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Urban land use dynamics, the nexus between land use pattern and its challenges: The case of Hawassa city, Southern Ethiopia

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ABSTRACT

This study makes an attempt to explore where? what land use type? causes enormous land use change over time in Hawassa city? It discusses the rate of urban expansion in the study area along historical lines. Besides, it identifies the major actors in urban land use dynamics. Furthermore, it evaluates and discusses the practicability of the 2006 land use plan of the city. The study was primarily carried out in the 3 purposefully selected kebeles of Hawassa city: Dato, Tilte and Fara. Primary data was obtained from 200 surveyed households which were proportionally distributed to the study kebeles; semi-structured interviews which were carried out with 16 key informants and through field observation. Secondary data was collected by reviewing published and unpublished documents [Image and written]. Data was analyzed quantitatively [using ratios, percentages] and qualitatively [thematic description of issues]. Besides, GIS and ERDAS Imagine software were employed to analyze image data. The study revealed abnormal informal land market as the major cause for land use change. Lack of well-documented land information systems; unfair access to formal land; and lack of formal land allocation were underlined to be the major reasons for the proliferation of informality [mainly causing land use change in the urban fringe]. Infill development has signified efficient utilization of land; nevertheless, it resulted in unexpected evictions and disturbing of the scenic urban fabric. Farmers eviction from their holdings with little or no compensation in the urban fringe; the use of urban green areas for housing and offices development within the city; and environmental sanitation problems due to congested settlement were conceived as challenges. The study revealed about nine (9) land use types from the 2006 land use plan of the city, nevertheless; there exists disparity between planning and its implementation. Therefore, local land managers should give due emphasis to mitigate informal land market, its actors and the associated problems through appropriate policy intervention: developing land information systems; awareness creation among actors of land use [farmers, speculators, brokers and the people at large]; promoting urban good governance; and community participation at the local level.

Background and justification

The contemporary world is an urban world (Pacione, 2009; Wubshet, 2002; UN, 2006). This is apparent in the expansion of urban areas and the extension of urban influences across much of the habitable surface of the planet. Today, for the first time in the history of humankind, urban dwellers outnumber rural residents (Pacione, 2009). The 50 percent mark of world urban population has been crossed in 2007 (United Nations, 2004 cited in Jenkins et al., 2007; Degefa, 2008). Across the globe, the towns and cities of the third world are growing very rapidly (Correa, 1989). Developing countries, which started the process of urbanization lately, are the ones which are rapidly urbanizing (Wubshet, 2002; UN, 2006). Oberai (1993) stipulates that rapid urbanization, the growth of large cities and the associated problems have emerged as a major socio-economic issue with potentially important political implications in

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many developing countries. In order to solve these problems and create conducive environment for investment, government authorities tends to re-order the urban space which requires changes in urban land use (Gebre, 2008). Similarly, Laymon (2003) stated that while land use changes are a consequence of national growth, regional assessments of historical and contemporary land use change are needed to anticipate the impacts associated with change and contribute to an understanding of productive environmental sustainability.

Though Ethiopia is one of the least urbanized countries, its population is growing at a very rapid rate. The urban population of the country in 1967 was 1.6 million or 7.5 percent of the total population. The 1984 census recorded an urban population of 4.3 million or 11.4 percent of the total population. By the year 1994, the urban population reached 7.8 million or 14.6 percent of the total population. In 2007, the total urban population of the country reached 16 percent. Natural increase and rural-urban migration are the two components of urban growth (Tegegn, 1997a, 1997b; CSA, 1989, 1999, 2008).

Hawassa, which is the capital city of Southern Nations Nationalities Peoples Regional State [SNNPRS here after] and Sidama zone of the same region was established in 1957. By 1959, its total area of settlement was estimated to be 48 ha [1 ha = 10,000 m^2] (FUPI, 2006). The national sample surveys which were conducted in 1970 and 1978 put the population of Hawassa city at 3600 and 10,700 respectively. Since its establishment, the City has shown physical expansion owing to its population growth from time to time FUPI (2006). According to the 1984 population and housing census of the country, the total urban population of the city was 33,836 (CSA, 1989). By the year 1994, the total urban population of the City reached 69,169 (CSA, 1999) and further grown to 259,803 (CSA, 2008). Presently, the population of the City is projected to be 281,158. The population has increased nearly four times from 1994 to 2007. This shows that the doubling time (17 years) does not coincide with the national standard which is 27 years (this result is based on the 2007 census of the country).

Hawassa city has been experiencing very rapid urbanization since the late years of 1990s (FUPI, 2006). According to the city's municipality report, the annual population growth of the city is estimated to be 4.02%, though the regional and the national growth rates were found to be 2.9% and 2.6% respectively (CSA, 2008). This is mainly due to the socio-economic and demographic dynamism of the city that have resulted from the decentralization policy and the designation of the city as the capital of SNNPRS since 1991 (FUPI, 2006). The increase in urban population brings about growth in the physical dimension of urban areas (Wubshet, 2002). The growth of the population of any town or city is a function of certain social, economic, and demographic factors whereas its spatial expansion is generally a manifestation of its population growth through the increase of its built up area (Wubshet, 2002). Most metropolitan areas face the growing problems of urban sprawl, loss of natural vegetation, open spaces, agricultural land and so on. The public identifies these problems when they see residential and commercial developments replace undeveloped land around them (www usgs.gov).[2]

Rapid urbanization in Hawassa city is, therefore, accompanied by the need for new urban land for residential, commercial, institutional, industrial and other infrastructural developments which by and large results in land use change/dynamics. This study, therefore, makes an attempt to explore where? what land use type causes enormous land use change over time in the study area? Besides, the rate of urban expansion in the city is discussed along historical lines. Likewise, the paper concentrates on identifying the major structures governing urban land use and the actors who are responsible for urban land use dynamics. Furthermore, the practicability of the 2006 land use plan of the city is evaluated so that its implications are discussed.

Conceptual and theoretical frameworks

Agent based modeling and structuration theory were used as a frame of analysis. By using agent based modeling, it become possible to identify the major land use classifications and the associated causes for land use change (Fontaine, 2008). The model broadly typifies urban land use in to residential and non-residential [commercial, industrial, infrastructural, government offices, recreational]. Basically, dynamicity in urban land use is caused by the City's economic behavior, and stakeholders' behavior. The population of a given City can be inflated by the interplay of migration and natural increase. The demand of land for housing can be dictated by population of a given town and its household structure. The quest for non-residential land use also comes from the City's Economy and population. Residential land can be changed to non-residential mainly due to government intervention or spontaneously owing to the action of stakeholders. The local government supplies land through vacancy and Planning. However, stakeholders, individual agent's decision and the City's economy may spontaneously change residential area in to non-residential. In line with this notion, Pacione (2005) has noted that although most towns and cities have occupied the same location for centuries, the buildings and other physical infrastructure which comprise the built environment are not fixed but affected continuously by dynamic forces of change initiated by the public and private interests. This modification of the urban environment occurs at a variety of scales ranging from the residential relocation decisions of individual households to large-scale projects including public road building programs and private house-building schemes. In addition, to differing degrees in different countries, the operation of these 'market forces' is influenced (enhanced or constrained) by national and local planning. The net effect of these socio-spatial processes is revealed most clearly in the land-use structure of the city.

Structuration theory is based on the premise that the classic actor/structure dualism has to be re-conceptualized as a duality – the duality of structure. Generally, structuration theory underlines on the concepts of 'agency,' 'structure,' 'power,' 'action,' 'social system,' 'structuration,' and 'the duality of structure' (Giddens, 1984). Theoretical approaches such as structuralism and functionalism have inclined toward objectivism, strongly emphasizing the pre-eminence of the structures over the human agency, and treating 'structure' as the establishing parameter within which the agent was able to act. As this social whole has been conceived as having the primacy over action, the constraining qualities of structure are strongly accentuated. On the other hand, the human-centered schools of thought such as hermeneutics have contributed to the opposite way of theorizing the constitution of society. Basically, this implies interpreting the social structures to be the outcome of the sum of individual actions (Giddens, 1984). The chronic failure to reconcile these two analytical levels is exactly what Giddens seeks to address (Giddens, 1984). Anthony Giddens' structuration theory (Giddens, 1984) draws together the two principal strands of social thinking (structuralist and phenomenological and hermeneutic traditions). In the structuralist tradition the emphasis is on social structure (which is primarily seen as a form of constraint over human behavior), whereas in the phenomenological and hermeneutic traditions the human agent is the primary focus. Structuration theory, therefore, attempts to recast structure and agency as a mutually dependent duality. Human actors display

[2] Analyzing land use changes in urban environments: Department of USA Geological survey, http://www usgs.gov/ (accessed 20.09.09).