

URBAN SPRAWL AND RESIDENTIAL DEVELOPMENT IN THE ROMANIAN METROPOLITAN AREAS

INES GRIGORESCU*, BIANCA MITRICĂ**, IRENA MOCANU**, NICOLETA TICANĂ***

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In Romania nearly 7,500,000 (34%) inhabitants are living in metropolitan areas. The socio-economic and political changes brought about by the post-communist period have reshaped the metropolitan landscape together with its functional and socio-spatial pattern triggering a wide range of transformations mainly related to urban sprawl process (suburbanization). As one of its major consequences, residential development had caused the deconcentration and the spatial redistribution of the population within metropolitan areas. The paper attempts to analyse the main suburbanization-related residential patterns in connection with their key driving forces (socio-political, demographic, economic, housing) and the associated environmental consequences in the Romanian metropolitan areas in terms of: urban (residential) sprawl, real-estate market dynamics, changes in spatial pattern of population, living floor dynamics, etc., with a special focus on the most significant metropolitan systems: Bucharest, Oradea, Iași and Constanța. The present study will combine GIS computer mapping techniques with housing and demographic data and field surveys to identify the main urban-sprawl-related current residential patterns in the Romanian metropolitan areas and understand causes of change in order to predict how alternative policies will influence future spatial development.

INTRODUCTION

Over the past years most of European countries have faced the growing challenges of transformations in urban form and development patterns (Patacchini *et al.* 2009) through suburbanisation and densification processes (ESPON FOCI 2010). The conversion of agricultural and natural ecosystems as well as urban land-use changes have grown to be critical components of global change (Pouyt *et al.* 2007) providing a dispersed urban growth (urban sprawl) pattern especially in the major cities' outskirts. Urban sprawl can be referred to as land-use change and conversion of natural or semi-natural surfaces into urban uses with a high share of artificial surfaces, usually affecting the core areas of metropolitan regions and their surroundings (spatial dimension), thus ultimately, leading to a change of land-use patterns (pattern dimension) (Fina and Siedentop 2008). As a result, urban sprawl is usually defined as the spreading of a city and its suburbs over rural land (agricultural and forested) at the fringe of an urban area (Pouyt *et al.* 2007; Patacchini *et al.* 2009).

When discussing urban sprawl, at the metropolitan level several phases of evolution have been identified (van den Berg *et al.* 1982; Petsimeris 2003; Antrop 2004 etc.): urbanization, suburbanization, deurbanization (counterurbanisation), and reurbanization, defined as the relationship between growth and decline of the urban center and the urban fringe. The suburbanization phase is characterized by a strong process of deconcentration of both population and economic activities from the core areas towards the periphery. This phase sometimes turns into counterurbanization, a process mainly observed in the most urbanized and dense parts of Europe based on population shifts from the urban periphery towards the small and medium-sized towns of less urbanized metropolitan surroundings, while the core areas loose more people and jobs than the suburbs gain. The reurbanisation is driven by

* Researcher, Institute of Geography, Romanian Academy, Environment and GIS Department, 12 Dimitrie Racoviță Street, sector 2, Bucharest, RO-023993, inesgrigorescu@yahoo.com.

** Researcher, Institute of Geography, Romanian Academy, Human Geography Regional and Department, 12 Dimitrie Racoviță Street, sector 2, Bucharest, RO-023993, bianca_mitrica@yahoo.com, mocanitai@yahoo.com.

*** PhD student, Universite of Angers, France.

the revitalisation of inner cities, mainly specific to western European urban areas. During the current period, suburbanisation processes are leading trends in southern and Eastern Europe (ESPON FOCI 2010). This process characterised the territorial expansion of towns in several Southern European (Petsimeris 2003) or former communist countries (Turnok 1998; Soós and Ignits 2003; Degorska 2004; Ourednicek 2007; Sykora and Ourednicek 2007; Hirt 2008; Leetmaa 2008, Tammaru *et al.* 2009; etc.) describing a general model of development by linear tendencies of urban development along the main transportation axes as well as the appearance of residential areas outside the towns.

In many of the post-communist metropolitan areas from Central and Eastern Europe urban sprawl has been perceived as a dominant process of urban development causing population deconcentration and changing the spatial organisation in terms of restructuring physical morphology, functional land-use patterns and socio-spatial structure (Sykora and Ourednicek 2007; Leetmaa 2008). Moreover, urban sprawl, especially suburbanization become a major issue due to rapid changes related to unregulated commercial and residential sprawl experienced by the former compact socialist city. Therefore, non-contiguous, leap-frog suburban sprawl has more negative economic, social and environmental consequences than more concentrated forms of suburbanization (Sykora and Ourednicek 2007). Generally speaking, some scientists from western and post-communist countries stress out that largest number of researchers dealing with suburbanisation and suburbanisation-related (environmental) issues consider this process as having a negative impact on urban systems (Ourednicek 2007).

Urban sprawl, mainly through the suburbanisation process, has become present in the Romanian towns over the past twenty years. Consequently, the spatial pattern of their metropolitan areas has been increasingly changing like in most of post-communist societies. Therefore, when discussing suburbanization-related residential patterns in the Romanian metropolitan areas, linking them to the environmental, socio-economic and political triggering factors is required. The investigations carried out so far in Romania at national, regional and local level pointed to a strong connection between these key drivers of change and their environmental consequences (Nicolae 2002; Bălteanu and Grigorescu 2006; Grigorescu 2008; Ianoş *et al.* 2010; Grigorescu and Dumitrescu 2010 etc.). Additionally, complex studies on urban sprawl-related issues were undertaken, mainly dealing with its main characteristics and typologies (Suditu *et al.* 2010), legal tools and territorial planning (Suditu 2012) residential development and real-estate market dynamics (Conway *et al.* 1995; Niculită *et al.* 2011; Zilişteanu 2011), land cover/land use changes and related environmental impacts (Pătroescu *et al.* 2011; Grigorescu *et al.* 2012; Ioja *et al.* 2011), urban regeneration (Mocanu *et al.* 2004; Luca 2009) etc., mainly referring to the Bucharest Metropolitan Area or to other Romanian metropolitan systems.

Although, the projected aging and decline of population coupled with the impact of the economic crisis might affect urban sprawl-related processes in Central and Eastern Europe states due to their attempt to catch up with the other European states in terms of de-urbanisation and suburbanisation (ESPON FOCI 2010), changing residential patterns remains a cross-cutting issue.

METHODS AND DATA

The present research is dealing with the specific patterns of residential sprawl (mainly suburbanization) over the last twenty years (post-communist period) which has determined radical changes, especially at the urban-rural interface. The paper is trying to relate physical and socio-economical patterns of suburbanization-related changes in the Romanian metropolitan areas in order to identify the main key drivers of change and stress their environmental consequences.

The authors used different spatial and statistical data, essential in assessing the suburbanization patterns experienced by the Romanian metropolitan areas in general and by some selected relevant case-studies in particular (Bucharest, Oradea, Iaşi and Constanţa). Therefore, spatial data (GIS processing and investigating cartographical documents at various spatial and temporal scales especially after the fall of the communist regime when the suburbanisation process come into force), statistical data

(supplied by the National Institute of Statistics and Romanian Statistics Yearbooks) and field surveys were undertaken. The processed spatial data (topographic maps, 1990; EEA Corine Land Cover, 1990, 2000 and 2006 and orthophotoplans) helped us understand and visualise the territorial dynamics of suburbanisation as well as the linkages between the natural drivers and the main patterns of change. Additionally, a wide range of statistical data were processed (population density, population growth, employment, migration, construction certificates etc.) in order to improve our understanding with respect to the dynamics of residential sprawl in the Romanian Metropolitan Areas with a special focus on the selected case-studies.

This complex approach combined and integrated both quantitative (GIS processing of various cartographic elements and statistical data) with qualitative analysis based on field surveys and interviews. This subjective approach allowed us to identify the patterns of residential sprawl in terms of spatial distribution, structure, functionality, local knowledge, people's perception etc. with a special focus on housing-related issues.

URBAN SPRAWL AND METROPOLITAN DEVELOPMENT IN ROMANIA

In 2011, in Romania 11,778,195 inhabitants are living in urban areas (55.0% of total population), out of which 7,500,000 (34%) in metropolitan structures. Urban population dynamics had marked, together with the political context of the post-communist period, the emergence of the urban sprawl phenomenon in Romania.

According to the Romanian geographical literature which defines metropolitan areas as "spaces under the influence of urban centres that have macro-regional functions and whose population exceeds 1 million people" (Erdeli *et al.* 1999), only one metropolitan area (Bucharest) falls into this category. The other Romanian towns reach less than 400,000 inhabitants each and polarise spaces that have fewer than 1 million inhabitants. Therefore, the metropolitan development in Romania was encouraged by some provisions introduced in the legislation, according to which a metropolitan area could be established based on the joint character of administrative-territorial structures *through association, by voluntary partnership between the main urban centres (the capital city of Romania and the first-rank municipalities) and adjoining the urban and rural settlements situated at distances up to 30 km, that established cooperation relations at different levels* (Law no. 351/ 2001, National Territory Management Plan, Section IV – Settlements). Additionally, these provisions were completed by other papers able to grant metropolitan organization and management with new privileges (Law no. 350/2001, Ordinance no. 53/2002 and Law no. 286/2006).

Among the 21 towns which have intended to develop metropolitan areas in Romania only one – Bucharest – (*very large city*, according to the classification of towns in Romania) meets the requirements of both international and Romanian legislation in this respect. The other 20 towns have developed such urban systems based on the legislative context which supports metropolitan development rather by the joint character of the administrative units under the influence of a city than on the size of the polarization city: *17 large cities* (Iași, Constanța, Cluj-Napoca, Timișoara, Brașov, Craiova, Sibiu, Galați, Brăila, Baia Mare, Suceava, Târgu Mureș, Arad, Bacău, Pitești, Ploiești and Oradea) and *3 medium-sized towns* (Simeria, Hunedoara, Deva) (Fig. 1). The *small towns*, even though they cover the largest part of the urban network, couldn't develop metropolitan areas (Grigorescu and Dumitrescu 2010).

Although Bucharest is the only town which meets the requirements of developing metropolitan area, it does not function as independent metropolitan administrative unit as well as Oradea, Iași and Constanța. It exists as an urban structure made up of a core city and a quite large number of administrative units ranging from villages, communes to small towns. Since the post-communist urban restructuring has been more dynamic in the capital-city and the three functional metropolitan areas (Oradea, Iași and Constanța) the present study will focus more on their particular features in terms of suburbanization-related issues.

Over the last years, the Romanian towns have registered significant dynamics, facing a built-up area expansion of up to 200% (e.g. Arad 60%, Iași 73,7%, Suceava 76%, Mihailești 106,3%, Bragadiru 114,6%, Buftea 106% etc.) or even more (e.g. Măgurele 872,4% in the Bucharest Metropolitan Area) due to their position in the proximity of important urban centers (Suditu *et al.* 2010). Under the new socio-demographic conditions, the need to find new housing and services alternatives inside and even outside the urban area had led to the emergence of new motilities.

Urban residential sprawl has always been related to the natural factors in terms of favourable or unfavourable drivers. When discussing Romanian metropolitan areas, their position mostly in plain and low hills/plateaus relief units had an important role in the emergence and development of the residential sprawl, especially in some of the most urbanized metropolitan systems: Bucharest, Oradea, Iași and Constanța.

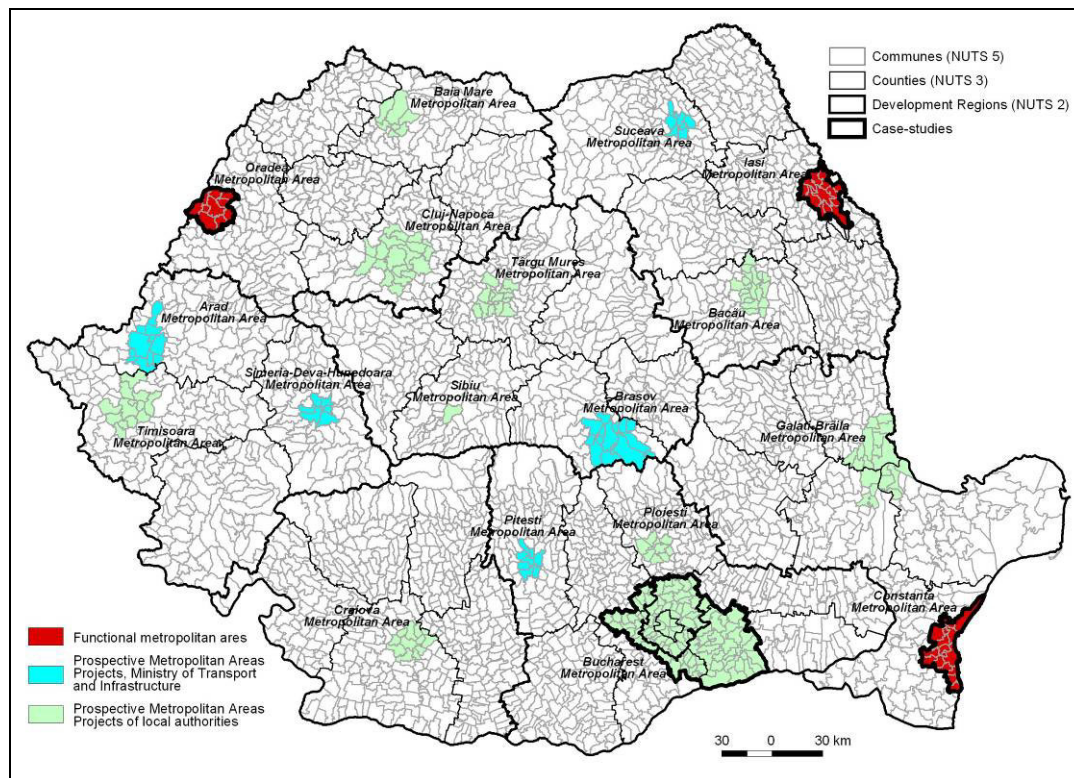


Fig. 1 – Metropolitan development in Romania.

By its position in the south-eastern part of the Romanian Plain also called Lower Danube Plain (Bălțeanu *et al.* 2006), **Bucharest Metropolitan Area** has always been an agricultural rural space (mainly arable with over 70%) as a consequence of its favourable geographic, social and historic conditions attributed to the space situated between the Carpathian Mountains and the Danube River (Geografia României, vol. V, 2005). These particular features coupled with other political and socio-economic drivers had favoured the smooth conversion from arable to residential land use categories. Additionally, other physical peculiarities such as water bodies (lakes, rivers), vegetation covered areas (forests patches, parks and gardens) had led to an increased development of residential areas.

The development of **Oradea Metropolitan Area** at the border between the Crișana Hills and Crișana Plain had let to certain disparities with respect to residential development, namely the plain landscape from the western half together with the lakes, rivers (Crișul Repede, Pețea) being much more preferred than the hilly relief from the eastern part in spite of its vegetation coverage.

In the north-eastern part of the territory, **Iași Metropolitan Area** is developed in a hill-like unit having a lower elevation in the north – Jijia-Bahlui Plain (100–150 m altitude) and rising up to 300–350 m altitude in the Central Moldavian Plateau separated by a monocline structure characterized by cuesta alignments (Coasta Iașiului with nearly 100 km long) (Bălțeanu *et al.* 2006). Therefore, the reduced altitudes, the high density of rivers and lakes (Bahlui, Nicolina Rivers; Veneția, Rediu Lakes etc.) as well as a large spread of vegetation covered areas had favored residential development mainly in the northern and north-eastern parts.

The most important urban system in the Romanian Black Sea area, **Constanța Metropolitan Area**, is overlapping the eastern part of the South-Dobrogea Plateau (150–200 m altitude) corresponding to flat plateau-like interfluvies and the Romanian Black Sea Coast, with cliffs elevated at some 10–35 m dominating the strips of beach, sometimes fragmented into narrow valleys with fluvial limans at their mouths (Bălțeanu *et al.* 2006). Once more, the predominant agricultural land use of this metropolitan area territory together with the tourist development on the sea shore had lead to residential development related to the bare agricultural land's conversion on one hand and the proximity of Black Sea or Siutghiol Lake on the other.

KEY DRIVING FORCES OF URBAN RESIDENTIAL SPRAWL

When analysing suburbanisation-related residential sprawl in the Romanian Metropolitan Areas, putting them in relation with their governing factors, is a fundamental action. Therefore, suburbanization can be connected to a great number of driving forces, among which the most important are political, demographic, economic, housing and social.

Political. When analysing the suburbanisation process in the Romanian metropolitan areas one must consider as main drivers the political factors that were subsequent to the communist era. During the *communist period* the forced industrialization, which ultimately lead to an increased urbanisation, had brought about the development of large residential areas (between 1950 and 1989) inside the city limits and in the suburbs closely related to the industrial areas.

After the fall of the communist regime, the Romanian territory has been strongly affected by a wide range of political transformations which were mainly experienced at social and economic level in terms of the transition from a centralised economic system to the market economy. These changes had triggered restructuring processes in all fields of activity leading to new characteristics and dimensions to the urban phenomenon (Bălțeanu *et al.* 2004; Bălțeanu *et al.* 2005; Bălțeanu and Popovici 2010). On its first interval, the so-called *transition period* (1990–2003) the leading process was the transition from state and collective property to private ownership through the decollectivisation and privatisation of agriculture by means of “land lows”. This complex process brought about a wide range of structural relocations of the different land use categories (especially from arable to residential or commercial) which lead to land abandonment and subsequently to property speculations in terms of land acquisition at lower prices by investors in order to convert them into real-estates and trade them at higher prices.

Regarding the transitions and post-transition periods, the European economic literature is very rich in approaches in terms of definition, durations and main features. In Romania, the beginning of the post-transition period is underlined by the prevalence of private ownership, decentralization of the business management and the reinforcement of the free-market economy system (Scarlat 1999; Scarlat, Scarlat 2007). At the end of 2003, the European Commission stated that “Romania can be considered as a functional market economy once the good progress made has continued decisively” (CCE 2004).

The second stage – the so-called *post-transition period* (2003–2010) – deepens the territorial changes and transformations of the former period. During this time span, the integration into the European Union structures coupled with the economic boom experienced by the largest part of the Romanian towns had led to significant spatial dynamics with respect to residential suburbanisation in almost all the metropolitan territories.

Demographic. Over the 20th century the population growth process in Romania had reached discontinued variations, while the most important towns and their surrounding territories had faced a quite rapid and constant increase trend which reflected the economic, political and social conditions characteristic of each stage. Therefore, Romania's economic and social development recorded significant changes associated with two major periods (1950–1960/1962 and 1989). The first marked the transition from the capitalist economy to the centralised-based socialist system, and the second from the socialist economy to the market system. Similar to other former socialist countries between 1950 and 1989, Romania underwent extensive industrialisation associated with explosive urbanisation aimed at reinforcing the national urban system (Urucu *et al.* 2006).

After the fall of the communist regime, the Romanian urban system underwent a restructuring process imprinting new features and dimensions to the urban phenomenon. Under the new socio-political context, the suburbanization process emerged, thus being characterized by a strong of deconcentration of both population and economic activities from the centre towards the hinterland triggering the so-called urban diffusion (Grigorescu 2008). Therefore, the population growth which unfolded during the communist period registered important variations after 1990. This process had evolved concurrently with the urbanisation and suburbanization processes. This dynamics was mainly related to the huge disparity in size and potential between the core cities of the analysed metropolitan areas and the other components of the metropolitan system (Figs. 2 a, b and 3 a, b).

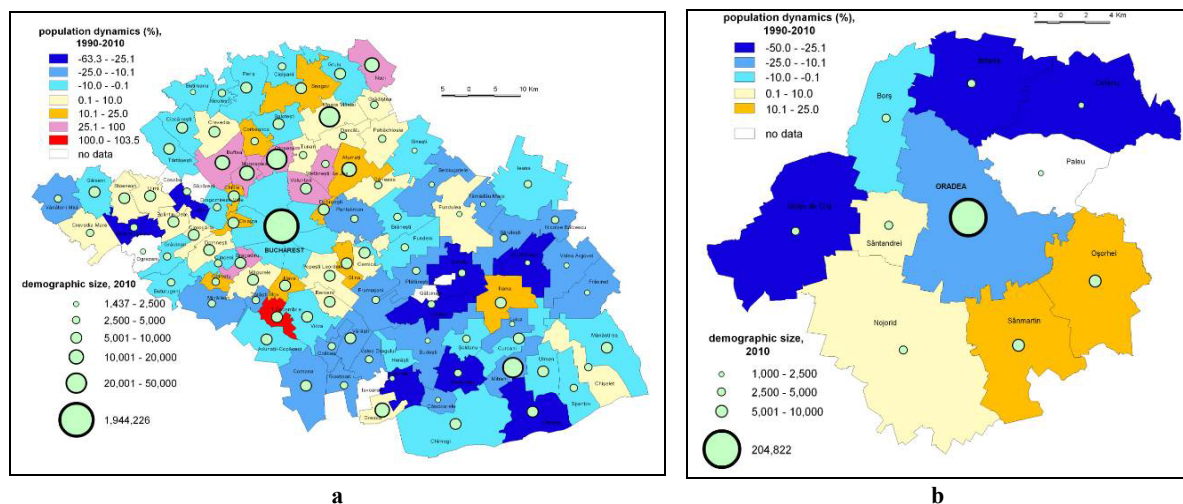


Fig. 2 – Population growth and demographic size of settlements in the Bucharest Metropolitan Area (a) and Oradea Metropolitan Area (b).

In the Romanian Metropolitan Areas, a higher population dynamics is registered in surrounding area of the capital-city determined by the preference of people for the suburbs, seen as the most desired residential areas (Buftea, Mogoșoaia, Corbeanca, Voluntari, Bragadiru etc. for the Bucharest Metropolitan Area; Sânmartin, Osorhei for Oradea Metropolitan Area; the north-eastern and north-western localities for Iași Metropolitan Area; northern and southern areas for Constanța Metropolitan Area etc.).

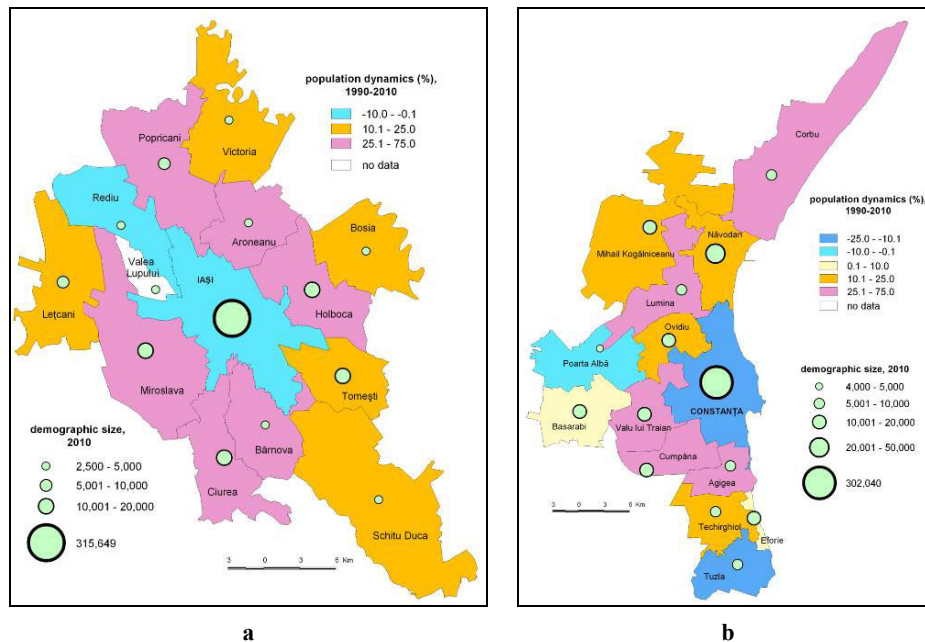


Fig. 3 – Population growth and demographic size of settlements in the Iași Metropolitan Area (a) and Constanța Metropolitan Area (b).

This process also stimulated the conversion of some rural settlements from their metropolitan area into urban settlements in order to attenuate the hypertrophic tendency of some of the towns. Out of all the Romanian metropolitan areas, the case of Bucharest is by far the most noteworthy. Over the last twenty years, out of the total of 14 towns, more than half were declared urban (4 in 1989 and 6 in 2005). A quite comparable development was registered by other metropolitan areas but not as dynamic (Brașov, Baia Mare etc.).

Economic. The new socio-political conditions of the post-communist period entailed deep-going restructuring processes which ultimately lead to suburbanization. The new stage of transition from industrial-to-services towns was line with the general economic and socio-political transition experienced by the whole country. Industrial functions retained their importance (becoming even more important than in the developed economies of Western Europe), modern industry and technology being called to facilitate the future development of the system in accordance with European urban exigencies.

The impact of economic restructuring in Romania was more or less felt by all the branches and sub-branches of the national economy, whether located in town or in the countryside. The geographical areas afferent to them registered negative socio-economic phenomena, such as poverty, unemployment, etc.

The post-1990 economic evolution was marked by industrial restructuring and privatisation within a new legislative context. The processing industry would decline, a new competitional framework was created, internal demand dropped, the COMECON market was dismantled, and financial deadlock set in (Dumitrescu 2008).

Housing preferences and development. Over the last period, demographic factors (mainly population growth) are no longer the most significant drivers triggering urban sprawl; cultural and housing preferences coupled with several economic factors (real estate market, transport costs etc.) becoming essential in urban development (Christiansen and Loftsgarden 2011).

The foremost development structures in the post-communist metropolitan areas are concentrated in the suburban area, primarily by relocating households from the central city to its scenic outskirts (Hirt 2008). On the other hand, while offering private benefits to new suburbanites, some environmental

consequences and landscape degradation in terms of social costs such as lowering local quality of life (Kahn 2000; Degorska 2004), a higher impact on local natural assets etc. can turn up.

After 1990 Romania's housing sector has undergone a dramatic transformation marked by rapid privatization and a reduced government role in the production and allocation of housing (Conway *et al.* 1995). As a result, the transition from state and collective property to private ownership had led to a high fragmentation and abandonment of property. Subsequently, developers carried out a "strategy" able to turn these abandoned land into residential or other uses, so they purchased large surfaces of land, assembled it and built infrastructure in order to develop new residential projects. Ultimately these projects were sold creating new residential areas for wealthy population.

During the 1990s the development of residential areas has been very slow being limited by a lower population income able to purchasing land or other residential outcomes. However, beginning with the 2000s, the increasing wealth especially of Bucharest, Oradea, Iași and Constanța metropolitan areas population had led to a more dynamic development of suburban housing.

After the fall of the communist regime, governments have set free access to public houses and subsequently encouraged the construction of new buildings developed by private entities. In some European post-communist countries (Czech Republic, Poland etc.), various incentives have been applied, including subsidies and preferential tax treatments. In Romania the first measure was to sale the houses to their occupants for a low price mainly to ease the state and local budgets with the burden of maintenance, especially in the case of apartment blocks. However, under a less coherent system of housing, some efforts to build a market-oriented system of housing finance through the purchase of houses through market transactions were accomplished (Zilișteanu 2011). Therefore, providing free trading of properties coupled with an increased financial crediting provided by banks had encouraged the real-estate booming in terms of transactions and prices until 2008, when the financial crises stroked.

Under the given circumstances, if before 1990 most of the recent developed residential areas had a dominant agricultural use, after this year the prices grow from few eurocents/sq.m to more than 100 euros/sqm on an average. The highest dynamics was registered in the Bucharest Metropolitan Area, where, in the Pipera-Tunari area, for instance, the most expensive land could reach in 2008 up to 1,100 euros/sq.m., followed by the town of Otopeni where, near the airport and the Bucharest-Ploiești Highway could value even 600–800 euros/sq.m etc. After the economic crisis the real-estate market collapsed, in most of the cases the price dropped at more than half of its previous value (Fig. 4). This phenomenon is outlined by the increased number of construction certificates which, particularly in the case of Bucharest, Constanța, Iași and Oradea Metropolitan Areas, registered significant increases, especially in the 2004–2008 time span related to and improvement of living standards.

Out of the analysed data, among all the construction functions, the certificates granted for residential individual buildings range first reaching significant high values (up to more than 9,000 in the Bucharest Metropolitan Area in 2008). After the economic crisis (2008), the available data point to dramatic shrink which went hand in hand with the fall of the real-estate market (Fig. 5).

Generally speaking, residential suburbanisation is changing spatial distribution of population according to its socio-economic status, thus inducing a reversal of the traditional socio-spatial pattern of the socialist city, characterised by the socio-economic status of population declining with distance from the centre (Sykora and Ourednicek 2007).

Consequently, the suburban zones are attaining a better-educated population with high incomes (Ouredníček 2003 quoted by Sykora and Ourednicek 2007) and on the other, social tensions, residential segregation and exclusion are encouraged (Soós and Ignits 2003). The suburban residential areas lead to the incursion of rich newcomers into the sometimes lower income, less educated indigenous inhabitants of the former rural settlements.

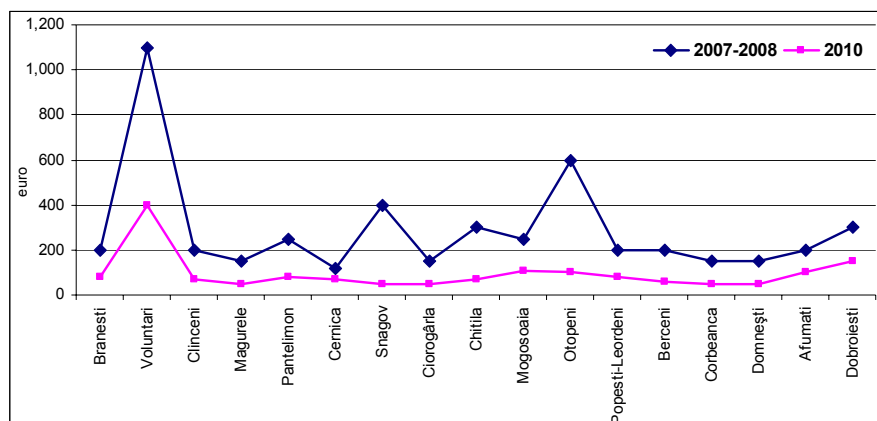


Fig. 4 – Land prices dynamics in the Bucharest Metropolitan Area.
Source: Real-estate agencies and field surveys.

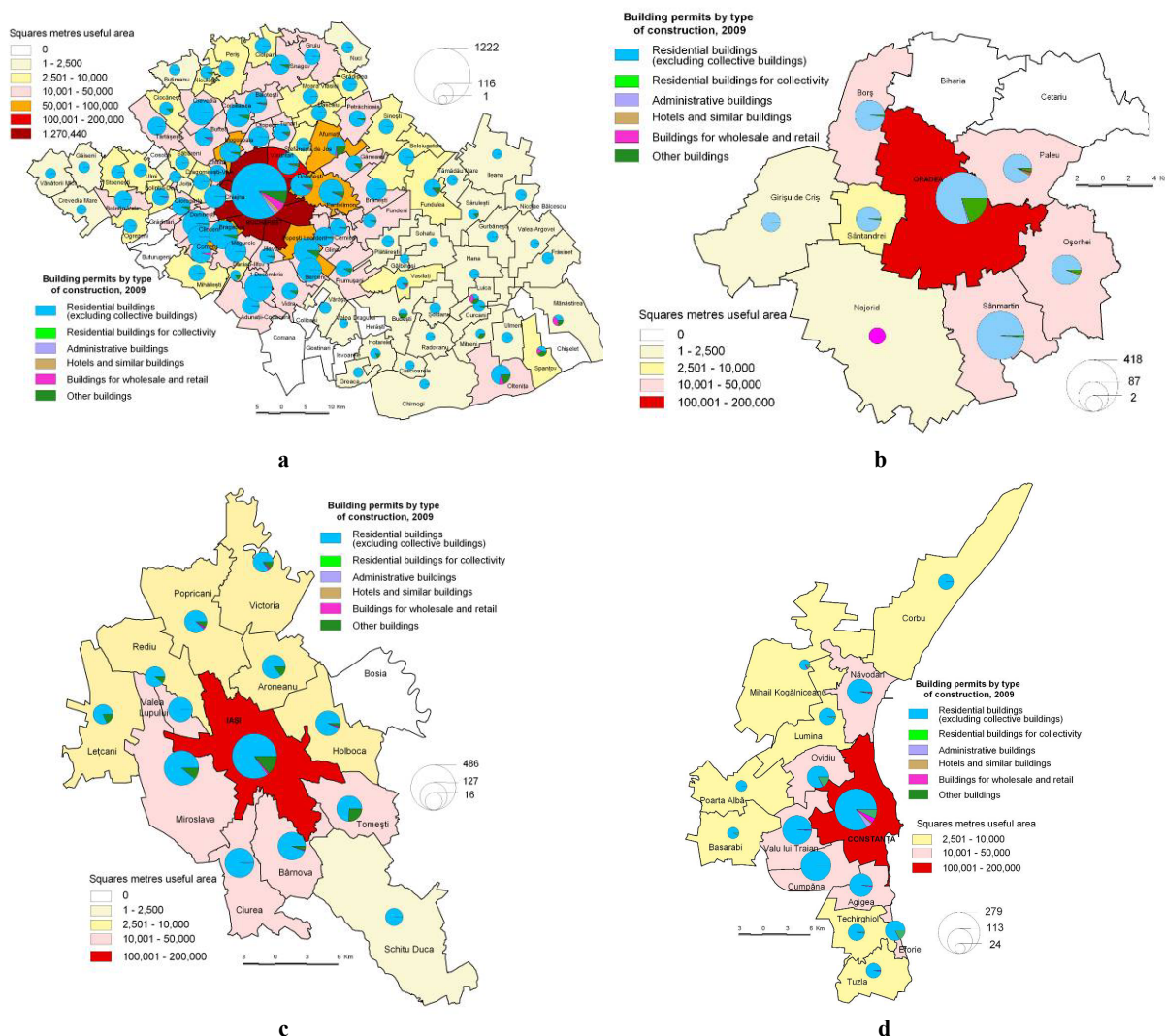


Fig. 5 – The dynamics of building certificates in Bucharest (a), Oradea (b), Iași (c) and Constanța (d) Metropolitan Areas.

Social. In Romania, unequal incomes and low public commitment following the communist era have widened the residential gaps in the metropolitan areas, and hence the uneven spatial distribution of social groups in terms of poor urban areas with almost rural type houses, old central zones, low-comfort blocks-of-flats, etc. on one hand and luxury house, gated communities etc. on the other. Therefore, in some once-modest city environs better-off groups were in a position to have residential preferences while the poorer ones, subject to income constraints, could not choose their residential neighbourhood. Some areas now exhibit a peculiar mixture of two distinct social strata in terms of wealthy affluent newcomers and poor long-time residents (Hirt 2008).

An obvious phenomenon of the Romanian large cities is the migration from the centre to the outskirts and from blocks-of-flats to one-family dwellings, or the new residential districts (Stănculescu and Berevoiescu 2004). Thus, the many cases, urban environment in Romania is subject to poverty and social residential exclusions in terms of: higher utilities costs leading to disconnections from the heating network; degraded blocks-of-flats, green areas and access streets; eviction of poor families who, unable to pay their debts, lose their properties; overcrowded dwellings with several generations living together, because young people are unable to buy or rent a house; housing crisis (diminishing public funding for building new residences and the absence of social dwellings (Virdol 2008).

SUBURBANIZATION-RELATED RESIDENTIAL PATTERNS IN THE ROMANIAN METROPOLITAN AREAS

Just like other Central and Eastern European countries (e.g. Hungary, Poland, the Czech Republic etc.), economic and residential suburbanization experienced after 1990 occurred concurrently. This was supported by a broad spectrum of processes related to mass privatizations of apartment buildings, the emergence of an affluent entrepreneurial class, the boom of real estate market and the availability of cheaper properties in the suburbs accompanied by huge shopping centres, hypermarkets, warehouses and industrial properties (logistic parks) (Sykora 1999; Soós and Ignits 2003; Sykora and Ourednicek 2007; Sykora 2006; Hirt 2008).

The housing sector has witnessed increasing affordability problems, a marginalisation of communal housing stock, an increase of segregation and a decrease in the old housing stock. The growth experienced in some parts of the metropolitan areas had led to the decline in other parts; therefore, booming suburbanization contributes to the decline in inner city (Sykora 1999).

Bucharest Metropolitan Area. Usually, the new districts of suburban housing emerge in areas with good physical environment and transport connection to city centres (Sykora and Ourednicek 2007). Other aspects are related to their attractiveness is the quality of the residential project (uniqueness, design) and the access to different services (guarding facilities, parking places, swimming pools, green areas, super-markets, kindergartens, medical centres, leisure places), thus turning these residential projects into real luxury neighbourhoods. These new residential investments made the transition from the individual resident houses (secondary, for the week-end or holyday), some with no proper environmental facilities, to compact residential areas such as “gated communities” with all the necessary environmental facilities (Grigorescu 2008). The prices of these residential areas are mainly influenced by their geographical location (near green areas or waters) and by the proximity of main transport network with direct and rapid access to the core cities.

In 2010, the interior living space per capita in the Bucharest Metropolitan Area varied between 8.8 sqm in Gălbinași Commune (Călărași County) and 51.2 sqm in Corbeanca Commune (Ilfov County). Bucharest City values were of 16.1 sqm, basically a 26.1% growth rate versus 1990 the average value through the Metropolitan area was of 16.8 sqm. Over the 1990–2010 period the most dynamic settlements at this indicator were Corbeanca (494.2%), Clinceni, Domnești, Voluntari, Cornetu, Tunari, Dascălu, Mogoșoaia, Berceni (150–300%) (Fig. 6 a).

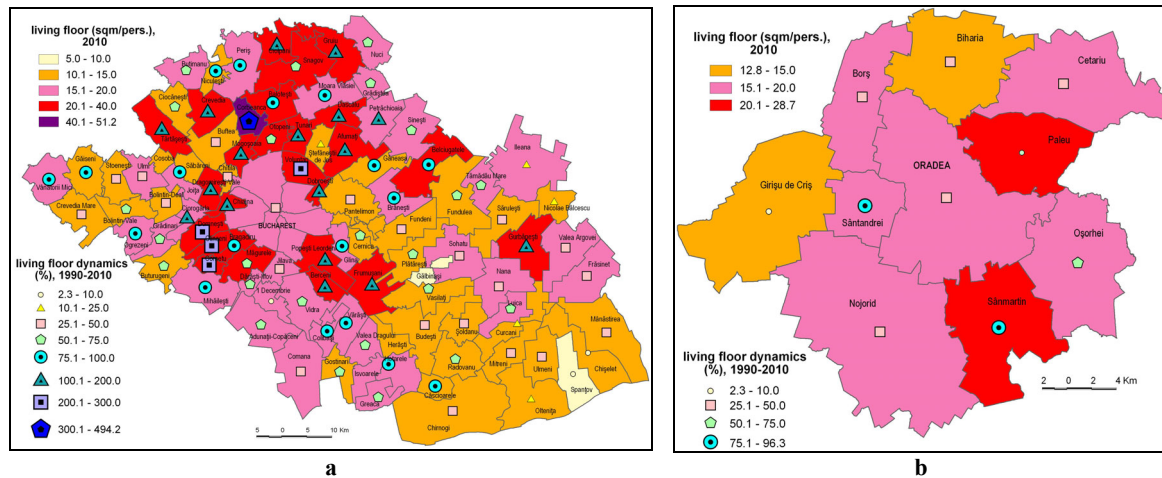


Fig. 6 – Living floor in Bucharest Metropolitan Area (a) and Oradea Metropolitan Area (b), 1990-2010.

Under the given circumstance, in the Bucharest Metropolitan Area 6 compact residential areas (*Pipera-Tunari*, *Ștefănești*, *Mogoșoaia-Chitila*, *Corbencea-Otopeni-Balotești*, *Snagov-Periș*, *Pantelimon-Cernica-Brănești*) and 6 residential nuclei (*Dascălu*, *Buftea-Crevedia*, *Tărtășești*, *Domnești*, *Berceni*, *Comana*) were developed (Figs. 7 and 8).

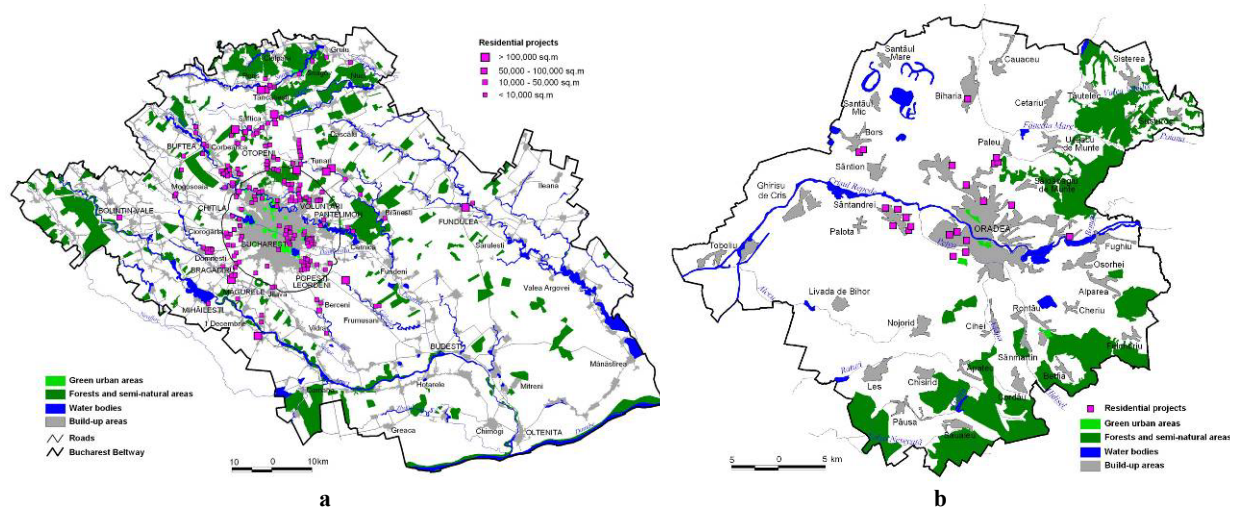


Fig. 7 – Residential projects in the Bucharest Metropolitan Area (a) and Oradea Metropolitan Area (b).

The last category aimed at relocating the spreading out of the suburbanization front from the traditional residential areas (north and north-west) to new developed residential areas (south and north-west) based on low land prices, attractive environmental features and good transport infrastructure (Grigorescu 2008).

Oradea Metropolitan Area. As in all major cities of Romania, there are large numbers of apartment buildings which were developed during the communist period by the state, especially during the 70s and 80s. After 1990, the rapid privatization of public housing in Oradea has been accompanied by a significant increase in the number of residential property transactions.

In the Oradea Metropolitan Area the living floor variations were of 12.8 sqm in Girișu de Criș Commune and 28.7 sqm in Paleu Commune; Oradea City values averaged 15.9 sqm, and 16.2 sqm its

metropolitan area, pointing to an increased tendency of suburbanization. The smallest interior living space was registered in the communes of Sântandrei (96.3%), Sânmartin (80.0%) and Oșorhei (64.7%) (Fig. 6 b).



Fig. 8 – Residential development in the Bucharest Metropolitan Area (A – gated community in Corbeanca; B and C – residential projects in Voluntari).

As compared to Bucharest, Constanța or Iași, residential projects in the Oradea Metropolitan Area are quite scattered, however one being able to identify some clusters in areas which can be perceived as development nuclei. One of the areas is located in the south-western part of the city where some of the main residential projects can be found (Europa, Luceafărul, Henry Ibsen, Ioșia etc.). Other housing projects are located in the metropolitan localities Sântion (Royal and Astra), Paleu (Golden Residence, Tineret and Orizont Paleu) or in Sântandrei where several other real-estate projects are to be completed.

Constanța Metropolitan Area. Some 15–20% of the housing stocks existing in the rural area and in the centre of Constanța City are more than 50 years old. A special problem poses the blocks-of-flats, the majority were built between the late 1960s and the 1980s. In the rural areas and in the small towns (Techirghiol, Ovidiu, etc), the housing stock is very heterogeneous, e.g. individual dwellings, basically small subsistence households rather than modern residential habitats, sometimes without basic utilities (water supply, sewerage system, gas network, and even electricity) (Constanța Metropolitan Zone, 2010).

Over the last years the extension of individual dwellings to the periphery of the core city and in the neighbouring localities (Lazu – Agigea, Cumpăna, Poiana – Ovidiu, Valul lui Traian and Sat Mamaia – Năvodari) was noticed as it is a expected development triggered by the tendency to concentrate residential quarters at the periphery or in the adjoining country-side (Fig. 9).

When discussing the living floor in Constanța Metropolitan Area one may notice variations between 12.1 sqm at Poarta Albă and 23.1 sqm in Eforie town. In 2010, the metropolitan area averaged 15.4 sqm; Constanța City 15.2 sqm, that is a 41.0% growth rate compared to 1990, with major growth rates in the communes adjoining Constanța City Valul lui Traian (168.5%) and Agigea (128.8%) and the towns of Eforie, Techirghiol and Ovidiu (Fig. 10 a).

Therefore, the metropolitan area of Constanța stands under the pressure of the expanding city aiming to meet the requirements of the polarizing town in terms of developing new residential districts, commercial, services units etc. At first glance, this development brought about progress to the country-side and its population. However new problems emerged because the legal framework was much too permissive with respect to land use conversion and relocation, and coupled with high land prices (especially before 2008) lead to the marginalization of the rural population.

Iași Metropolitan Area. Just like in the rest of the Romanian Metropolitan Areas, the housing stock in the town of Iași and three surrounding communes (Ciurea, Holboca, Tomești) is more than 30–40 years old. Over the last decade, significant investments in infrastructure and real-estate projects had determined the growing of housing stock, thus leading to the development of large residential areas (individual dwellings or housing projects) in the core-city and in the surrounding communes (e.g. Bârnova, Holboca, Miroslava, Ciurea, Valea Lupului, Tomești etc.) (Figs. 11 and 12).

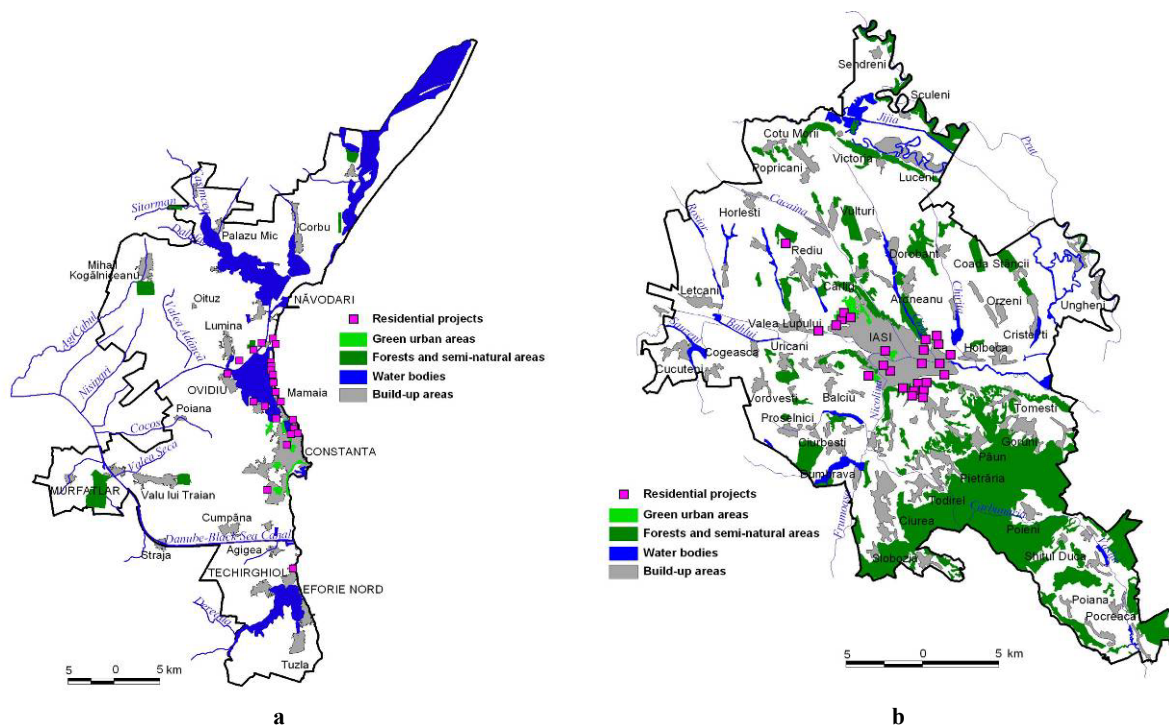


Fig. 9 – Residential projects in the Constanța Metropolitan Area (a) and Iași Metropolitan Area (b).

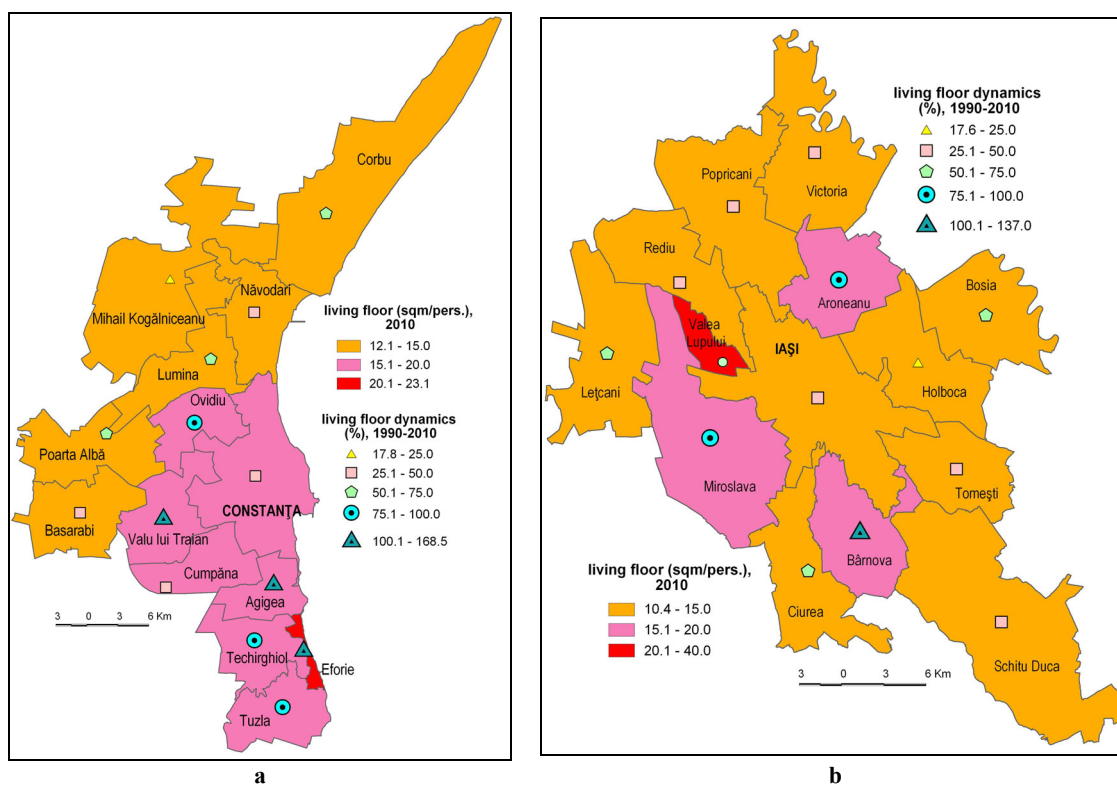


Fig. 10 – Living floor in the Constanța Metropolitan Area (a) and Iași Metropolitan Area (b), 1990–2010.

The situation of Iași Metropolitan Area looks as follows: 10.9 sqm in Victoria Commune and 13.5 sqm in the City of Iași, the metropolitan area having 13.5 sqm on average. Values over the 1990–2010 period used to increase in Bârnova (137.0%), Miroslava (96.0%), Aroneanu (95.7%) communes.



Figs. 11 and 12 – Dancu (Holboca Commune). Building with possible retail and office functions (150 m², built in 2008), located near the blocks-of-flats, and new villa (137 m², built in 2009) (Source: <http://www.immo-land.ro>).

The need to develop new districts (e.g. Apărătorii Patriei) which had lead to the construction of large commercial centres, and reconstruct/construct new residential quarters called for a unitary, integrated approach capable to provide accessibility and mobility in the city and in its surrounding territory. Simultaneously, creating a sustainable public transport system and taking reliable traffic management measures is compulsory (Iași Metropolitan Zone, 2009).

When considering the housing projects, at least two residential-prone areas can be distinguished in the Iași Metropolitan Area: *Bucium* located in the southern part of Iași town, lying on a hilly-like relief form which grants it with a beautiful view, thus leading to the development of several residential projects such as Collina Bucium, La Pini-Crisco, Panoramic Village, Decorama etc. and *Copou* situated in the north-western part of the core-city, near the Botanical Garden and Sorogari Forest, favouring the development of Copou Bellevue, Reveria, Royal Tower etc. housing estates (Fig. 12). The prices of these residential projects vary between 70,000 and 150,000 euros per estate dependent on the surface, location, utilities etc.

The relationship between population's socio-economic power and the environmental features of a city hinterland has shaped residential preferences for most of the metropolitan areas' citizens. According to the particularities of these relationships, several suburbanisation-related residential patterns in terms of both individual and planned residential spread have been developed. The new residential patterns embody the most visible spatial changes of suburbanisation in the Romanian Metropolitan Areas, among which the most significant are the following:

Irregular residential development often located in the cities outskirts and characterized by individual houses which vary in size and architecture according to plot's availability and affordability. They take place on abandoned agricultural land or on existing villages either by constructing new houses on the bare plots or instead of demolished old buildings. In most of the situations they have negative impact on the environment in terms of lack/insufficient environmental facilities (sewage system, water supply, roads, waste collecting etc.) (Fig. 13).

Small-size residential projects. Usually developed within the city limits but also in their surrounding areas, these new residential areas are made up of high buildings or villas sometimes providing luxury apartments (e.g. Agora 1 in Iași Metropolitan Area; Solaris Tower in Constanța Metropolitan Area; Planorama, West Park, Topaz etc. in Bucharest Metropolitan Area etc.).



Fig. 13. Irregular residential development in the Bucharest Metropolitan Area
(A – Măgurele, along the ring of Bucharest; B and C - Pantelimon).

Residential complexes/projects characterised by a booming development, especially between 2000 and 2008, was mainly encouraged by cheaper land, especially to higher distances to the core city or on agricultural land which was subsequently turned into build-up. This practice enabled the developers to buy huge surfaces of land at lower prices. According to their affordability and accessibility these residential projects could be divided into: *open residential projects* – residential areas with access to all the necessary environmental facilities and other services (security, parking, green areas, commercial areas, kindergartens, medical centres, leisure etc.). Even though, as compared to the gated communities, the public access is permitted they are affordable only for high income groups; and *gated residential projects (gated communities)* – walled or fenced housing development to which public access is restricted and enclosed by physical protective elements (Blakely and Snyder 1997; Blandy 2006) providing increased security. Some of the first such residential areas built in Romania after 1990 were the so-called “French Village”, “Green Paradise” etc. This type of residential area is extremely expensive in Bucharest and in his proximity. Only the middle upper class and upper class can afford it, thus being one of the main causes of both social and residential isolation which ultimately lead to voluntary segregation (Raposo 2006).

The high land price in some residential-prone areas or in already build residential projects makes single family housing a presence only in the small residential areas located at the city peripheries in the so-called “irregular residential development” pattern. The other two residential patterns are bestowed to medium-high or high income groups.

DISCUSSIONS AND CONCLUSIONS

The current suburbanization-related residential development in the Romanian Metropolitan Areas stands for a new approach in understanding the relationships between urban sprawl and its driving forces (political, demographic, housing and social) in a context of global environmental change.

Under the current socio-economic conditions and the changing demands of society the identified suburbanization-related residential patterns are favoured by the large population migration to metropolitan areas and fast expansion of homes to cities hinterland, thus evolving from subsistence to recreation and aesthetics-related patterns.

The raised land prices and the inadequate housing programs have made many people move out to cheaper areas where there are no urban planning systems. This uncontrolled development has been followed by severe abuse and land speculation, sometimes accompanied by inadequate land use. These practices have been widely facilitated by laws that allowed land fragmentation into small plots without any previous zoning of the territory or control of the architecture of the new buildings. As a consequence, the suburbanisation phenomenon has not been always associated with a set of coherent urban development policies to attenuate possible negative impacts on cities’ surrounding territories. Therefore, a coherent territorial planning scheme should have in view the optimisation of spatial development in order to prevent the uncontrolled expansion of settlements.

The variety build-up structures (transport systems, buildings, etc.) triggered by the urban sprawl phenomenon and the related residential development had led to new urban patterns which have affected metropolitan areas' landscape. Under the given circumstances, territorial governance's involvement in the local policy to control urban sprawl is becoming of increasingly important.

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