] (0.1417)	0.1190[a] (0.0275)
Precipitation	-1.0669[a] (0.0187)	-1.1972[a] (0.0917)	-0.5994[a] (0.0308)
Distance	0.0191[a] (0.0016)		0.0075[a] (0.0003)
Export industry	0.0000[a] (3.73e-06)	0.0000[b] (0.0000)	-0.1919[a] (0.0082)
Export agriculture	0.4871[a]	0.1905[a]	0.4890[a]

	(0.0070)	(0.0423)	(0.0155)
Import agriculture	0.1684[a] (0.0128)	-0.0783 (0.0619)	0.0018 (0.0024)
Import industry	-0.3268[a] (0.0285)	0.1208 (0.1245)	0.3157[a] (0.0121)
Time export	0.0028[a] (0.0006)	0.0136[a] (0.0042)	-0.0003 (0.0014)
Bribe	-0.0085[a] (0.0006)	-0.0090 (0.0078)	-0.0093[a] (0.0007)
Regulations	-0.0223[a] (0.0009)	-0.0246[a] (0.0024)	0.0004 (0.0012
Time import	0.0084[a] (0.0005)	-0.0247[a] (0.0041)	0.0027[a] (0.0011)
Business regulatory environment	-0.2745[a] (0.0122)	-0.5394[a] (0.2032)	0.0150 (0.0235)
Time property	0.0193[a] (0.0003)	0.0061[a] (0.0009)	0.01599 (0.0002)
GDP investor country	0.0094[a] (0.0019)		-0.0052[a] (0.0004)
Population density	-0.0253[a] (0.0044)	-0.0729[a] (0.0186)	-0.2607[a] (0.0104)
GDP target country	-0.4326[a] (0.0116)	0.4545[a] (0.0468)	0.2406[a] (0.071)
Inverse Mill Ratio	-0.9040[a] (0.0247)	-0.1551[b] (0.0631)	-0.6551[a] (0.0222)
Constant	3.5181[a] (0.1057)	1.3070 (1.1486)	-0.0772[a] (0.0812)
Observation	21,813	5677	18,474
Pseudo R2	0.5515	0.6683	0.6112
Target Country Fixed Effects	Yes	No	Yes
Investor Country Fixed Effects	Yes	No	Yes

Source: Computed. Note that a, b and c stand for 1, 5 and 10% significant levels. The figures in parentheses are the robust standard errors. All variables are in log form except the dummy variables.

5. The Conclusion

The paucity of literature that has empirically investigate the impact of large-scale land investments on environmental sustainability motivates this study. The results suggest that the activities of large-scale land investors impacted adversely on the environment. The study further finds that at the decision to invest (extensive margin), there is the tendency that the environment gets more deplorable, in which the foreign investors sustainably use the land while this is not the case for the domestic investors. At the actual large-scale land investment level (intensive margin), the foreign large-scale land investments have adverse effects on the environment but they maintain sustainable use of the land, while the domestic large-scale investment negatively impacted on both the environment and the sustainable land use. Climate change impeded the availability of large-scale land, especially for agri-food production and other land uses such as forestry, conservation, renewable energy and tourism. In addition, the findings also indicate that the decision to acquire land is determined by the climatic condition, the economic size of

the investors' countries, institution capacity and governance as well as the ease of trading in the destination countries. However, at the intensive margin, economic size stimulates large-scale land investments to the extent that the growth in income level of target countries lead to environmental degradation due intensive and extensive of the land but this is not the case for investor countries. Also, the actual large-scale land investments are influenced by trade, population density and the capacity of the institutions. Thus, the factors that adversely affect environmental sustainability are energy intensity, climate change and institutional capacity.

Thus, despite the fact that large-scale investments could combat the challenges of national food insecurity, youth unemployment and poor production technology, there should be intense efforts by the regulatory agencies to continuously monitor and regulate the activities of these investors to conform with global environmental best practices. Concerted efforts should be made to ensure appropriate corporate social and environmental conducts in order to ensure that the destination countries could leverage these investments to sustainable progress in their development aspirations.

References

Arezki, R., Deininger, K., Selod, H. 2015. What drives the global "land rush? World Bank Economic Review 29 (2), 207-233.

Cotula, L. 2012. The international political economy of the global land rush: a critical appraisal of trends, scale, geography and drivers. Journal of Peasant Studies, DOI:10.1080/03066150.2012.674940

Deininger, K., Byerlee, D. 2012. The rise of large farms in land abundant countries: do they have a future? World Development 40 (4), 701-714.

Deininger, K.W., Xia, F., Savastano, S. 2015. Smallholders land ownership and access in Sub-Saharan Africa: a new landscape**?** Policy Research Working Paper Series 7285, The World Bank.

Di Matteo, F., Schoneveld, G.C. 2016. Agricultural investments in Mozambique: an analysis of investment trends, business models and social and environmental conduct. Volume 201, CIFOR.

Helpman, E., Melitz, M., Rubinstein, Y. 2008. Trading partners and trading volume. Quarterly Journal of Economics 123 (2), 441-487.

Kareem, O.I. 2014. The European Union sanitary and phytosanitary measures and Africa's exports. European University Institute RSCAS Working Papers, RSCAS 2014/98, available at: http://cadmus.eui.eu/bitstream/handle/1814/33311/RSCAS_WP_2014_98.pdf?sequence=1

Kareem, O.I. 2016a European Union's Standards and Food Exports from Africa: Implications of the Comprehensive Africa Agricultural Development Programme for Coffee and Fish, Journal of African Development, Vol.18, No. 1, pp.9-31.

Kareem, O.I. 2016b. The determinants of large-scale land investment in Africa: an application of Heckman model. a paper presented at the annual World Bank conference on land and poverty, Washington D.C., March 14-18th, 2016. Available at: https://www.conftool.com/landandpoverty2016/index.php?page=browseSessions&abstracts=show&form_session=412&presentations=show

Kareem, O. I. (2018) "Determinants of Large-Scale Land Investment in Africa", Land Use Policy, Vol. 15, pp. 189 - 190. Available at: https://www.sciencedirect.com/science/article/pii/S0264837716302502

McMichael, P. 2012. The land grab and corporate food regime restructuring. The Journal of Peasant Studies 39 (3–4), 681–701.

Schoneveld, G. C. 2014. The geographic and sectoral patterns of large-scale farmland investments in sub-Saharan Africa. Food Policy (48), 34-50.

Zoomers, A. 2010. Globalisation and the foreignization of space: seven processes driving the current global land grab. The Journal of Peasant Studies 37 (2), 429-447.