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# Territorial developement and built surface evolution of Vaslui city in relation to the soil cover

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# TERRITORIAL DEVELOPEMENT AND BUILT SURFACE EVOLUTION OF VASLUI CITY IN RELATION TO THE SOIL COVER

**Adrian Andrei[1] Alexandru-Iulian Crăciun[2]**

**Abstract.** Vaslui is a city from eastern Romania, which has been developed as agro-industrial fair, after 1968 knowing territorial growth through forced industrialization. After 1989, the Vaslui City has experienced significant growth of builted space until 2010, that led to the direct implication on the pedological cover within the proximity. However progress has been achieved without taking into account the legislative cradle, that led to a chaotic development, and to a small degree of coverage on pedological cover with builted space.

**Keywords:** territorial evolution, builted surface, pedological cover, vernacular development

## Introduction

This article aims to study the post-revolutionary development of Vaslui City, which is located at the confluence of the Bârlad and Vaslui rivers, were it had a propitious natural site for developing an human settlement surrounded by productive agriculture areas. The town was developed naturally as a agro-industrial fair where products obtained from proximity were collected. After the last Romania's administrative-territorial organization in 1968, Vaslui City was imposed as county seat, which led to a territorial and economic development achieved through forced industrialization of the city, resulting the agglutination of rural population in the surrounding areas of the city. These events were held intensely during the period 1965-1977, after 1989 industrial enterprises proved to be unsustainable; urban systematic development from socialism period was replaced by a vernacular development along the roads DN24 and DN2F, like an urban sprawl(Khalil,2011). The main builted areas in recent years are residential and occupy large areas of land that had in the past the role of agricultural land.

## Materials and Methods

First step in the analysis of territorial evolution of Vaslui City with implications over pedological cover was the bibliographic study from " Evoluția structurii urbane a municipiului Vaslui " written by Ungureanu Al. and Nimingeanu V. (1988), and "Modul de utilizare a terenului şi starea calității solului în municipiul Vaslui" written by Mocanu A.S. (2008) from

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where we extracted information about the territorial evolution and pedological cover of Vaslui City.

The mapping step was achieved by using GIS software TNTMips 6.9, which resulted from digitizing the surface of buildings from topographical maps scale 1: 5000 (edition 1987) and orthophotos in 2005 and 2010 and soil types according to the plans made by OSPA Vaslui scale 1: 10.000, following the final stage of processing the data obtained using Microsoft Excel 2007 software.

**Territorial and builted surface evolution**

In Figure 1 it can be observed that the population of the city fell in 2010 compared to 1990 by 26%, this process been mainly caused by international migration that can be clearly seen in 2005-2010 period.

Comparing the evolution of the population with evolution of built surface (Figure 2) in Vaslui, it can be noticed that the builted surface has an increase tendency, this tendency being caused by development of industrial areas in the north and south-west areas of the city and the building of blocks in Railway Station area. Another reason is that population made the transition from blocks houses, this action leading to a builted surface evolution of 55.6 ha in the period 1987-2005. Period 2005-2010 is characterized by a slow evolution (6.76 ha) due to evolution of residential neighborhoods from north and west areas of the city.

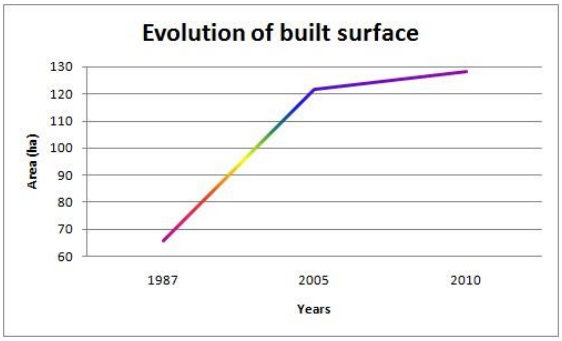


*Figure 2: Evolution of built surface, period 1987-2010*

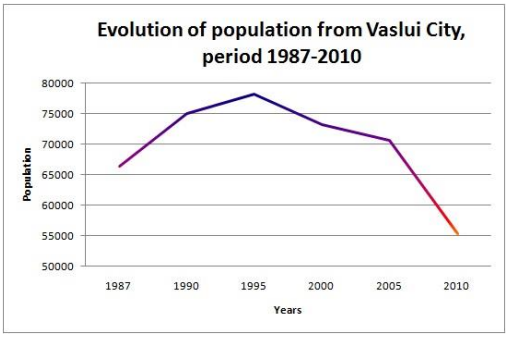


*Figure 1: Evolution of population from Vaslui City, period 1987-2010 (data source: INS Vaslui)*

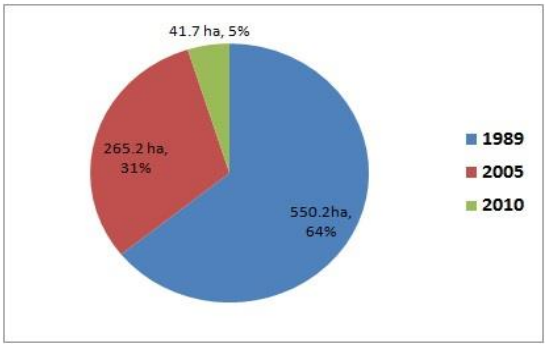


*Figure 3: Territorial evolution of Vaslui City, period 1987-2010*

The territorial evolution of the city (Figure 3) is represented by a significant increase of 31% in 1989-2005 (262.2 ha), about 50% total fine of 1989 (550.2 ha), this increase being

given by the industrialization of the city, that has been developed in the south and north of the city (Fig. 4). The increase for 2005-2010 is a built-slow 5% (41.7 ha) characterized by vernacular development of residential neighborhoods in the northern part of the town.

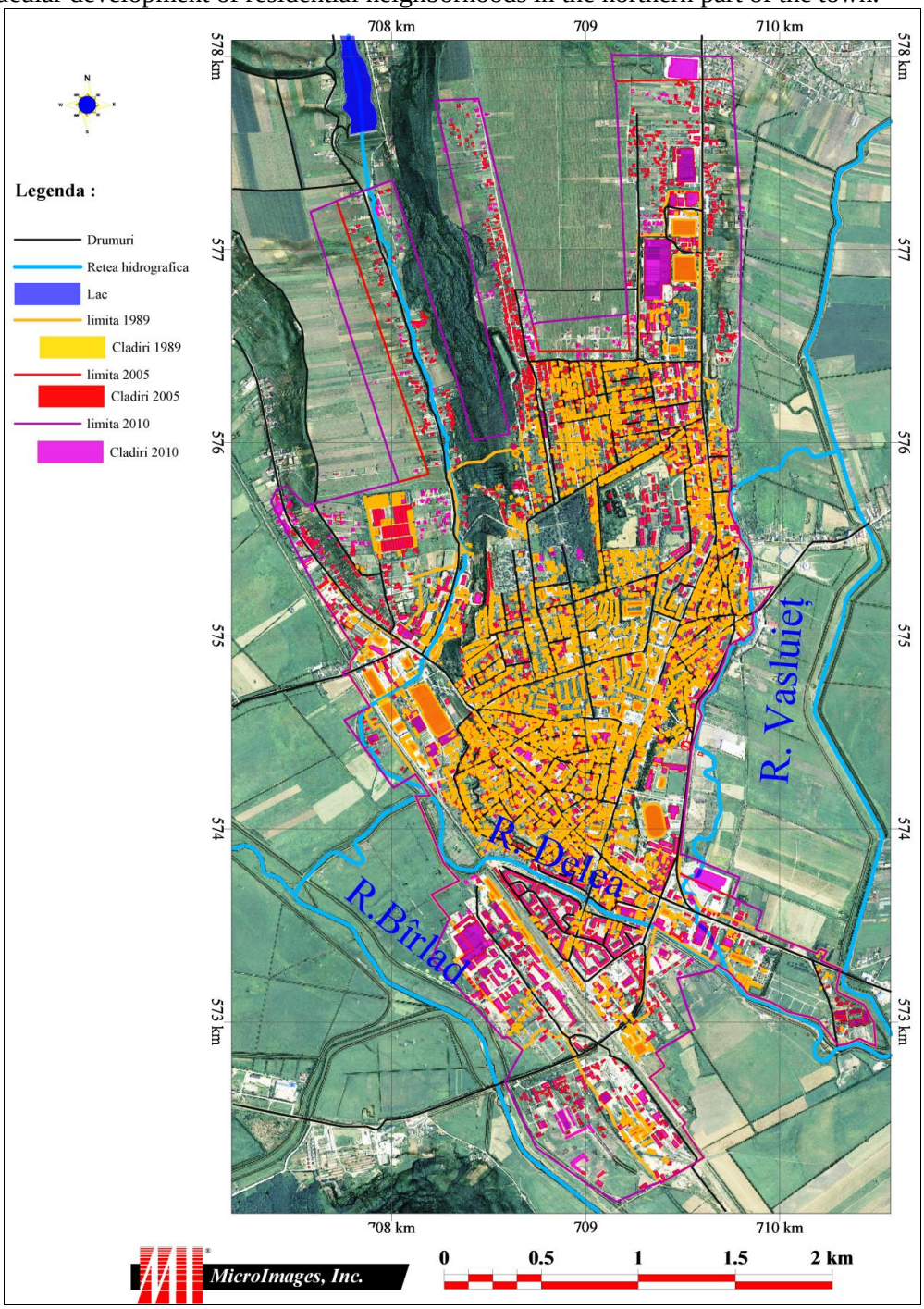


*Figure 4: Map of territorial and builted surface evolution in period 1987-2010*

**Implication over pedological cover**

The territorial evolution of Vaslui during 1987-2010 resulted in the removal of use and direct implication on pedological cover. This evolution led to the passage of Aluviosoil (62.45 ha), Chernozem (182.88 ha), Faeoziom (48.72 ha), Vertosoil (1.67 ha) to Antrisoil type.

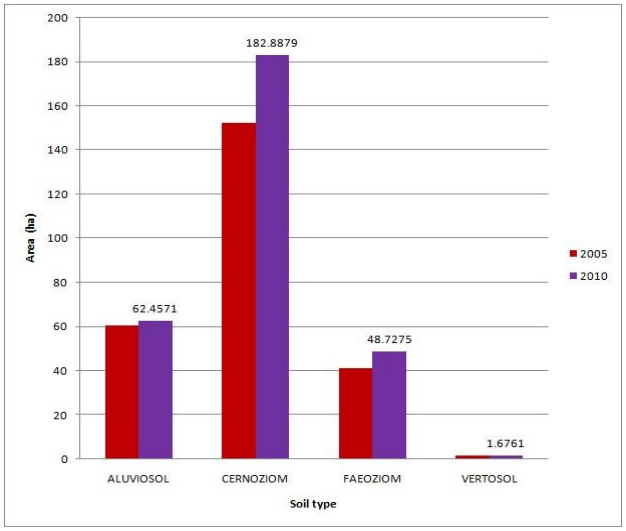


*Figure 5: Territorial evolution with implication over soil cover*

The territorial evolution expanded especially in the northern part of Vaslui, developing new neighborhoods where the topography is favorable for development of the city. However the growth and expansion of the territory is due to houses that were builted without taking into account the legislative framework, Law no. 50/1991 update it in 2014 Authorizing the execution of construction works and the Law No. 350/2001 Territorial and urban planning.

Evolution of builted surface generated changes over pedological layer by introducing construction materials in soil composition. Given the fact that evolution of builted surface is continuous (Fig.1), also the impact over pedological layer is continuous as shown in Figure 7. The soil types that are affected by development of builted surfaced are Aluviosol 3.8 ha, Chernozem 14.4 ha, Vertosoil 2.6 ha and Faeoziom 0.1 ha.

The coverage of soils with buildings (Fig. 6) is very low compared with city territory that have implications over pedological cover (Fig. 5); indicating an early development of builted surface in Vaslui; coverage of soil with buildings being 6.1% for Aluviosoil, 7.9% for Chernozem, 5.3% for Faeoziom and 3.5% for Vertosoil.

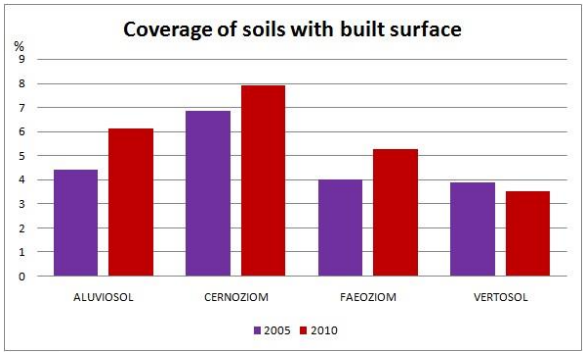


*Figure 7: Cover of soil with built surface*

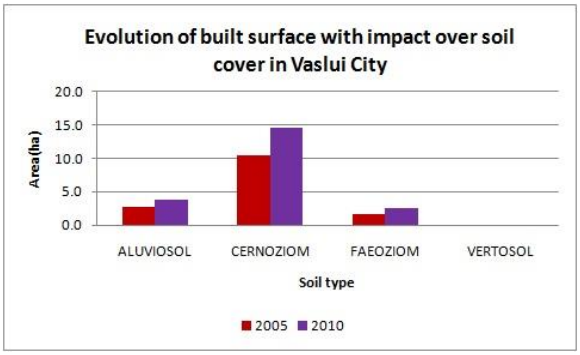


*Figure 6: Evolution of built surface with implication over soil cover in Vaslui City*

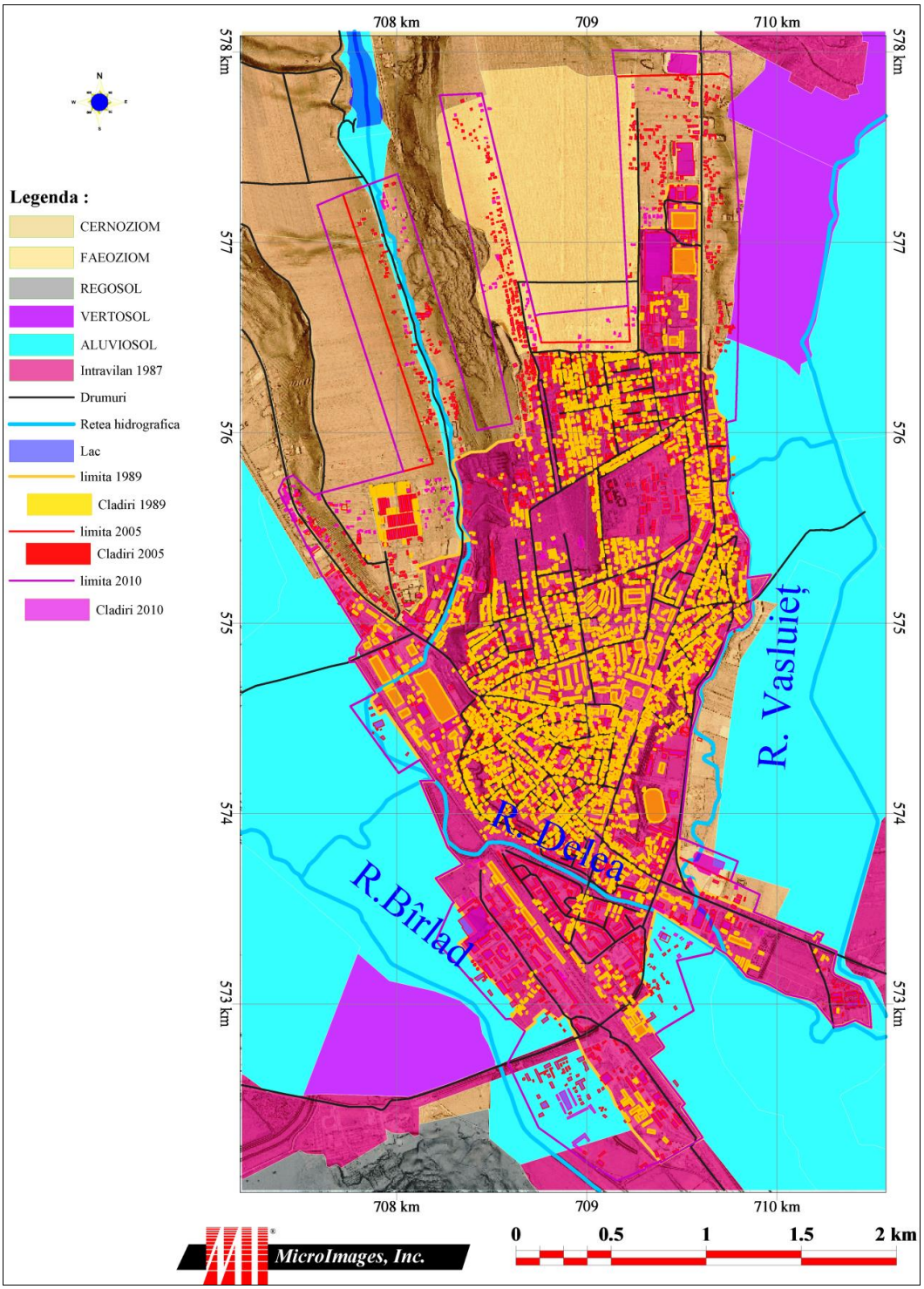


*Figure 8: Map of territorial and builted surface evolution of Vaslui City with implication over the pedological cover*

**Conclusions**

The areas of town have increased by about 35% during 1989-2010, while the city's population decreased by about 26%.Although the territorial evolution of the city is axial (DN24, DN 2F) it can be seen that most of the new neighborhoods are characterized by a vernacular development.

Effective use of land for construction had increased by 5.08% in 2005 and 7.06% in 2010, which reveals an early residential development. Thus, it could be seen as a disintensification of agricultural caused by conversion to urban land and natural areas. (van Vilet,2015). The former agricultural activity area was transformed in a residential and natural areas (e.g. Delea valley) with the help of gaps in urban regulations and a decreasing land management intensity, after December 1989.

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