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THE CONCEPT OF URBAN SPRAWL AND ITS CAUSES

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Abstract

Urban sprawls are transition zones with indefinite borders between rural and urban areas. Many factors cause to the urban sprawl such as population increase, socio-economic factors, technological development and development policies. To have the indefinite borders of the urban sprawl is appeared as a major problem, because urban sprawls have occurred as a result of uncontrolled and unplanned growth. The arrangements should be made for resolving of uncertainties in urban sprawl to eliminate these problems. In this regard, Geographic Information Systems (GIS) would help about determining the borders of urban sprawls and quick data production.

Keywords: Hinterland, Urban Growth, Urban Sprawl.

1. Introduction

Various definitions can made for urban sprawl from different perspectives. Galster et al. (2001) made specific definitions which can be alternative for or can be used at the same time with urban sprawl; (1) specific land utilization model, (2) land development process, (3) reasons of land utilization behaviours, (4) results of urban land utilization behaviours.

Parallel to the rapid increase of population, urban growth which develops according to demands of dwelling, industry and business sectors is in the trend of expanding towards city boundaries and causes occupation of agricultural lands and forests. This uncontrolled and unplanned growth is defined as urban sprawl that is the result of urban growth (Zhang, 2004; Sudhira and Ramachandra, 2007:1). Urban sprawl which is asserted to be carried out for urban growth is in fact not suitable either for urban growth or rural environment in real sense. In this sense, since it is carried out in disorganized and uncontrolled way, it has effects which hinder regional sustainable development (Bhatta, 2010:8). These areas can be deprived of infrastructure services, basic facilities such as health, education (Sudhira and Ramachandra, 2007:1). After 1960's urban growth and urban sprawl are regarded as an important problem in many cities throughout the world and especially in metropolitan cities (Squires, 2002:41; Pengiun, 2011:1).

2. The Concept of Urban Sprawl

The lands of urban sprawl which are defined as lands that have lost their rural characteristics and yet cannot be defined as urban include specific uncertainties results in various problems such as unplanned urban growth and use of non-agricultural purpose. Therefore, urban sprawl can be defined as a hinterland between rural and urban areas. While Gordon and Richardson (1997) define urban sprawl as leapfrog development¹, DiLorenzo (2000) defines it as growth with cancer or virus. In the confusion in definition of urban sprawl, Wilson et al. (2003) and Galster et al. (2001) state that describing would be more suitable rather than defining.

In order to make general characteristics of urban sprawl throughout Europe, global socio-economic powers are rather in interaction with local environmental and spatial restrictions. These socio-economic powers include socio-economic trends at macro and micro level such as transportation, land prices, personal preference of dwelling, demographic trends, cultural traditions and restrictions, increasing attraction of the city, practices of local and regional land utilization policies. Despite this interaction, urban sprawl continues rapidly with developing transportation connections and increasing personal mobility (EEA, 2006:6).

Urban sprawl characterizes to a large extent discontinuous and fragmented occupation together with random population density. Apart from having environmental and social impacts on urban and rural

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¹ Leapfrog development is a discontinuous pattern of urbanization, with patches of developed lands that are widely separated from each other and from the boundaries of recognized urbanized areas (Osman et al., 2008). The leapfrog development occurs when developers build new residences some distance from an existing urban area, bypassing vacant parcels located closer to the city. In other words, developers choose to build on less expensive land farther away from an urban area rather than on more costly land closer to the city (Noor et al., 2014). Leapfrogging is identified as one form of urban sprawl, which also includes scattered development, strip or ribbon development and continuous low-density development (Heim, 2001).

population, sprawl brings a great burden on the state as well (Polidoro et al., 2011:73). This phenomenon may cause various important socioeconomic events such as economic discrimination, local administrations and financial unbalance between societies. It is also observed to have influences on the life of individuals. In some studies there are various assertions that sprawl decreases open area and amenities, increases the cost for public services and taxes, cause traffic density, cause flood in urban areas, increase natural living area and water quality. Apart from this, there are accusations that it causes obesity, asthma, apathy and anti-social behaviors (Wu, 2006:528). In spite of this, some studies defend that urban sprawl emerged due to people's desire to live in big houses and vast areas and their preferences such as tendency to comfort, and it has emerged within a regular market process between urban and agricultural utilization (Henderson and Mitra, 1996:614; Brueckner, 2000:161).

Since the reasons of urban sprawl are similar with the reasons of urban growth, they are difficult to differ (Bhatta, 2010:10). For example, in Europe growth of cities was related with increasing population basically. However, urban sprawl is a new phenomenon and its reason cannot only be attributed to population growth (EEA, 2006:6). Therefore, determination of sprawl and taking measure against it is quite important for sustainable urban growth. In many studies, the most important reason of urban sprawl is indicated as the increase of demand for dwelling at low density areas. As a result of insufficient demand for dwelling in city centers, there is an increase in building houses at city boundaries (Chin, 2002; Slaev and Nikiforov, 2013:23). Areas emerging according to this demand are in two forms; expansion in the image of the continuance of city with connection to city center and expansion as defined as leapfrog development being separated and far from city (EEA, 2006:6; Irwin et al., 2007:495; Coison et al., 2014:38).

Another reason of urban sprawl which is as important as the increase of population and demand for dwelling is the role of market. Many researchers which carried out studies on this subject adopt the approach of open market, they defend that the effect of market can be formed since the process of urban sprawl should be directed and managed within specific limits (Slaev and Nikiforov, 2013:24).

3. The Causing of Urban Sprawl

Factors causing urban sprawl differ according to development level of countries or according to structure of society. For example, in America demand for having a large house detached with garden which is in touch with nature, introverted life styles (Bruegmann, 2005) and racism (Nechyba and Walsh, 2004:184) are the main reasons of urban sprawl. In a report prepared by European Commission, reasons causing urban sprawl in Europe were gathered under 7 main titles (table 1).

Table 1. Causing Factors of Urban Sprawl

Macro-economics factors	Economic growth
	Globalisation
	European integration
Micro-ekonomical factors	Rising living standards
	Price of land
	Availability of cheap agricultural land
Demographic factors	Competition between municipalities
	Population growth
	Increase in household formation
Housing preferences	More space per person
	Housing preferences
Inner city problems	Poor air quality
	Noise
	Small apartments
	Unsafe environments
	Social problems
	Lack of green open space
Transportation	Poor quality of school
	Private car ownership
	Availability of roads
	Low cost of fuel
Regulatory frameworks	Poor public transport
	Weak land use planning
	Poor enforcement of existing plans
	Lack of horizontal and vertical coordination and collaboration

Reference: EEA, 2006.

Indicators of economic growth such as increase of income per capita, increase in the number of workers increase demand for dwelling which causes rapid urban growth and housing. Depending on economic growth, industrialization increasing at city boundaries and housing demand of people employed on these production areas are listed among the reasons of sprawl (Bhatta, 2010:18). Bhatta (2010) emphasizes that speculations of urban development based government policies are also the reason of urban sprawl. It is

stated that uncontrolled, disorganized planning and untimely growth emerge depending on speculations. It is known that numerous fertile agricultural land and forest land in Turkey disappear due to speculations.

That the price of agricultural land is quite lower than plot is an important factor causing urban sprawl (EEA, 2006:20). Low land prices cause heavy demand of sectors such as industry, trade and construction. Preference of these sectors in agricultural land instead of plots as the establishment place both causes urban sprawl and inefficient use of resources due to non-agricultural use of agricultural land.

In land rent theory of Von Thunen, distance to city center which is accepted as market in differentiation of agricultural production areas and transportation expenses that should be paid for this distance were discussed as two main factors. Moreover Von Thunen also expresses that since the land prices of places which are close to settlement units are higher, the land are cultivated here more intensively (Leigh, 1946). Von Thunen land model was applied in the study which was carried out by Livanis et al. (2006), yet it was determined that the reason why net income of agricultural land which are close to city are higher was not only that transportation expenses are lower but at the same time, differences in expense structure of enterprises and transformation in agricultural land are also effective. Apart from this, Sinclair (1967) approved that Thunen model can be valid for under-developed area of the world and it would be meaningless for developed countries. By emphasizing that the main power which determine the use of agricultural land which are close to urban land is urban expansion, Sinclair asserted on the contrary to Thunen that low density agriculture is dominant in places which are close to market in cities and agricultural density increases as it gets far from markets. In the model which was developed by Sinclair, it is put forward that there is a competition between agricultural land which are close to city and other uses and due to intense speculative developments, agricultural land are allocated for housing, business and transportation uses rather than agricultural uses. Therefore, the value of land in which urbanization is expected are more valuable compared to agricultural land in rural areas. Due to these expectations, either a demand is formed on agricultural land by speculators or the land owner keeps the land. Emergence of urban sprawl as a result of this process is regarded as one of the probable outcomes (Sinclair, 1967:78).

Rapidly increasing population lies in the basis of various factors causing urban sprawl. Apart from the effect of increase in birth rate, migration from rural to urban place also has great impact on rapid population increase in urban area. As a result of this uncontrolled growth, problems arising from city becoming crowded direct people to live out of city center which causes urban sprawl. Apart from increasing population, increase in household income is among the factors which cause urban sprawl.

Inter-linkages between dwelling and industry/business/transportation area are also important for the promotion of urban sprawl. In some cases settlement areas promotes development of related business fields. Apart from this, new transportation linkages most of the time enable development of commercial and industrial fields, development of new settlement areas in its environment (EEA, 2006:18). This interaction between sectors causes increase of urban sprawl.

Many problems especially observed in metropolitans cause formation of urban sprawl. Increase of environmental pollution, air pollution and noise depending on increasing population; increase of security problems and decrease of green areas depending on increase of housing areas make life outside the city attractive for people which result in urban sprawl in return.

In America where the most severe effect of urban sprawl is observed, agricultural land which are close to city are accepted as the most fertile and important land of the country for economic, environmental and aesthetic reasons. It is expressed that these lands are important for the sustainability of agriculture of the country. However, this sustainability is endangered as urban sprawl increases and agricultural land is lost. Although agricultural land in America is supported in the sense of tax and funds, sufficient precautions are not taken against sprawl. According to recent regulations, precautions were taken in order to preserve sustainability of agricultural land in many states. Although precautions against urban sprawl are insufficient, funds were enabled for the protection of agricultural land within the scope of PACE (Purchase of Agricultural Conservation Easements) program (Thompson, 2001).

In England especially in London, policies were developed such as directing people towards city center and its vicinity instead of city boundaries, making important promotions on urban regeneration and making investment on public transportation. Moreover, it was aimed to protect agricultural land by restricting urban growth with green belt. Agricultural, recreational and forest areas are included in the region defined as green belt (Bruegmann, 2005).

4. Conclusions

Countless natural resources are seriously consumed in the name of urban growth. With the effect of urban sprawl, as a result of settlement, business and industrial areas getting close to natural and protected areas and increase of air pollution have serious damages on ecosystem. Especially consumption of land and

soil which are nonrenewable resources is at alarming rate. In other words; urban sprawl has direct and irrevocable effects on natural areas (EEA, 2006).

The most important problem is indefinite border of urban sprawl. Generally, it is seen that urban sprawl mechanically emerges where there is unplanned and disorganized development. On the contrary, when the growth that occurs towards the environment of city is coordinated by a powerful urban growth policy, denser urban growth would be assured. In this sense, ineffective land utilization planning or not making sufficient supervision on available plans can be shown as the reason of uncontrolled urban sprawl.

In recent years, Remote Sensing and GIS techniques have been commonly used in analysis, imaging and mapping of urban growth, land use and urban sprawl models (Bhatta, 2012). In the study carried out by Ready and Abdalla (2003), by using GIS technology and hedonic theory of wages, the effects of positional comfort and land use on land which are used as housing area were analyzed. GIS technology provides geographical reference and critical data to make sense out of the complication of urban sprawl. GIS technology has been utilized in the determining of urban sprawl borders as well as in the formation of the value maps of the lands in these areas. This technology with no uncertainties and enabling quick data production has the qualities that would help policy implementers.

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