Review article

The impact of urbanization expansion on agricultural land in Ethiopia: A review

Assefa Ayele^{1*}, Kassa Tarekegn²
¹Department of Agricultural Economics and Agribusiness Management, College of Agriculture and Veterinary Medicine, Jimma University, P.O. Box 307, Jimma, Ethiopia

²Southern Agricultural Research Institute, Arba Minch Agricultural Research center, Socio-Economics Research Division, P.O.Box. 2228, Arba Minch, Ethiopia

E-mail address* (corresponding author): assefa.ayeale50@gmail.com/ayeale.assefa@ju.edu.et

ORCID iD: Assefa Ayele: <https://orcid.org/0000-0002-3212-7298>; Kassa Tarekegn: <https://orcid.org/0000-0001-9571-1849>

ABSTRACT

In a country like Ethiopia where the vast majority of the populations are employed in agriculture, land is an important economic resource for the development of rural livelihoods. Agricultural land in peri-urban areas is, however, transformed into built-up regions through horizontal urban expansion that has an effect on land use value. In recent years Ethiopia has been experiencing rapid urbanization, which has led to an ever-increasing demand for land in peri-urban areas for housing and other nonagricultural activities that pervades agricultural land. There is a high demand for informal and illegal peri-urban land which has been held by peri-urban farmers, and this plays a vital role in the unauthorized and sub-standard house construction on agricultural land. This urbanization has not been extensively reviewed and documented. In this review an attempt has been made to assess the impacts of rapid urbanization on agricultural activities. Urban expansion has reduced the areas available for agriculture, which has seriously impacted upon peri-urban farmers that are often left with little or no land to cultivate and which has increased their vulnerability. Housing encroachments have been observed to be uncontrolled due to a weak government response to the trend of unplanned city expansion. This has left peri-urban farmers exposed to the negative shocks of urbanization because significant urbanization-related agricultural land loss has a positive correlation with grain production decrease. Appropriate governing bodies should control urban development in order to control the illegal and informal spread of urbanization on agricultural land that threatens food production.

KEY WORDS: agricultural land, food production, peri-urban expansion, rapid urbanization, Ethiopia

ARTICLE HISTORY: received 29 July 2020; received in revised form 21 November 2020; accepted 22 November 2020

1. Introduction

Ethiopia is the second most populous nation in Africa (more than 109 million people) with a total area of 1.1 million km² and lies in the north eastern part of the Horn of Africa (WORLD BANK GROUP, 2019). Agriculture is the backbone of the Ethiopian economy, of which 80.5% of the rural population relies on agriculture for their livelihoods. This particular sector determines the growth of all other sectors and consequently the whole national economy. It constitutes over 50% of the gross domestic product (GDP), accounts for over 85% of the labour force, and generates over 90% of the foreign exchange ((ECA, 2016; WELTEJI, 2018).

The land tilled by Ethiopian small-scale farmers accounts for 95% of the total area under agricultural use, and these farmers are responsible for more than 90% of the total agricultural output (GEBRESELAASSIE & BEKELE, 2012).

In economic theory, land is regarded as a special asset providing space for locating economic activities, infrastructure, and dwellings, as well as amenity services and aesthetic value (VAN DER VEEN & OTTER, 2001; HUBACEK & VAN DEN BERGH, 2002; ARIBIGBOLA, 2008). In developing countries, most people rely on agricultural production, making land an important asset (TUYEN, 2013). Yet, this valuable and scarce resource is in fixed supply (AZADI ET AL., 2011), requiring sustainable utilization.

Therefore, any change to the agricultural land use in these countries requires thoughtful planning to both conserve the land and reduce the risks of undermining the livelihoods of the people. However, existing literature shows that economic growth and persistent urbanization is an unavoidable global phenomenon that initiates urban encroachment into agricultural land (PAUL & MCKENZIE, 2012; DADI ET AL., 2016). While some studies state positive outcomes from the conversion of agricultural land in local communities since urbanization transforms a backward and agricultural country to become modern and industrial. As a result of an increase in non-food producers and their average incomes, it often provides growing demands for agricultural products and for higher value products that bring benefits to farmers (MELESE, 2004; SATTERTHWAITE ET AL., 2010). However, others argue against positive impact and report negative consequences because in most urban areas in low- and middle-income nations, the absence of land-use planning or a strategic planning framework to guide land-use changes leads to urban areas expanding haphazardly (NGUYEN VU & PHILIPPE, 2011; NGUYEN & HO, 2013; PRIBADI & PAULEIT, 2015; FENTA ET AL., 2017; ENIYEW, 2018).

Urbanization rates are quickly increasing in developing countries, with two-thirds of the world's population anticipated to be living in cities by 2050 (UN POPULATION DIVISION, 2014). A typical characteristic of urban areas in developing nations are the informal settlements caused by the large influx of populations from other semi-urban or rural areas (CHIRISA, 2008). Rapid population growth and the related need for housing and other amenities have resulted in an increasing urbanized land cover, mostly along major roads and in rural countryside, which is typically scattered and inefficient in resource utilization (EWING & HAMIDI, 2015). Currently, Ethiopia has been experiencing a rapid urbanization process since the implementation of an economic development and privatization policy to stimulate national economic growth (ADAM, 2016). In the country, the population living in cities is expected to grow from 15.2 million in 2012 to 42.3 million by 2034, corresponding to an annual growth of 5.4% (WORLD BANK, 2015). The share of the population living in cities has increased from an estimated 7.1% in 1994 (SCHMIDT & KEDIR, 2009) to 16% in 2008 (ABEBE, 2006) and is expected to reach 60% by 2040 at the current annual growth rate of 3.5% (DESA, 2014).

In the next decades, Ethiopia will be building its cities in which it will then have to live for many generations. Given the 2.73% total annual population growth rate, the high rate of migration to towns, and the increase in the number of urban centres,

the rate of urbanization is increasing at a rate of 4.4% (TADESSE & HEADEY, 2010). Furthermore, the country's urban population is expected to grow on average by 3.98% annually, and by 2050, about 42.1% of the total population is expected to inhabit urban centres (TESSEMA, 2017; UN-HABITAT, 2010).

The urban growth in Ethiopia, and likely in many African cities, is generally characterized by a lack of adequate planning or a lack of the implementation of plans, resulting in cities that often have a shortage of the necessary infrastructure and services (HAREGEWEYNA ET AL., 2012; MUDHCO, 2014; ZEWDIE ET AL., 2018). This has contributed to fragmented urban landscape patterns along major roadways to its rural fringes especially in the regional cities. In the past couple of decades, regional cities in Ethiopia have grown faster than the capital city, Addis Ababa (UN-HABITAT, 2017). Peri-urban areas surrounding the urban areas are characterized as one of the most vulnerable geographic areas for the rapid conversion of a large amount of prime agricultural land to urban areas that makes farmers loss of livelihood assets (MULUWORK, 2014; WEGEDIE, 2018). As a result, large numbers of local landholders, who mainly engage in agricultural activity for their livelihood, have been forced to lose their land rights (ADAM, 2014). Several studies (KASA ET AL., 2011; WORKU, 2019; AHLAM, 2017; FENTA ET AL., 2017; ENIYEW, 2018) have confirmed that there have been considerable losses of areas of agricultural land use cover in Ethiopia during recent decades. In most instances, there is little effective control over land-use conversions from agriculture to non-agricultural uses. There may be regulations that are meant to limit these conversions but these are often avoided by politicians and real estate agents. As a result of this, agricultural land, which is the mainstay of the livelihoods for majority of people in the country, is decreasing day by day.

Generally, such land-use conversion often reduces the most fertile land, and therefore the impact on agricultural production and food security is often larger than the absolute amount of land involved (NAAB ET AL., 2013; SHISHAY, 2011). Policies that ensure a just and equitable compensation for such expropriated farmers remain necessary (MULUWORK, 2014). Hence, a better understanding of the spatial and temporal dynamics of urban growth and their impact on the small-scale farmer's life in the surroundings are required. However, urbanization and its impact on agricultural land has not been extensively reviewed and documented. Thus, as a response to the existing information gap, this review article has attempted to assess the effect of rapid urbanization on agricultural land in Ethiopia.

2. Overview of urbanization and peri-urban farming in Ethiopia

2.1. Pattern and trend of urban growth in Ethiopia

Ethiopia is the second-most populous country in Africa after Nigeria and 19.45% live in urban and peri-urban areas (CSA, 2016). According to the UNITED NATIONS POPULATION DIVISION (2014), Ethiopia attained an urbanization level of 16% in 2007 and this grew to 20% in 2017. This level of urbanization is low compared to the averages for African and Sub-African countries whose urbanization rates are 40% and 37% respectively. Yet, Ethiopia's urban population has been projected to increase three times in the next two decades (UNDESA, 2018). As a result, it is estimated to reach between 30-35 million (27-30% of the total population) by 2025 and will have escalated to 42.2 million (40% of the total population) by 2037 (WORLD BANK, 2015). Ethiopia's urban growth rate is more than 4.0% per year, which places it among the highest in Africa and in the world (MWUD, 2007) (see Fig. 1). This rapid urban growth has been accompanied by horizontal expansion of urban centres and the emergence of new forms of settlements.

Fig. 1. Global trends of urbanization growth rates from 1950 to 2050 (UNDESA, 2018)

2.2. Drivers of rapid urbanization

Rapid urbanization is derived from migration from villages to towns, urban expansion to peri-urban areas, and the natural growth of urban inhabitants.

Migration. Migration is considered to be a major factor in the urban growth dynamics of Ethiopia and has been a significant contribution to the country's urban population (PAUL & EMILY, 2010). The population migration in Ethiopia to urban centres has been rural-urban and urban-urban. Studies by (BEZU & HOLDEN, 2014; ESHETU & BESHIR,

2017) revealed that the proportion of migrants in urban centres has drastically increased. Migration from rural to urban areas accounted for 24% of all migration flows in 2005, i.e. seven percentage points lower compared with 2013; in contrast, the share of migration across rural areas accounted for 46% of total migration flows, representing a decrease of more than ten percentage points compared with 2013 (CSA, 2014). According to the WORLD BANK (Ethiopia Urbanization Review) (2015), migration contributed 30-37% of urban growth between 2007-2017 and will contribute 38-48% up to the year 2037 (see Fig. 2).

Fig. 2. Urban population increase by urbanization factor (national) (2012-2037) (Source: World Bank Documents, Ethiopia Urbanization Review, 2015)

Urban expansion. Upgrading of villages to urban centres and the expansion of urban areas into rural areas due to urban sprawl are other drivers of urbanization in Ethiopia. As demand for land has increased over time, urban centres have been physically expanding their boundaries into surrounding rural and peri-urban areas by including additional land where people had previously based their lives in agriculture (VANDERCASTELEN ET AL., 2018). Urban expansion has been practiced in a planned and unplanned manner. Most commercial and manufacturing expansions were guided by urban expansion planning, whereas many of the residential settlements were due to urban sprawl from inner cities and informal settlements with people living on the outskirts in a built or rented housing occupation (BULTI & ABEBE, 2020). Commercial activities, infrastructures, and services in expansion areas have attracted people who were originally agrarian to gradually transform their living styles to urban settings, and these have caused spatial expansion as well as urban increments to the overall population count (ERMIAS ET AL., 2019).

Natural growth. According to **WORLD POPULATION PROSPECTS** (2019), Ethiopia is currently one of the fastest growing countries in the world, with a growth rate of 3.02% per year. If Ethiopia follows its current rate of growth, its population will double in the next 30 years, hitting 210 million by 2060. Most of the world's population growth in the next 40-50 years is expected to come from Africa, and Ethiopia will be a large part of the growth. Infant mortality rates in urban and rural areas of the country was 59 and 76 deaths per 1,000 live births in 2016, respectively, however, these figures have exhibited a declining trend from 97 in the urban areas and 115 deaths in the rural areas per 1,000 live births in 2000 (**CSA**, 2016). The decline is mainly attributable to improvements in the delivery of health services in the country. The availability of better health services in urban centres, therefore, plays a role in maintaining natural growth of the population through decreased child and infant mortality rates.

2.3. Urbanization versus peri-urban land tenure administration in Ethiopia

Land in Ethiopia is owned by the government and is managed by either a rural or urban tenure system. Rural land is held through a limited real right protected through a land certification system; rural land cannot be bought or sold but is transferred to eligible heirs (as determined by regional land proclamations). Urban land operates on a leasehold system, which can be bought and sold (**ALAMIREW ET AL.**, 2015). Land rights in the peri-urban areas are governed by the rural landholding system. However,

they are under intense pressure to be changed to the urban leasehold system due to the growing demand for land for urban purposes. Extensive and continuous urban population growth requires large tracts of land from adjacent peri-urban areas for residential and other urban purposes (**ADAM**, 2014). Some of the basic land governance challenges in the peri-urban areas include haphazard residential development with insufficient social services and infrastructure; land acquisition for speculative purposes; illegal and extra-legal land subdivisions, and transactions; unauthorized land use change and transactions without the knowledge of the land administration authorities. Besides, with increasing land values, multifaceted actors are interested in peri-urban land, which may intensify land use disputes between different institutions and actors (**HOME**, 2004).

In the Ethiopian context, peri-urban land which has been used predominantly for agricultural purpose and held by local farmers is a potential target area for informal development (**ADAM**, 2020). From the point of plot acquisition and construction, there are three possible ways which may lead to the creation of new built-up interests and rights outside the formal regulatory framework. The three aspects of informal settlements typical to the peri-urban areas of Ethiopia that can lead to the formation of new rights are forceful occupation of vacant state land, illegal purchase from the rightful local landholders, and unauthorized subdivision and construction by the rightful local landholders themselves (see Fig. 3).

Fig. 3. Built-up property formation process in the peri-urban areas of Ethiopia (Source: Adam, 2020)

2.4. The impact of urbanization on peri-urban farming communities in Ethiopia

In a country like Ethiopia where agriculture employs the vast majority of the population, land is an important economic resource for the development of rural livelihoods. Agricultural land in peri-urban areas, however, when transformed in to built-up land through horizontal urban expansion has an effect on land use value (HOLDEN ET AL., 2010; AGEGNEHU ET AL., 2016; MUHABAW & GASHU, 2019). As stated by TUYEN (2013) and BEKELE (2010) urban expansion has many positive and negative effects on farmers in peri-urban areas. However, the negative impacts are more generally highlighted because this expansion is often uncontrolled, or uncoordinated, and therefore the negative impacts override the positive ones. Particularly in developing countries, land conversion and displacement is not considered critically by any activities that have taken place on it. Yet, it can have adverse effects on displaced households in terms of livelihood disruption, and social and cultural consequences (NIGUSIE, 2011; MULUWORK, 2014).

As argued in many studies (AZADI ET AL., 2012; RUDI ET AL., 2012; DADI ET AL., 2016; WOLDEGERIMA ET AL., 2017), unsustainable agricultural land conversion in the urban fringes has had negative implications by reducing farmlands and crop yields which threaten the livelihoods of local people. For instance, a study done by DADI ET AL. (2016), on the major drivers of urban sprawl and their impacts on land-use conversion in the peri-urban kebeles of Dukem town, central Ethiopia, showed the total cultivated land available to grow wheat had declined from 230.82 km² in 2005 to 104.82 km² (55%) in 2011, whereas teff flour crop production shrank from 134.77 km² to 93.67 km² (30.4%) over the same period. The overall yield harvested for both crop types decreased drastically between the 2005 and 2011 harvesting seasons. For example, the combined yield (teff and wheat) was reduced from 1280.3 tons in 2005 to 867.7 tons in 2011. This clearly shows the rapid decline of croplands over time and the growing vulnerability of rural households for whom agriculture remains the only source of household income.

According to the Federal Rural Land Administration and Land Use Proclamation No. 456/2005 and the Federal Expropriation Regulation No. 135/2007, the land transaction compensation fee for rural areas has three major components that are integrated as part of the compensation package which include crop cost, displacement cost and permanent improvement cost. Farmers in peri-urban areas are inadequately compensated

for their land (TURA, 2018; WUBNEH, 2018; ADAM, 2011; VAN DIJK, 2009). In a study done by WUBNEH (2018) he supposes there is a farmer who has an acre of land (10,000 m²) and assumes that the individual gets 25 quintals of crops from a farm, at an average price of 1500 Birr per quintal (100 kg), and makes a total annual income of 37,500 Birr. The displacement cost is supposed to be 10 times the average annual income earned during the five years preceding the expropriation of the land, thus the farmer would receive a displacement cost of 375,000 Birr. The farmer would also receive permanent improvement cost on land, which we estimate to be his total compensation would be 600,000 Birr or an average compensation of 60 Birr/m². Researchers find that the displacement compensation does not represent a compensation for the loss of land use rights (AMBAYE, 2013; ABDO, 2015) which is based on the calculation method which is neither scientific nor justifiable. Due to this low price of the compensation package, researchers (ABDO, 2015; ALEMU, 2015) also state that farmers prefer an informal land sale to informal settlers.

2.5. Empirical review on rate of urbanization and farmland encroachment in Ethiopia

Available studies have indicated that because the rate of population growth is linked to the fast expansion of urban slum areas the land that is now needed for agriculture has shifted to residential development use. This has resulted in peri-urban dwellers being seriously threatened by rapid urbanization because of the problem of scarcity of land for agricultural purposes that will arise. Farmers are often left with little or no land to cultivate and this renders them vulnerable.

A study undertaken by BELAY (2014), on the impact of urban expansion on agricultural land, used a remote sensing and GIS approach. The case of Gondar city, Ethiopia, showed that there is a loss of farmland and displacement of households who had been involved in farming. The study, which obtained the changes between 1966 and 1999 and 1999 and 2004 from Landsat imageries found the rate of urban expansion over the agricultural land was 113.32 km² within the 13 year interval and 106.26 km² within the 5 year intervals respectively. This shows that the rate of urban expansion is increasing rapidly. This has resulted in the reduction of agricultural land. Generally, one can say that the higher rate of urban expansion leads to a higher loss of agricultural land.

A study was performed by FENTA ET AL. (2017) on the dynamics of urban expansion and land use/land cover changes using remote sensing and spatial

metrics about the case of Mekelle City in northern Ethiopia. The results showed that in the periods 1984–1994, 1994–2004, and 2004–2014, the built-up area increased annually by 10%, 9%, and 8%, respectively; with an average annual increment of 19% (100 ha year⁻¹), from 531 ha in 1984 to 3524 ha in 2014. Between 1984 and 2014, about 88% of the gain in built-up area was from the conversion of agricultural lands, which decreased by 39%. Extension of existing urban areas was the dominant growth type, which accounted for 54%, 75%, and 81% of the total new development during the periods 1984–1994, 1994–2004 and 2004–2014, respectively.

A study done by [AHLAM \(2017\)](#) on urban expansion and its impact on the livelihood of peripheral farming communities with a case study of Kutaber town, Amhara region, Ethiopia showed that different land use/land cover classes have changed into built-up areas. Even though many changes have been observed between 1986 and 2016, the highest negative rates of change were seen in grassland and farmland which decreased on average by 21.66 km² (25.044 %) and 14.627 km² (16.912%) respectively (Table 1). Whereas the highest positive rate of change was seen in built-up areas which increased on average by 51.247km² (59.254%) in this time period.

Table 1. Land use/land cover change in km² and percent between 1986 and 2016 in Kutaber, Ethiopia (Source: Extracted from analysis of Landsat images of 1986 and 2016 by Ahlam, 2017)

Class name	1986		2016		Change 1986-2016	
LULC Type	Area km ²	Area %	Area km ²	Area %	Area km ²	Area %
Built-up areas	0.295	0.341	51.542	59.595	+51.247	+59.254
Farmland	31.984	36.981	17.357	20.069	-14.627	-16.912
Forest land	22.299	25.783	10.337	11.952	-11.962	-13.831
Grass land	26.861	31.058	5.201	6.013	-21.660	-25.044
Water	0.025	0.028	0.001	0.001	-0.024	-0.027
Shrub land	4.882	5.644	1.776	2.053	-3.106	-3.591
Bare land	0.140	0.161	0.203	0.234	-0.063	-0.072
Total	86.486	100	86.486	100	86.486	100

[ENIYEW \(2018\)](#) assessed the effects of urban expansion on the surrounding land use using GIS and Remote Sensing in Debre Tabor town. The study revealed a significant change in the urban boundary and in urban land-use cover between 1984 and 2016. The urban boundary expansion rate between the years 1984 and 2000 was 69.06%, which was higher than the rate experienced thereafter to the year 2016 (18.86%). However, for the thirty-two year period, between 1984 and 2016, the overall boundary increment was almost eighty-one percent (81.4). The study also indicated that the area experienced a rapid increase in built-up areas (80.93 %), and agricultural land (23.81%). However, in the same period there was a sharp decrease in forest by 36.07%, and open land by 65.02%. Built-up area expansion had occurred by expanding the urban boundary at the expense of open land, agricultural land, and forests.

3. Conclusion

Agriculture is a major source of food for domestic consumption, of raw materials for the domestic manufacturing industries and primary commodities for export. Available studies have indicated that

the rate of population growth is linked to the fast expansion of urban areas; and land that is now needed for agriculture has shifted to use for residential development. In Ethiopia, expansion of urban development into agricultural landscapes and other rural settings has prompted much public concern over land use since agriculture contributes significantly to poverty reduction in Ethiopia. As demand for land increased has over time, urban centers have been physically expanding their boundaries into surrounding rural and peri-urban areas by including land where people have previously based their lives in agriculture. There is a high demand for informal and illegal peri-urban land which has been held by peri-urban farmers with a large fraction of peri-urban agricultural productivity in Ethiopia. In most instances, there is little effective control over land-use conversions from agriculture to non-agricultural uses. There may be regulations that are meant to limit this, but these are often avoided by politicians and real estate agents, and this plays a vital role for unauthorized and sub-standard house construction on agricultural land. The result of this review have revealed that farmers are therefore, often left with little or no land to cultivate crops and this

renders them vulnerable and poses unprecedented challenges in terms of hunger and food insecurity because they are inadequately compensated for their land. This has left peri-urban farmers exposed to the negative effects of urbanization because of significant urbanization-related agricultural land loss which has had a positive correlation with a decrease in grain production. In addition, rural urban migrations and rapid population growth which have resulted from natural increases are the main drivers of this urban expansion.

Compared to sub-Saharan Africa, Ethiopia has an admirable record of supporting agriculture with its continued state-led policies to boost agricultural production. However, an understanding of the complex issues involved in urban expansion are required along with an evidence-based analysis and a policy of recommendations, along with a continuous debate on the advantages and disadvantages of alternatives options. It is necessary to improve land management knowledge and skills of city planners in order to help to balance the increasing land demand with the loss of agricultural land along with proper compensation for forced eviction, encroachment, and conversion of farmlands into housing development and physical infrastructure. Therefore, the government and other concerned bodies should be vigilant and make the necessary improvements in spatial and urban planning.

References

- Abdo M. 2015. Reforming Ethiopia's expropriation law. *Mizan Law Review*, 9, 2: 301–340.
- Adam A.G. 2014. Land tenure in the changing peri-urban areas of Ethiopia: The case of Bahir Dar city. *International Journal of Urban and Regional Research*, 38, 6: 1970–1984.
- Adam A.G. 2016. Urbanization and the struggle for land in the peri-urban areas of Ethiopia. *Paper presented at the Annual Bank Conference on Africa*.
- Adam A.G. 2020. Urban Built-Up Property Formation Process in the Peri-Urban Areas of Ethiopia. [in:] S. Appiah-Opoku (ed.) *Land Use Change and Sustainability*. IntechOpen.
- Agegnehu S.K., Fuchs H., Navratil G., Stokowski P., Vuolo F., Mansberger R. 2016. Spatial urban expansion and land tenure security in Ethiopia: Case studies from Bahir Dar and Debre Markos peri-urban areas. *Society & Natural Resource*, 29, 3: 311–328.
- Ahlam Y. 2017. Urban expansion and its impact on the livelihood of peripheral farming communities: The case of Kutaber town, Amhara region, Ethiopia (MSc. Thesis), Addis Ababa University, Addis Ababa.
- Alamirew B., Grethe H., Siddig K.H.A., Wossen T. 2015. Do land transfers to international investors contribute to employment generation and local food security? *International Journal of Social Economics*, 42: 1121–1138.
- Alemu G.T. 2015. Land expropriation and compensation payment in Ethiopia: Review. *Journal of Economics and Sustainable Development*, 6, 13: 93–97.
- Ambaye D.W. 2013. Land rights and expropriation in Ethiopia. International Theses, Springer, Switzerland.
- Aribigbola A. 2008. Improving urban land use planning and management in Nigeria: The case of Akure. *Theoretical and Empirical Researches in Urban Management*, 3, 9: 1–14.
- Azadi H., Ho P., Hasfiati L. 2011. Agricultural land conversion drivers: A comparison between less developed, developing and developed countries. *Land Degradation & Development*, 22: 596–604.
- Azadi H., Van Acker V., Zarafshani K., Witlox F. 2012. Food systems: New-Ruralism versus New-Urbanism. *Journal of the Science of Food and Agriculture*, 92, 11: 2224–2226.
- Bekele F. 2010. The impact of horizontal urban expansion on sub-urban agricultural community livelihood: The case of Tabor sub-city, Hawassa city, SNNPRS, Ethiopia (Doctoral dissertation, MA Thesis unpublished).
- Belay E. 2014. Impact of urban expansion on the agricultural land use a remote sensing and GIS Approach: A Case of Gondar City, Ethiopia. *International Journal of Innovative Research and Development*, 3, 6: 129–133.
- Bulti D.T., Abebe B.G. 2020. Analyzing the impacts of urbanization on runoff characteristics in Adama city, Ethiopia. *SN Applied Sciences*, 2: 1–13.
- Chirisa I. 2008. A population growth and rapid urbanization in Africa: Implications for sustainability. *Journal of Sustainable Development in Africa*, 10, 2.
- CSA (Central Statistical Agency of Ethiopia). 2008. *Housing and population census*, Addis Ababa, Ethiopia.
- CSA. 2016. *Demographic and Health Survey*, Addis Ababa, Ethiopia.
- Dadi D., Azadi H., Senbeta F., Abebe K., Taheri F., Stellmacher T. 2016. Urban sprawl and its impacts on land use change in Central Ethiopia. *Urban Forestry & Urban Greening*, 16: 132–141.
- Desa U.N. 2014. World urbanization prospects, the 2011 revision. *Population Division, Department of Economic and Social Affairs, United Nations Secretariat*.
- Economic Commission for Africa (ECA). 2016. *The demographic profile of African countries*. Addis Ababa, Ethiopia.
- Eniyew S. 2018. Mapping urban expansion and its effect on the surrounding land uses using GIS and remote sensing. A case study in Debre Tabor town, Ethiopia. *Journal of Degraded and Mining Lands Management*, 6, 1: 1427.
- Ermias A., Bogaert J., Wogayehu F. 2019. Analysis of city size distribution in Ethiopia: Empirical evidence from 1984 to 2012. *Journal of Urban Management*, 8, 2: 237–244.
- Ewing R., Hamidi S. 2015. Compactness versus sprawl: A review of recent evidence from the United States. *Journal of Planning Literature*, 30, 4: 413–432.
- Fenta A.A., Yasuda H., Haregeweyn N., Belay A.S., Hadush Z., Gebremedhin M.A., Mekonnen G. 2017. The dynamics of urban expansion and land use/land cover changes using remote sensing and spatial metrics: the case of Mekelle City of northern Ethiopia. *International Journal of Remote Sensing*, 38, 14: 4107–4129.
- Gebre-Selassie A., Bekele T. 2012. Global growing casebook: insights into African agriculture. [in:] Christoph Eder D.K.-R.J.P. (ed.). *A Review of Ethiopian Agriculture: Roles, Policy and Small-scale Farming Systems*. European Commission: Global Growing Campaign: 36–65.
- Haregeweyn N., Fikadu G., Tsunekawa A., Tsubo M., Meshesha D.T. 2012. The dynamics of urban expansion and its impacts on land use/land cover change and small-scale farmers living near the urban fringe: A case study of Bahir Dar, Ethiopia. *Landscape and urban planning*, 106, 2: 149–157.
- Holden S.T., Otsuka K., Place F.M. (Eds.). 2010. *The emergence of land markets in Africa: Impacts on poverty, equity, and efficiency*. Routledge.

- Home R. 2004. Outside de Soto's Bell Jar: colonial/postcolonial land law and the exclusion of the peri-urban poor. [in:] R. Home, H. Lim (eds.) *Demystifying the Mystery of Capital: Land Tenure and Poverty in Africa and the Caribbean*. Cavendish Publishing Limited, London.
- Hubacek K., Van den Bergh J. 2002. The role of land in economic theory. *Interim Report IR 02-037*. International Institute for Applied Systems Analysis, Laxenburg.
- Kasa L., Zeleke G., Alemu D., Hagos F., Heinimann A. 2011. *Impact of urbanization of Addis Abeba city on peri-urban environment and livelihoods*. Sekota Dry Land Agricultural Research Centre of Amhara Regional Agricultural Research Institute, Addis Ababa.
- Melese M. 2004. City expansion, squatter settlements and policy implications in Addis Ababa: The case of Kolfe Keranio sub-city. *Ethiopian Journal of the Social Sciences and Humanities*, 2, 2: 50–79.
- MUDHC (Ministry of Urban Development Housing and Construction). 2014. *National report on housing on housing and sustainable urban development*.
- Muhabaw A., Gashu K. 2019. Peri-urban informal land market and its implication on land use planning in Gondar city of Ethiopia. *The Ethiopian Renaissance Journal of Social Science and Humanities*, 6, 2: 1–21.
- Muluwork B.B. 2014. *An assessment of livelihood and food security of farmers displaced due to urban expansion: The case of Kombolcha town in Amhara National Regional State, Ethiopia* (Doctoral dissertation), Mekelle University, Mekelle.
- MWUD (Ministry of Works and Urban Development). 2007. *Plan for urban development and urban good governance, Federal Democratic Republic of Ethiopia*.
- Naab F.Z., Dinye R.D., Kasanga R.K. 2013. Urbanization and its impact on agricultural lands in growing cities in developing countries: a case study of Tamale in Ghana. *Modern Social Science Journal*, 2, 2: 256–287.
- Nguyen V., Ho T. 2013. Effects of recovery of agricultural land to life, the jobs of farmers in Van Lam district, Hung Yen province. *Journal of Science and Development*, 11: 59–67.
- Nguyen V., Vu D., Philippe L. 2011. Peasant response to agricultural land conversion and mechanisms of social differentiation in Hung Yen province, Northern Vietnam. *Paper presented at the 7th Asia International conference, Hanoi, Vietnam*.
- Nigusie D. 2011. Rapid urban expansion and its implications on livelihood of farming communities on peri-urban area: the case of Sebeta town (Unpublished MA Thesis). Addis Ababa University, Addis Ababa.
- Paul D., Emily S. 2010. The rural-urban transformation in Ethiopia. *Ethiopia strategy support program 2 (ESSP2), Working Paper 13*, International Food Policy Research Institute, Ethiopia.
- Paul V., McKenzie F.H. 2013. Peri-urban farmland conservation and development of alternative food networks: Insights from a case-study area in metropolitan Barcelona (Catalonia, Spain). *Land Use Policy*, 30: 94–105.
- Pribadi D.O., Pauleit S. 2015. The dynamics of peri-urban agriculture during rapid urbanization of Jabodetabek Metropolitan Area. *Land Use Policy*, 48: 13–24.
- Rudi L.M., Azadi H., Witlox F. 2012. Reconcilability of socio-economic development and environmental conservation in Sub-Saharan Africa. *Global and Planetary Change*, 86: 1–10.
- Satterthwaite D., McGranahan G., Tacoli C. 2010. Urbanization and its implications for food and farming. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 365, 1554: 2809–2820.
- Schmidt E., Kedir M. 2009. Urbanization and spatial connectivity in Ethiopia: Urban growth analysis using GIS. *Discussion Paper No. ESSP 003*, International Food Policy Research Institute, Ethiopia.
- Shishay M. 2011. *The impacts of urban built-up area expansion on the livelihood of farm households, in the peri-urban areas of Mekelle city: The capital of Tigray regional state, Ethiopia* (MSc. Thesis), Addis Ababa University, Addis Ababa.
- Tadesse F., Headey D. 2010. Urbanization and fertility rates in Ethiopia. *Ethiopian Journal of Economics*, 19, 2: 35–72.
- Tessema M.W. 2017. Impact of urban expansion on surrounding peasant land the case of Boloso Sore Woreda, Areka Town, SNNPR, Ethiopia. *Global Journal of Human-Social Science Research*, 17, 2: 53–65.
- Tuyen T.Q. 2013. Livelihood strategies for coping with land loss among households in Vietnam's sub-urban area. *Canadian Center for Science and Education*, 9, 15: 33–46.
- UNDESA (United Nations Department of Economic and Social Affairs). 2018. *World urbanization prospects: Revision, highlights*. UNDESA, New York.
- UN-Habitat. 2017. *The state of Addis Ababa 2017: The Addis Ababa we want*. UN-Habitat, Nairobi.
- United Nations Human Settlements Programme (UN-Habitat). 2010. *State of the world's cities 2010/2011: Bridging the urban divide*. Earthscan.
- UNPD (United Nations Population Division). 2014. *World urbanization prospects: Revision*, New York, USA.
- Van der Veen A., Otter H.S. 2001. Land use changes in regional economic theory. *Environmental Modeling & Assessment*, 6, 2: 145–150.
- Vandecasteele J., Beyene S.T., Minten B., Swinnen J. 2018. Big cities, small towns, and poor farmers: Evidence from Ethiopia. *World Development*, 106: 393–406.
- Wegedie K.T. 2018. Determinants of peri-urban households' livelihood strategy choices: An empirical study of Bahir Dar city, Ethiopia. *Cogent Social Sciences*, 4, 1: 1562508.
- Welteji D. 2018. A critical review of rural development policy of Ethiopia: Access, utilization and coverage. *Agriculture & Food Security*, 7, 1: 55.
- Woldegerima T., Yeshitela K., Lindley S. 2017. Characterizing the urban environment through Urban Morphology Types (UMTs) mapping and land surface cover analysis: The case of Addis Ababa, Ethiopia. *Urban Ecosyst*, 20: 245–263.
- Worku G. 2019. *Assessment of the effects of urban expansion on the surrounding rural agricultural land and livelihoods of the peri-urban farmers: the case of Tefki town, Oromia region, Ethiopia* (Doctoral dissertation).
- World Bank Group. 2019. Ethiopian overview. Available at <https://www.worldbank.org/en/country/ethiopia/overview>.
- World Bank. 2013. *Ethiopia economic update II: Laying the foundation for achieving middle income status*. The World Bank, Washington, DC.
- World Bank. 2015. *Ethiopia urbanization review: Urban institutions for a middle-income Ethiopia*. World Bank, Washington, DC.
- World Population Prospects. 2019. *Revision of Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat*.
- Wubneh M. 2018. Policies and praxis of land acquisition, use, and development in Ethiopia. *Land Use Policy*, 70, 170–183.
- Zewdie M., Worku H., Bantider A. 2018. Temporal dynamics of the driving factors of urban landscape change of Addis Ababa during the past three decades. *Environmental Management* volume, 61: 132–146.