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## THE CHANGING PATTERN OF SPATIAL STRUCTURES OF THE URBAN PERIPHERY IN ADAMA CITY, CENTRAL ETHIOPIA: RECENT TRENDS AND DRIVING FORCES

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### Abstract

*This study aims to investigate the factors shaping the contemporary patterns in the development of spatial (land use) structures of the peripheral areas in Adama city, one of the principal urban centres of Ethiopia experiencing rapid growth. The study involved quantitative and qualitative analysis of primary data collected through household survey, and intensive field observation which were conducted during the months of October and November 2010. Besides, secondary data obtained from Housing Development Project Office were consulted and analyzed. The study revealed that the pattern of spatial structures in the peripheral zones of the study area in recent periods is likely to be explained by the increased prevalence of homogeneous structures of predominantly residential functions. The development of such patterns tends to be triggered by government actions on urban land management which led to increased investment on private housing development, and urban administrative restructuring.*

### Introduction

The earth's landscape is never static. So are the urban spatial structures which undergo continuous changes in response to cultural, social, economic as well as political changes. The impact of each of the factor obviously varies among regions depending on local conditions. The dynamics has been manifested in diverse forms and historically associated with varied factors. Changes in demographic structures in terms of size, density, and composition of population tend to be the most obvious reflection of urban growth dynamics (Shen Jie, 2000; Yachan, 2005). Besides, changes on the spatial structures of the built up environment are important processes

explaining urban growth dynamics. According to Couch (1990), urban changes could be manifested in such forms as spatial expansion or contraction and internal restructuring. Changes in the urban internal spatial structures could be explained in terms of the changes on land use patterns and sprawl of built up areas (Johnson, 1971; Johnston, 1980). All categories of land uses, such as commercial, and industrial as well as residential have been in a continuous modification reflecting the competition, for the best location, of the potential users (Knox and Marston, 2004; Balchin, et al., 2000). Changes in urban land use patterns, as a typical feature, may arise from the transfer of land from one use to another, for example, from farming to urban



use, from residential to business use and from private to public uses (Balchin and Kieve, 1985). Thus, the built up environment of towns and cities, which comprises buildings and other physical structures has been undergoing continuous changes induced by the dynamic forces of urban development initiated by public and private interests (Couch, 1990; Pacione, 2005).

Studies assert that national policies among other factors play critical role in influencing urban spatial structures. According to Esfandiar (2006), government policy approaches especially those related to land and housing are likely to have direct impact on the nature of spatial settlements in urban suburbs. Han (2009) argued that though the local economic and demographic changes do contribute to land use changes, local development approach to urban management plays a critical role. Thus, apart from actual needs of people, and profit seeking groups, approaches of local governments towards achieving development goals tend to have profound impact on urban spatial structures (Henderson, 2003; Han, 2009).

Urban growth in the form of spatial expansion involves new land development which, in turn, has substantial impact on the land use pattern. New land development in urban areas may take different forms. According to Angel, et.al (2005), it can be legally sanctioned involving strict and mixed zoning for separate and mixed land uses respectively, or illegal entailing informal land subdivisions. Although urban areas comprise varieties of distinct land uses, housing (residential land uses) tends to be the dominant consumer of urban space in the city. Consequently, residential land uses tend to exert a significant impact on the spatial structures of the urban areas (Pacione, 2005).

The changing pattern of urban spatial

structures is associated with two interrelated processes; the outward expansion of urbanized area and internal reorganization of land uses corresponding to functional and structural adjustments (Xu et.al, 2007). Expansion of cities is usually accompanied by changes in the urban spatial structures and takes place in varied forms; with the same densities as those prevailing in existing build up areas, with increased densities, or with reduced densities. It can take place through the redevelopment of built up areas at high densities, through infill of the remaining open spaces in already built up areas, or through new 'green field' development in areas previously in non-urban use (Angel et al., 2005).

The forces underlying urban changes in developing regions are those operating, at varying degrees, both at global and local scales. While the effect of globalization describes the former, the later could be explained in terms of economic, social and political or administrative changes occurring within specific country or region. China's urban changes have, for example, been strongly influenced by the post-Maoist economic reforms, including the 'open door policy', promotion of Foreign-Direct-Investment (FDI) (Zhang, 2002; Ma, 2002; Zhao, et.al, 2003). The recent trends in urban growth of most African countries have been significantly influenced by local development actions, notably, liberalization of economic policies, which led to increased inflow of investment (Montgomery et.al, 2004). The World Bank report (2008) asserted that the increased role of urban centres in economic growth in recent years in Africa has been witnessed not only by exploding population but also by the spatial growth of cities.

In Ethiopia urban centres have been growing at a rapid rate since the recent decades. According to the UN estimate (2005), the urban growth rate of the country had risen to over 5

per cent during much of the periods in the second half of the last century, and it has continued to grow with a rate of over 4 per cent since the recent years. Currently, the country's national urban growth rate is about 4.1 per cent (UN-Habitat, 2008). A striking feature of the recent urban growth in Ethiopia is that cities in the country had their population growing at a relatively much faster rate than the national population growth (MWUD, 2007). Rapidly changing pattern of urban spatial (land use) structures is, thus, likely to become the recent trend in the country. In the light of this, the objective of this study is to investigate the driving forces resulting recent changes over the spatial (land use) structures of the urban periphery in Adama city (the study area).

#### Database and Methodology

The data relevant to the study were collected through household survey and field observation conducted during the months of October and November 2010. Besides, official documents obtained from the Housing Development Project Office of Oromia Regional State were thoroughly consulted to substantiate the study.

A total of 171 households were surveyed from four urban administrative units locally known as *Kebeles*, namely, kebele-01, 03, 04 and 14, out of which the entire city has been sub-divided. These four units were selected based on the rationale that the changing pattern of spatial structures in the peripheral areas of the city, associated with residential expansion, tends to be most prevalent within the territories of these four units located in the central peripheral zones. The sample size for each of the four units was allocated in proportion to the total numbers of households hosted in each. The heads of the specified numbers of households in each unit were, then, approached using systematic random sampling technique

based on the housing registry obtained from the respective *kebele* administrative offices.

The primary data collected from the sampled households using questionnaire survey were analyzed quantitatively. Descriptive statistical procedure was, specifically, employed for the purpose. This involved computation of frequencies, percentages, and so on. On the other hand, data obtained by field observation were qualitatively analyzed. Similarly, secondary data generated from official documents were also analyzed both quantitatively and qualitatively.

#### Study Area

Adama city is located in the central part of Ethiopia. It is situated 99 km to the southeast of Addis Ababa (the national capital) along the highway connecting the national capital with the Eastern and South Eastern regions of the country and also with the major port, Djibouti. Geographically, it lies within the coordinates - 8° 33' to 8° 36' North latitude; and 39° 11' 57" to 39° 21' 15" East longitudes. In terms of the national urban status, Adama city is among the principal urban centers in Ethiopia. At present, it ranks second in terms of population agglomeration in the country next to the national capital, Addis Ababa and it is the largest of all the urban centers in Oromia Regional State (Fig. 1).

#### Results and Discussion

The development of extensive residential land use structures tends to be the typical feature in the urban peripheral spaces in the study area. Attempt has been made to investigate the factors that have induced the process of residential relocation in these areas. Table- 1 reveals that, the majority, 89 (about 52.0 %) of the households had their former residence located in Adama city but in some

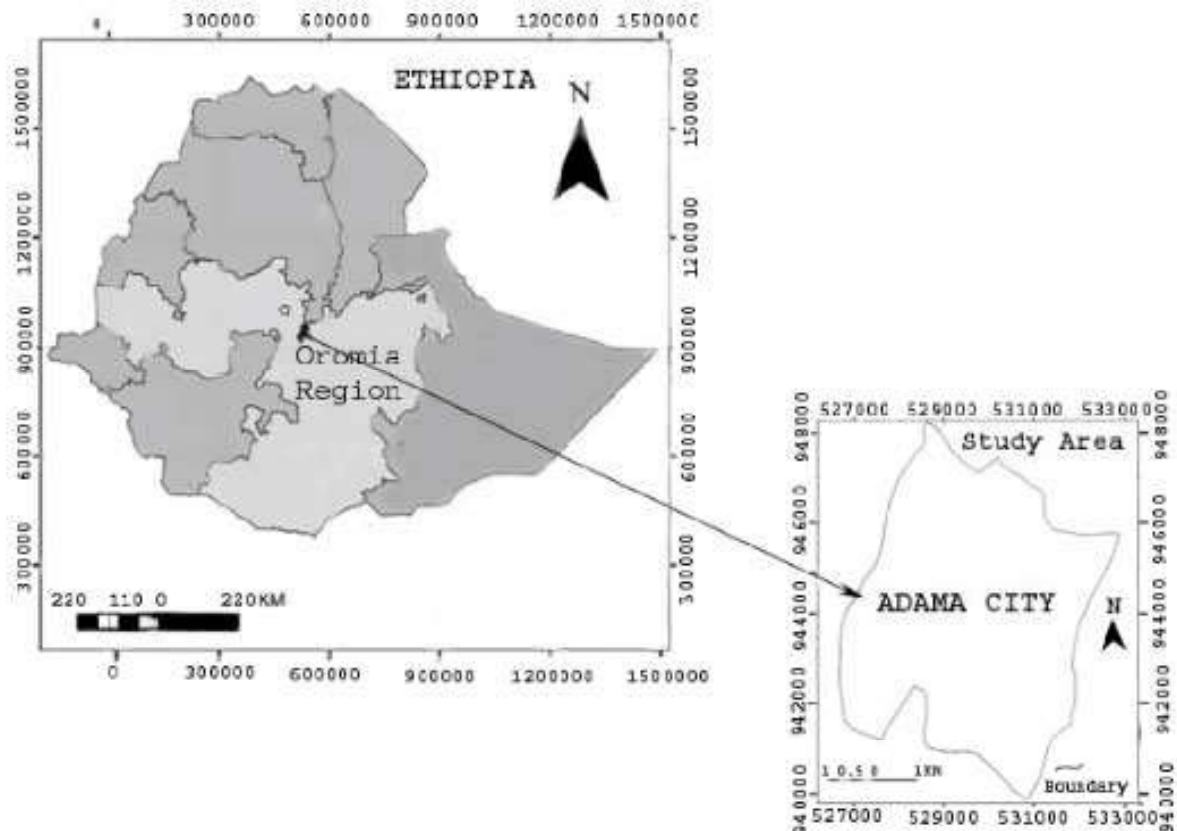


Fig. 1: Location Map of the Study Area

other locality. They thus came through intra-urban residential relocation. Fairly larger proportions, 56 (32.7%) had their former residence in other urban centers, and hence are in-migrants. Relatively smaller, (26) but appreciable proportion, (about 15 %) of the households came from country sides (rural areas). This means that, the peripheral urban spaces under the recently developed residential (housing) structures are likely to be occupied by households which may be put under two categories with respect to location of their former residences. The first, which tend to be most prevalent, had their former residence located within the same city and later relocated into the peripheral areas. The second group comprised of migrants from both other urban centers and rural areas. The greater majority were, however, of intra-urban residential relocation. Thus, intra-urban residential

relocations and in-migration of households are likely to have direct bearing to the recent changes in the pattern of spatial structures in the urban peripheral spaces. In fact, the factors that have induced these two processes become the basic forces behind the changes.

Intra-urban residential relocations may be caused by varied reasons which could, generally, be categorized into either voluntary or involuntary (Pacione, 2005). The former takes place by the households' own choice or desire, for instance, desire for low-density dwelling or desire to shift from renting to private/owner-occupied residence. The later, on the other hand, is attributed to forcing situations induced by external factors, for example, property demolition or eviction from the original dwelling (Clark and Onaka, 1983). In order to investigate the situation with respect to the study area the respective households, out

**Table 1**  
**Adama city: Distribution of Respondents by Location of Former Residence**

Location of Former Residence	Respondents	
	Number	Per cent
The Same place (Adama city)	89	52.0
Other Urban Area	56	32.7
Rural Area (Country side)	26	15.2
Abroad/Foreign Country	-	-
<b>Total</b>	<b>171</b>	<b>100.0*</b>

Source: Field Survey (2010)

\*Rounded off

of the sampled, were asked to indicate the reasons behind their intra-urban residential relocations.

Table 2 reveals that the greater majority (nearly 90%) of the households had their intra-urban residential shift primarily influenced by policy related to urban land management, particularly existence of liberalized urban land acquisition policy. Other factors of significant contributions cited by the majority of the respondents are: desire for improved housing, desire to shift from renting to own house, and improvement of income. The respective proportions of households mainly influenced by these factors are about 87.6 per cent, 68.5 per cent, and 76.4 per cent (Table 2). Fairly larger proportions of the respondents also mentioned, the desire for low density housing (by about 65.5%), and existence of suitable formal financial/loan acquisition systems (by 49.4 %) as reasons for shifting of their residences. Thus, the increased prevalence of intra-urban residential relocations in the study area during recent years has been induced by a wide-variety of factors. However, government actions, particularly, those related to urban land

management tend to have the most significant impact. Other factors that tend to have impacted the process include the desire for improved residence (housing), the desire to shift from rented accommodation to own house and improvements in household incomes.

The factors responsible for the in-flow of the households in the periphery of the city have also been investigated. Table 3 shows that, the majority (over 62%) of the households, out of urban migrants, were formal employees who came by transfer. Nearly 20 per cent of the households had their residences moved into the city primarily in association with the availability of relatively better urban facilities. There were also households, though relatively small in number (nearly 14%) in proportion, whose residential shift into the city was associated mainly with the desire to be closer to their relatives. Thus, formal employee groups and their families whose workplace may be shifted into Adama city are likely to comprise the dominant proportions of urban migrants under the recently developed residential (housing) units of the peripheral spaces of the city.

**Table 2**  
**Adama City: Distribution of Respondents by Reason for Intra-urban Residential Relocation**

Reasons for Residential Relocation	Response Rate							Aggregate		
	Strongly Agree(5)	Agree(4)	Uncertain(3)	Disagree(2)	Strongly Disagree((1)	Total	(Ag. + Sag.)	(Dis+ SDis)		
	No.	No.	No.	No.	No.	No.	No.	%	No.	%
Fair Access for Urban Land	-	21	7	46	15	89	21	23.6	61	68.5
Improvement of Income	37	31	-	19	2	89	68	76.4	21	23.6
Liberalized Land Acquisition	23	57	2	7	-	89	80	89.9	7	7.9
Desire for Improved Housing	23	55	-	11	-	89	78	87.6	11	12.4
Desire to Shift from Renter to Own Housing	33	28	-	13	15	89	61	68.5	28	31.5
Desire for Low Density Housing	20	38	6	24	-	89	58	65.2	24	27.0
Informal Land Acquisition	2	6	-	41	40	89	8	9.0	81	91.0
Public Housing Development	8	11	-	-	70	89	19	21.3	70	78.7
Suitable Financial Acquisition System	11	33	-	31	14	89	44	49.4	45	50.6

Source: Field Survey(2010)

Another factor having an implication to the changing pattern of urban spatial structures in the study area is related to housing developments under government schemes. In fact, the intra-urban residential relocations in the study area in recent years are likely to be partly attributed to public housing development. Table 2 indicates that 21 per cent of the sampled households relocated their residence into the urban periphery in

association with housing development schemes of the government.

Actions towards this have become an urban reality in the country as a whole and in Adama city in particular. Now, it is not hard to recognize residential land use structures of up-floored building blocks erected in the different corners of the urban peripheral spaces of Adama city. Table 4 shows that, the urban space (predominantly peripheral) consumed in



**Table 3**  
**Adama City: Distribution of Respondents by Primary Reason of Residential Shift**

Reason for Residential Shift to Adama City	Respondents	
	No.	Per cent
Transfer as Employee	35	62.5
Desire to be Closer to Relatives	8	14.3
Relatively Improved Urban Facilities	11	19.6
Conducive Physical Environment	-	-
Other	2	3.6
<b>Total</b>	<b>56</b>	<b>100.0</b>

Source: Field Survey (2010)

**Table 4**  
**Adama City: Number of Building Blocks and Housing Units Developed (2007- 2010)**

Description	Total Number of Built Blocks	Total Urban Space Consumed (ha.)	Average Annual Conversion of Urban Space (ha.)
No. of Building blocks	137	5.16	1.29
No. of Housing units	3151	0	0

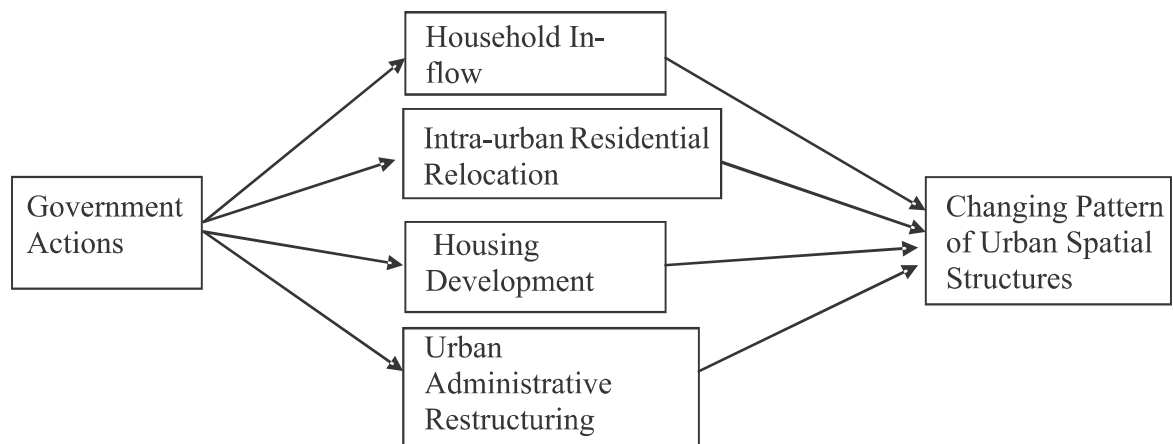
Source: Oromia Regional State, Housing Development Project Office (2010)

connection with housing development between 2007 and 2010 was 5.16 hectares. This, obviously, had its own share of bringing changes not only on the spatial extent but also on the land use patterns of the existing built-up area. With regard to its impact on the urban spatial structures, it resulted in the emergence of new (up-floored) residential land use structures, which were formerly almost non-existent in the entire area.

The study revealed that the recent patterns of the spatial (land use) structure of the urban peripheral areas of Adama city are

significantly shaped by government actions and policies. Specifically, policies related to urban land management, urban administrative restructurings, and housing development tend to have influenced the process. In Ethiopia, as a whole, varied forms of distinct land tenure systems have been experienced during the periods of prevalence of successive governance systems. These range from free hold land tenure system of the pre-1975, and public controlled permit system from 1975 to 1991 and public lease hold system of post-1991 periods.



**Adama City: Driving Forces of Urban Spatial Structural Change****Fig. 2****Conclusion**

The study concludes that government policies related to land management have direct bearing to the changing pattern of spatial structures in the urban peripheral spaces of Adama city. Government's actions generated two processes. The first is intra-urban residential relocations under which large numbers of households in the city were able to secure land for housing in the urban peripheral spaces into which their residences have been shifted. The other is in-flow of households from both other urban centers and rural areas. The overall outcome of these is the prevalence of extensive spatially homogeneous structures of mainly residential (housing) functions in the peripheral spaces of the city. Thus, the changing patterns of spatial structures in the urban peripheral spaces induced by intra-urban residential relocations and inflow of households are associated with the of land leasing policy of the government.

Another action of the government has induced the in-flow of households is related to urban administrative restructuring. With the adoption of decentralization policy, the principal urban centres of the country, of which

Adama city (the study area) is the one, are given the status of Independent Local Urban Administration. This obviously has attracted more institutional (office) establishments and hence, more numbers of employees to be accommodated. It is, thus, more likely for this to be accompanied by an increase in the in-flow of households (employees and their families). Furthermore, the recent pattern in the development of urban spatial structures in the study area has been partly influenced by government action on housing development. The impact of this is found to be exhibited in a way that it resulted in new (previously almost non-existent) residential land use structures comprised of mainly up-floored building blocks added into the urban peripheral spaces of the city.

It can be further summed up that inducing processes such as household in-flow, intra-urban residential relocations, housing development, administrative restructuring and government actions are basically operating to bring the observed changes in the spatial structures in the urban peripheral spaces of the study area (Fig. 2).

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