

TERRITORIAL ASSESSMENT OF INSTITUTIONAL ACTORS AND TOOLS IN GOVERNANCE OF THE ROMANIAN LABOUR MARKET

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Key-words: governance, labour market, territorial approach, Romania.

L'approche territoriale des acteurs institutionnels et des instruments pour la gouvernance du marché du travail en Roumanie. La gouvernance du marché du travail comprend les politiques, les normes, les lois, les règlements, les institutions et les processus qui influencent l'offre et la demande du travail. L'article propose une approche territoriale des acteurs institutionnels impliqués dans la gouvernance du marché du travail. L'article souligne les relations établies entre les différents niveaux de gouvernance (nationale et européenne). Les acteurs institutionnels sont organisés selon trois niveaux, chacun ayant des attributs spécifiques, différents d'un niveau à l'autre. La dimension spatiale des acteurs institutionnels impliqués dans la gouvernance du marché du travail est évidente dans le cas de structure pyramidale spécifique pour l'Agence Nationale pour l'Emploi (41 agences départementales + l'agence municipale de Bucarest, 96 agences locales et 149 points de travail).

I. INTRODUCTION

The interesting problems involved by the complex process of governance have in the past few decades aroused global, national, regional and local debates. In the UN Development Programme (UNDP), governance is defined as "the exercise of political, economic and administrative authority in the management of a country's affairs at all levels. It comprises the mechanisms, processes and institutions, through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences" (UNDP, 1997, *Governance for Sustainable Human Development*, pp. 2–3, cited by Narang 2005). This definition gives a clear outline of representative governance notions, such as, responsibility, transparency, participation, commitment and inclusion (Narang 2005).

Governance in the job market covers all the policies, norms, laws, regulations, institutions and processes which influence labour supply and demand. Strengthening the institutional capacity in order to improve labour offer/demand relations is a basic component of governance in the job market (http://www.ilo.org/asia/areas/lang--en/WCMS_099408/index.htm). Governance in the labour market represents a research subject in a lot of studies, articles and books. The specialist literature underlines the following aspects: governance in the labour market of Eastern and Central Europe (Standing 1997), (re)modelling work relationships in the economic transition period (Hill, Martin, Vidinova 1997, Allsopp, Kierzkowski 1997), the role of social movements maintaining an instable/stable labour market in Eastern Europe (Ost 2002), employment and productivity disparities in the EU and their impact on labour market governance (Dunford 1996), characteristics of the informal labour market in some industrial branches (Baumann 2002), relationships between governance of the labour market and working conditions in New Europe (Teague 1994), the geography of labour market governance (Haughton, Peck 1994), indicators of governance (Kaufmann, Kraay, Mastruzzi 2007), analysis of the emerging scalar configuration of the governance of the European Union (Mamadouh, van der Wusten 2008). Governance represents a core concept or a collateral concept of some theories. A lot of studies and articles put governance in the focus of research, but in the light of the present study, the approaches to the theory of multi-level governance are particularly important. Multi-level governance characterises the changing relationships between actors, both public and private, situated at different territorial levels. Multi-level governance

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has been conceived as a system of continuous negotiation among nested governments at several territorial tiers (Marks 1993, Marks *et al.* 1996, Hooghe 1996), which describes how the supranational, national, regional and local governments are enmeshed in territorially overarching policy networks (Bache 2005) (http://en.wikipedia.org/wiki/Multi-level_governance).

The range of multi-level governance is related to the process of decentralisation, a concept of major scientific and practical importance. Based on the different definitions and the multitude of meanings of the “governance” concept, Liesbet Hooghe and Gary Marks have made a significant contribution to the identification of two types of assessments of decentralisation. Type I is characterised by: sub-central jurisdictions that are multipurpose, membership of these sub-central jurisdictions do not overlap, and the number of levels of sub-central jurisdictions is fixed. Type II is defined by task-specific jurisdictions, overlapping memberships and an unlimited number of jurisdictional levels (*Governance and Development Review*, Institute of Development Studies, 2003, www.ids.ac.uk/gdr/reviews/review_22.html).

II. EUROPEAN IMPLEMENTATION TOOLS IN THE GOVERNANCE OF THE LABOUR MARKET (INCLUDING UNEMPLOYMENT)

Official European documents and their provisions should be observed by all member-states. Each country elaborates its own strategies and programmes in matters of labour market and unemployment, but it is obligatory to respect all the European documents. Because of it, the implementation of European tools in the management of the job market may be considered a higher level of modelling the governance process.

The European employment policy passes through many key-moments ending up in the adoption of some official documents, e.g.: 1989, the *Social Paper (The Paper of the Employees' Fundamental Social Rights)* was adopted; 1994, the *White Paper*¹; 1997, the *European Employment Strategy (EES*², introduced in the Amsterdam Treaty); 2000, the elaboration of the *Lisbon Strategy*. This document is a guide-line for the European social policy and establishes the EU's fundamental goal for the next decade, namely the transformation of the European economy in the most competitive and dynamic one in the world, based on knowledge, capable to increase the economy in a sustainable way, with better jobs, and greater social cohesion. In 2004, the *Lisbon Strategy* was evaluated and the conclusions were disappointing: 6 million new jobs, but the economic performance was a far cry from the average of 3% (the Lisbon Strategy goal).

The Romanian labour market makes part of the low – medium performance class. This situation is similar to that of regions in central and northern Spain, in the north, centre and south of France, in the south of Italy and of Greece, and in the eastern part of Germany. Romania is the only EU member-state, which has a high regional homogeneity in matters of labour market performance (better said “missing performances”) in terms of the Lisbon Strategy indicators (*Spatial scenarios for Europe*, Conference on Austrian Spatial Scenarios 2030, ESPON, 2008, Vienna).

The *New Social Agenda*³ was presented in February 2005. The “Annual Report of Progress on Increasing Jobs” (2006), elaborated by the European Commission, underlines four most urgent challenges for the member-states, and three of them focus on the labour market: **1.** increasing investments in the higher educational system and in R&D activities; **2.** creating a business framework capable to encourage economic increase; **3.** helping people to find a job.

¹ The *White Paper* insists on the role of continuing education and vocational training.

² The *European Employment Strategy* represents a new culture in terms of employment, promotes the creation of new jobs by encouraging the local development and flexible work arrangements.

³ The *New Social Agenda* focuses on security jobs for all active European citizens by granting equal opportunities for all of them.

III. NATIONAL IMPLEMENTATION TOOLS IN THE GOVERNANCE OF THE LABOUR MARKET (INCLUDING UNEMPLOYMENT)

The National Employment Strategy 2004–2010 represents a useful tool in guiding and coordinating priorities in terms of employment policies. This document was elaborated by the Ministry of Labour, Family and Social Protection, by other ministries, and different institutions in partnerships with the social actors.

The *Joint Memorandum on Social Inclusion in Romania* is a document which evaluates short-term priorities in terms of employment and labour market policies specific to Romania. This working instrument, elaborated by the Ministry of Labour, Family and Social Protection and the European Commission, was adopted in October 2002 and its priorities represented the employment policy objectives with the perspective of having the European Employment Strategy implemented, after the country's EU access in January, 2007.

The role of the *National Action Plans for Employment (NAPE)* is to coordinate and provide for coherent labour employment programmes. These programmes are elaborated by the Ministry of Labour, Family and Social Protection in collaboration with the National Employment Agency, other ministries, associations of employers and trade-union representative at national level. The documents are conformable with the guide-lines set by the European Employment Strategy. NAPE highlights those short and medium-term measures which Romania intends to put into effect in order to increase employment and decrease unemployment, support continuing education, make the job-market more efficient and flexible, so as to cope more readily with economic change, and avoid social discrimination and exclusion (NAPE, 2002–2003).

In line with the provisions of the European Employment Strategy, Romania, just like any other member-state, should elaborate a *National Reform Programme* in keeping with the guide-lines of the *Lisbon Strategy*. The plans should follow three directions in terms of macro-economic (1), micro-economic (2) and employment (3) priorities. Romania's new EU-membership status requires its permanent endeavour to fall in line with the Community cycle of policy preparedness, work out the first *National Reform Plan* and meet the "Lisbon targets". The Plan was published in 2007, its third part, "Employment priorities", replacing NAPE.

The *National Employment Programmes* are elaborated yearly by the National Employment Agency. This instrument follows the implementation of the employment policies and strategies. The programmes were based on the Employment National Strategy, the National Action Plans for Employment, the Government Social Programme, the Anti-Poverty Plan, different government programmes and the National Reform Plan⁴. An important criteria for constructing the National Employment Programmes represent the social security budgets consistent with Laws 76/2002⁵, 116/2002⁶ and 72/2007⁷.

The *Employment of Marginalised Persons Programmes*, elaborated by the National Employment Agency, is an integral part of the National Employment Programmes.

The *Permanent Vocational Training Strategy (2005–2010)* has been worked out by the Ministry of Labour, Family and Social Protection in collaboration with the National Employment Agency, the

⁴ Those are the entire strategic documents representative for the National Employment Programmes.

⁵ Law no. 76/2002 on the unemployment security system and the system for encouraging employability. This law was modified by 4 other laws (no. 4/2003, no. 107/2004, no. 580/2004 and no. 144/2005), 13 government decisions and 12 government ordinances.

⁶ Law no. 116/2002 on the prevention and control of social marginalisation.

⁷ Law no. 72/2007 on stimulating student employment.

National Committee for the Vocational Training of Adults, the Ministry of Education and Research, etc. This strategy was built such that the level of participation in different forms of continuing education/learning to be of 12.5% of Romanian's adult population in 2010. The main goal of this strategy is to develop a system of continuing vocational training, flexible and transparent, with an adequate level of financing, and with the implication of the social partners.

The *National Permanent Training Plans* are put out by the National Employment Agency, based on labour market analyses. The aim is to better adapt the labour force supply to different types of activities.

IV. INSTITUTIONAL ACTORS AND MULTI-LEVEL GOVERNANCE IMPLEMENTATION TOOLS IN LABOUR EMPLOYMENT (UNEMPLOYMENT INCLUDED)

A general approach to the subject leads to individualising three levels of action, each with its own institutional actors, specific tools and tasks:

I. the upper level includes the Ministry of Labour, Family and Social Protection (MLFSP), the manager of OPDHR (Operational Programme for the Development of Human Resources) and the authority assigned the implementation of the PHARE programmes;

II. the median level, more precisely, the Labour Programmes and Strategies Department, subordinated to MLFSP, represents Romania at the European Commission in matters of employment and permanent professional training. This Department has two hierarchical subordinates, which have a direct tool to implement Social Policy (SP) in the job market (unemployment included), namely, the Employment and Professional Training National Observer (EPTNO). The role of EPTNO at the national level is to inform the national institution involved in labour market governance about the main characteristics and trends of the job market and unemployment. This information is useful for the elaboration of projects, plans and strategies in labour market field, for correct information and relations between different actors active on labour market.

Both the main actors and the subordinates of the first two levels are assigned coordination (at national level), harmonisation (with EU provisions), assessment, monitoring and management of the complex phenomenon of governance in the job market by implementing the national SP in this area.

III. the lower level, represented by the National Agency for Employment (NAE), has to put into effect the official documents elaborated at the first two levels (strategies and programmes in various job market sub-areas, e.g. professional training, permanent education, equal employment opportunities, marginalised people in the job market, etc.), organising and undertaking concrete steps and actions to implement the governance in matters of job market (unemployment included) (Fig.1).

V. THE TERRITORIAL DIMENSION OF THE INSTITUTIONAL ACTORS AND THE MULTI-LEVEL GOVERNANCE IMPLEMENTATION TOOLS IN MATTERS OF LABOUR MARKET AND UNEMPLOYMENT

The task of coordinating the employment policy devolves on the institutions placed on the first two levels, the basic method used being the so-called "open coordination" contained in the European Employment Strategy. One of its fundamental principals is subsidiary, that is, setting and assigning tasks to the actors of the three hierarchical levels (http://www.ier.ro/documente/formare/Politica_sociala.pdf, pp. 16). The coordinators must receive the signals emitted by the lower level actors who have the best knowledge of the local reality ("the *local* is the very place where everything is happening", Ianoş, Popescu 1997, pp. 42). It is crucial for the coordination process to meet the job market needs, perceived and transmitted to the national level via regional and local routes. Each local space,

and implicitly the local job market, entertains, via the regional route, complex relations with the much wider national space which contains and determines regional and local relations (Botazzi 1996).

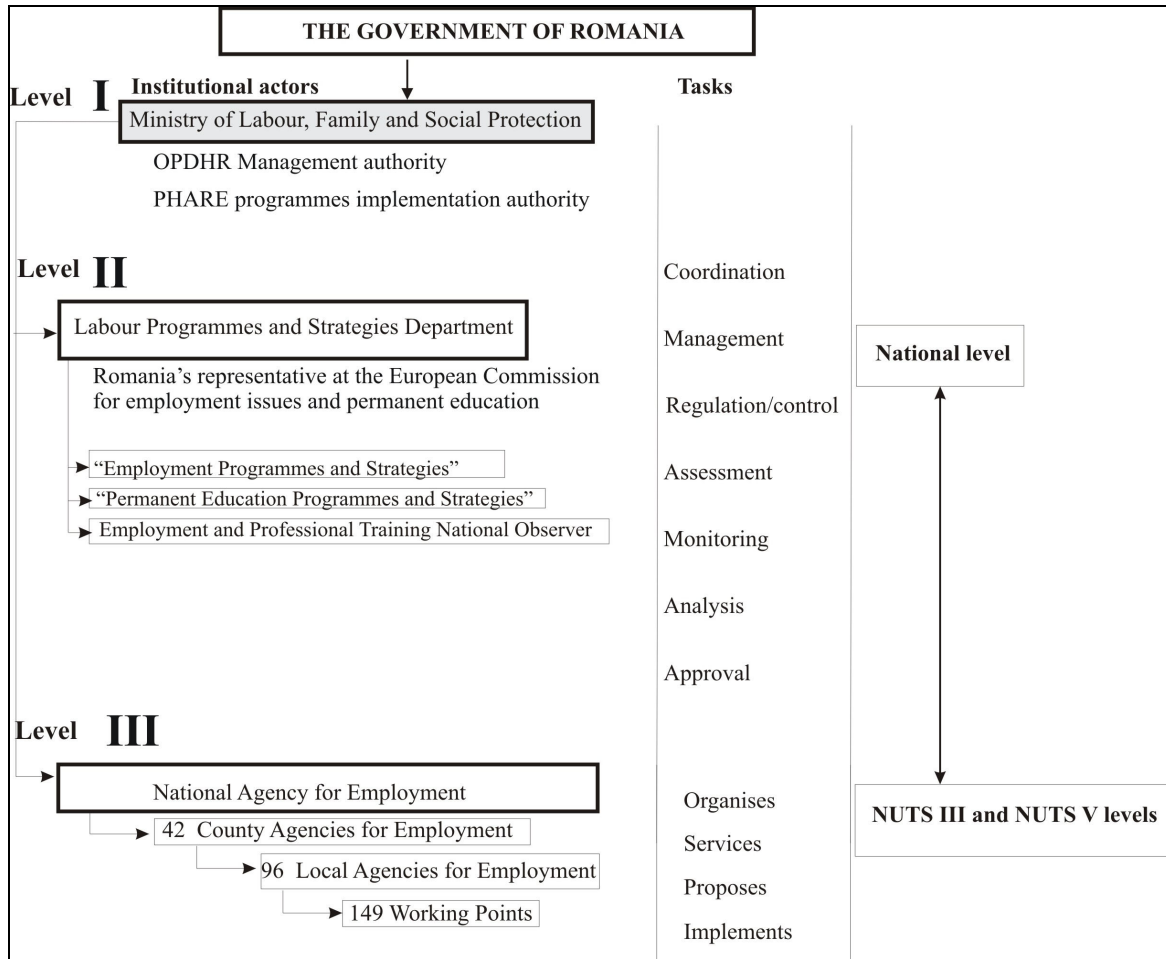


Fig. 1 – Institutional actors who implement multi-level governance in matters of job market (unemployment included).

The territorial dimension of the institutional actors active in implementing the national SP in matters of labour and unemployment are situated on the lower level. One of them is the National Agency for Employment (NAE), whose objectives are to institutionalise the social dialog for employment and professional training and to implement the corresponding strategies and social protection measures for the unemployed. These goals are attained through a territorial network of 41 Counties Agencies for Employment (CAE) and the Bucharest Municipality Agency, 96 Local Agencies for Employment (LAE) and 149 Working Points (WP). The National Agency for Employment is structured on three hierarchical levels: county agencies, local agencies and working points, all coordinated by NAE, and forming a system fundamentally involved in implementing the labour social policy of in matters of employment and unemployment. The Working Points are located in towns other than county seats (127 WP) and in the countryside (22 WP) and coordinate activities specific to more or less large rural area, having in view a multitude of economic, social, demographic and physical-geographical conditions. Many of the major activities discharged by county agencies cover labour employment pools, each of these being attached to a LAE (Fig. 2).

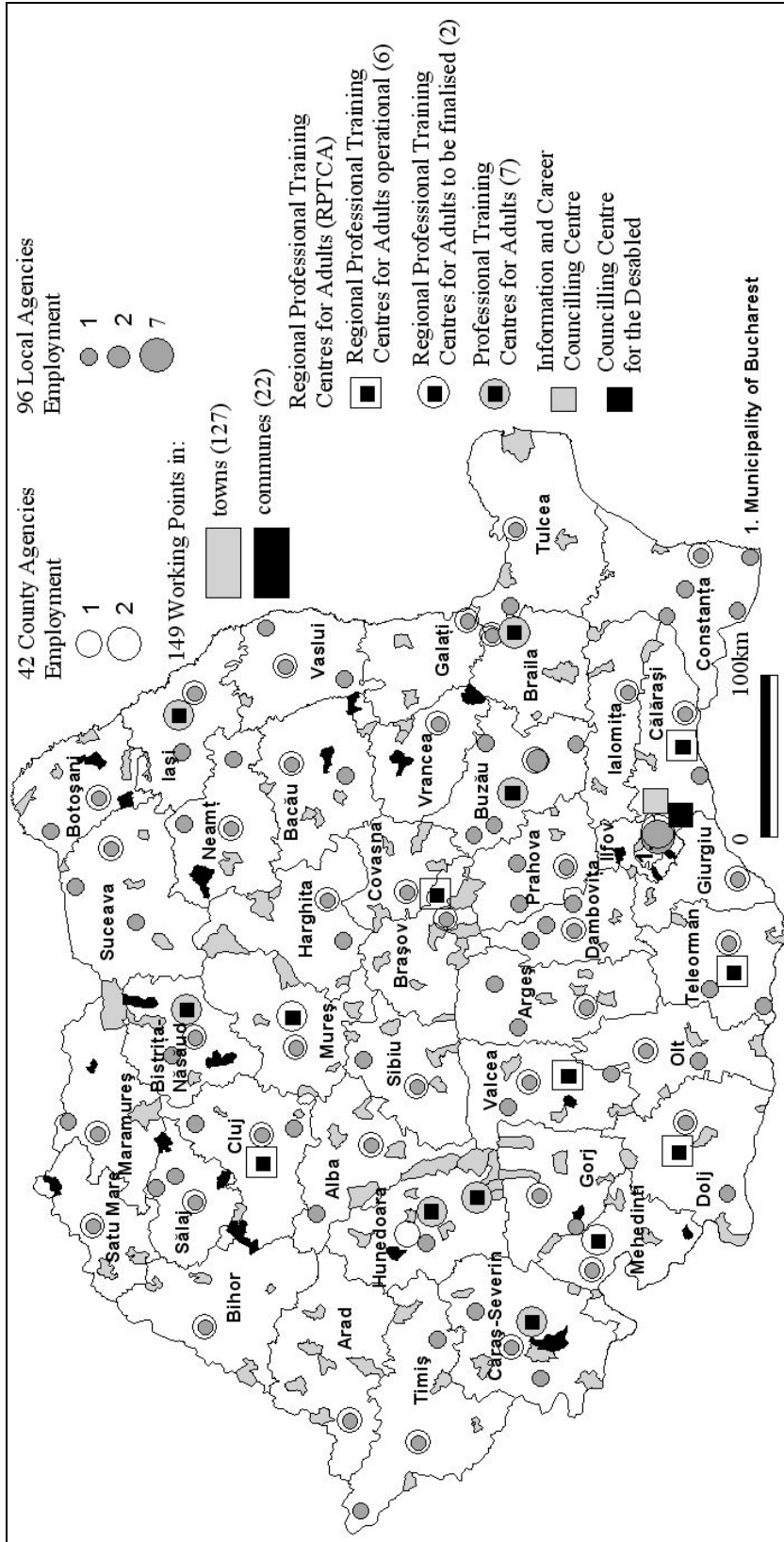


Fig. 2 – Multi-level National Agency for Employment system.

(Counties associated with Regional Professional Training Centres for Adults: RPTCA Braşov – Braşov, Covasna Harghita, Mureş, Covasna Harghita, Mureş, Prahova, RPTCA Cluj – Cluj, Bistriţa-Năşăud, Sălaj, Maramureş, Bihor, Satu Mare, RPTCA Vâlcea – Gorj, Vâlcea, Argeş, RPTCA Dolj – Mehedinţi, Dolj, Olt, RPTCA Teleorman – Teleorman, Giurgiu, Ilfov, Dâmboviţa, RPTCA Călăraşi – Călăraşi, Ialomiţa, Constanţa, Buzău, Brăila). Note: 15 counties (and Municipality of Bucharest) are not associated with any RPTCA. (Source: mapped information from <http://www.anofm.ro/contacteaza-ne>)

The employment pools represent the lower level of labour market governance: this level is the place where the measures and actions previewed for accomplishing the goals formulated on the higher levels are effectively implemented. The Local Employment Agencies, or the Working Points which coordinate the employment pools, hold a very important data-base regarding the quantitative and structural characteristics of the local labour market and of unemployment. Therefore, governance at the lower level means informing the higher institutional level about the situation in the local job-market and on the unemployment phenomenon; developing the first and the most adequate measures for resolving and minimising labour market dysfunctions. Job-market governance at the level of the employment pool means a face-to-face interaction between supply and demand (job exchanges, vocational training courses, etc.). This means that it is of vital importance for Local Employment Agencies or the Working Points to have access in the territory in order to ensure good governance in the local job market. Studying the territorial limits in the case of Buzău County Employment Agency (focused on the preliminary identification of homogeneity areas in the local labour market, on their correction under the influence of some geographical factors and on the final outline of territorial limits) enabled us to foresee the possibility for establishing a new Local Employment Agency, or a new Working Point in Berca Commune, which is the active actor on the local job-market and in this way contributes to decongesting the County Employment Agency (Mocanu, 2009) (Fig. 3 A, B).

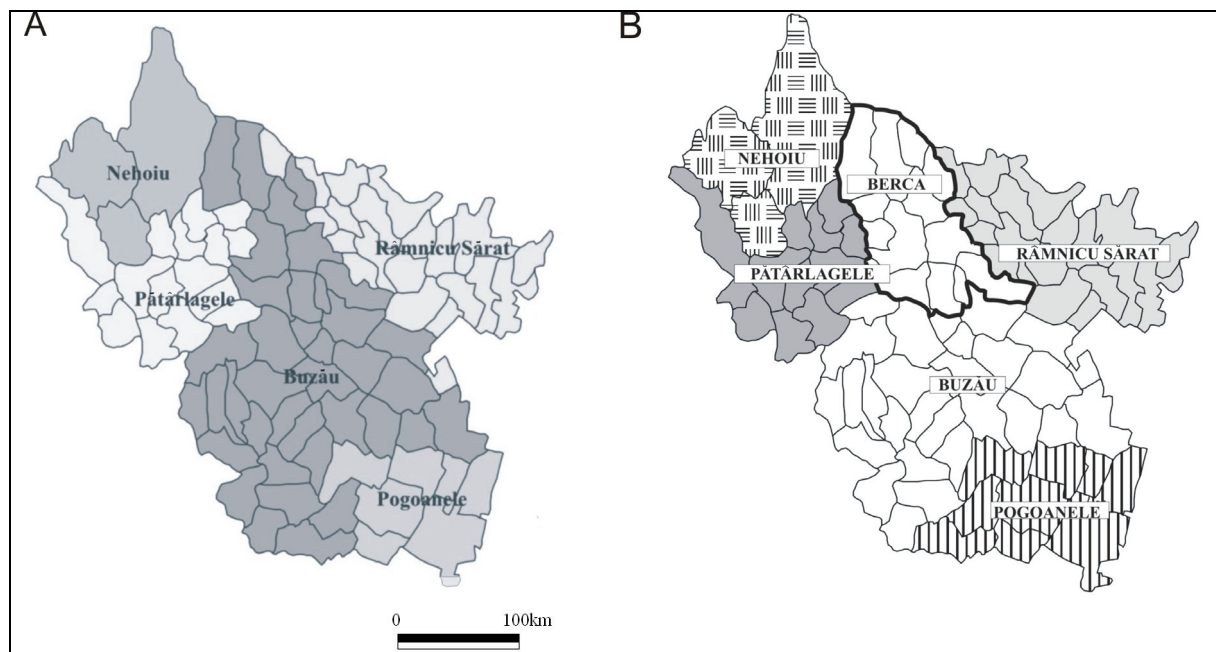


Fig. 3 – A) Buzău County Agency Employment (Working Points: Buzău, Râmnicu Sărat, Nehoiu, Pătârlagele, Pogoanele).

(Source: www.ajofp.buzau.ro/)

Fig. 3 – B) Buzău County Agency Employment (Working Points: Buzău, Râmnicu Sărat, Nehoiu, Pătârlagele, Pogoanele, Berca).

(Source: Mocanu, (2009))

The Employment and Professional Training National Observer (EPTNO) is one of the tools of governance, which improves the elaboration and implementation of the labour market governance. The EPTNO had permanent relationships with the public and private actors of the job market and realised some correct and coherent assessments of the real situation in the job market in Romania. The Observer fulfils this task by using the proposals received from the Territorial Labour Inspectorates, from CAE and the Territorial Directions for Labour and Social Protection.

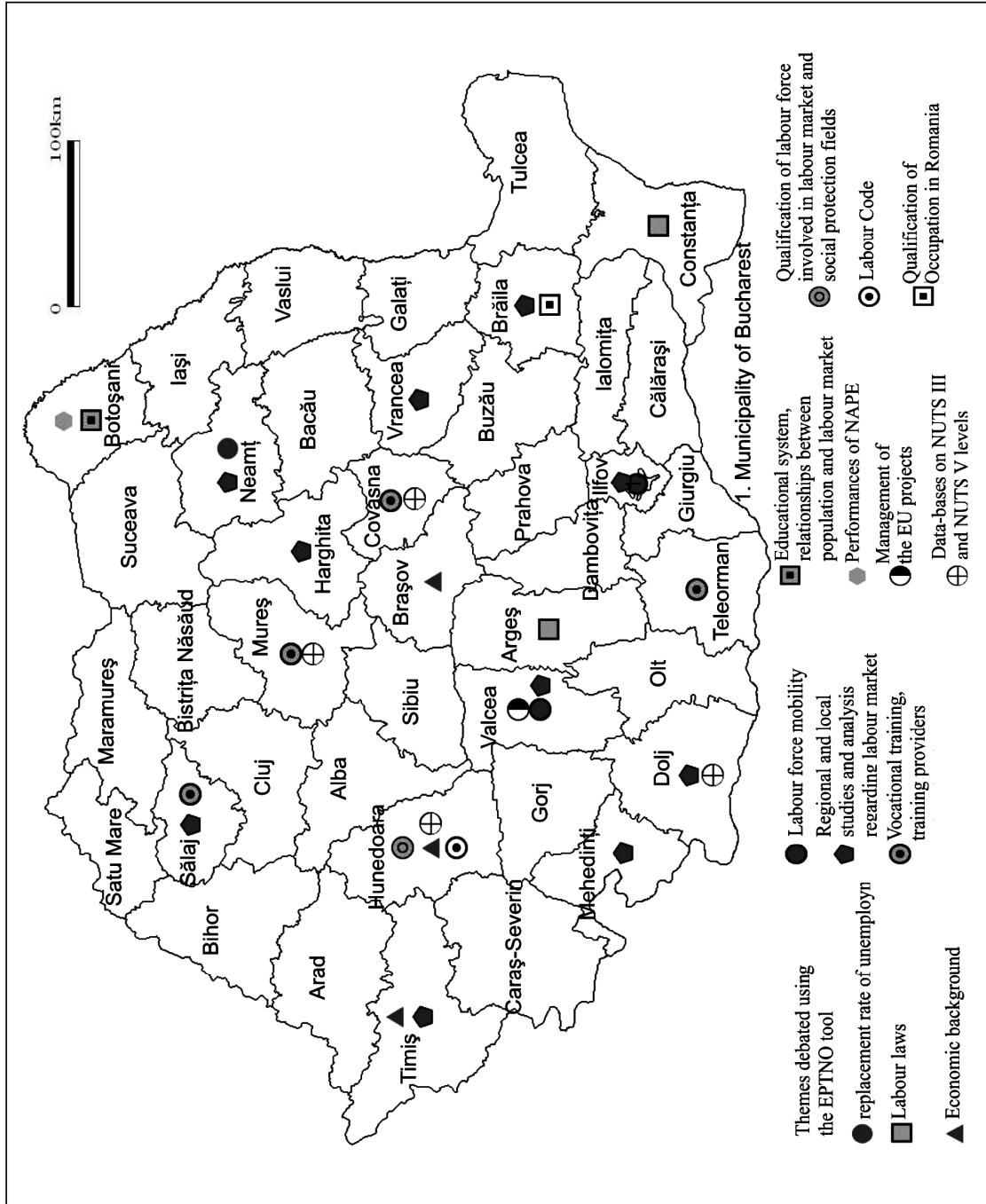


Fig. 4 – The Employment and Professional Training National Observer (EPTNO) – the proposals received from the territorial actors. (Source: mapped information from <http://www.anofm.ro/contacteaza-ne>)

The proposals are focused especially on the following: studies and analysis regarding the local and regional labour markets; vocational training and training providers; the creation of data-bases in matters of job market on NUTS II and V levels; the relationships between educational system, economic and demographic background and labour market (Fig. 4).

VI. CONCLUSIONS

The study of the multi-level governance in matters of labour market and unemployment in Romania underlines the following:

1. the national social policy in matters of labour market and unemployment was elaborated on the bases of the European official documents (instruments) in this filed of action;
2. in Romania, the governance of the labour market is focused on the assessment of the “Lisbon goals” and on the most urgent challenges established by the New Social Agenda, in February 2005;
3. the national institutional framework for the governance of the labour market assures the relationships with the European specialised institutions;
4. the institutional actors are organised on three levels and each of them have specific functions (the first level – the Ministry of Labour, Family and Social Protection (MLFSP), the second level – Labour Programmes and Strategies Department, subordinated to MLFSP and the third level – the National Employment Agency);
5. the territorial approach of the institutional actors and of the tools of governance is founded on the inferior level of the pyramidal structure, materialised by the territorial entities of National Employment Agency (42 County Employment Agency, 96 Local Employment Agency and 149 Working Points).

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Received September 12, 2009

HISTORICAL GEOGRAPHY OF SETTLEMENTS IN THE PĂTÂRLAGELE DEPRESSION: THE CARTOGRAPHIC EVIDENCE FROM THE LATE NINETEENTH AND TWENTIETH CENTURIES

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Key-words: cartography, oikonyms, historical geography, settlement, Pătârlagele, Subcarpathians.

Les établissements ruraux de la dépression de Pătârlagele: la géographie historique pendant la période depuis 1850 avec regard pour l'évidence cartographique. Généralement on a supposé que les établissements situés dans le paysage subcarpatique sont assez vieux, mais sans beaucoup de preuves. Pour clarifier la situation nous avons discuté l'évidence cartographique pour la période 1700–1850 à une échelle assez petite (Muică & Turnock 2009a). Maintenant notre exercice se continue avec quelques autres cartes pour la période depuis 1850, mais spécialement pour la période d'un demi-siècle avant la Première Guerre Mondiale, quand les grandes collections topographiques se sont développées (à une échelle assez grande) pour utilisation administrative et militaire. On prend en considération neuf cartes et quelques remarques sont présentées en conclusion pour les deux articles, y compris celui antérieur (*Revue roum. de géogr.*, t. 53, no. 2, 2009).

THE IORGULESCU AND PAPPAZOGLU MAPS

Resuming our examination of the map evidence for our research on the historical geography of the Pătârlagele Depression (Muică & Turnock 2009b) our first example for the late nineteenth century takes the work of a local historian whose geographical studies provide a wealth of detail for the area which is quite unique in terms of the placename evidence (Iorgulescu 1892). But 11 years earlier he produced a map (Iorgulescu 1881) showing a slightly less authoritative grasp of the local geography. He uses neat hachuring to focus on the main valleys and hills but with considerable inaccuracy (Fig. 1). A tributary stream is shown between Valea Rea and Chirleşti (which are effectively the same) but there is no valley further south between Valea Rea and Valea Lupului. The Muşcel, Pănătău, Sibiciu and Vii valleys are all invisible while the village of Valea Sibiciului is well out of position in the hills close to Gornet and Valea Muscelului (without a diacritical) uses the commune name rather than the correct village name of Muşcel. There is also some inaccuracy with regard to the proximity of settlements to the Buzău river. While both Mărunţişu and Pătârlagele appear to lie on hillslopes overlooking the river (valid for the original site of Mărunţişu on the edge of the forest but certainly not for Pătârlagele), Răpile (as Ripile) is very close to river without any hint of a commanding position on steeply-rising ground. However what impresses most about the map is the road along the right (western) side of the Buzău valley with no complement on the left (eastern) side beyond Ruşavăţ. Roads are shown negotiating the hills south of Cislău (to Crăciuneşti, Glod and Lapoş) and from Vipereşti to Tisău in the Nişcov valley, but no links are shown from the main valley route to serve the Mlăjet, Pănătău and Sibiciu areas that had to wait for the railway and the connecting bridge at Pătârlagele (provided just before the First World War); likewise there is no hint of communication along the Bâsca Chiojdului valley.

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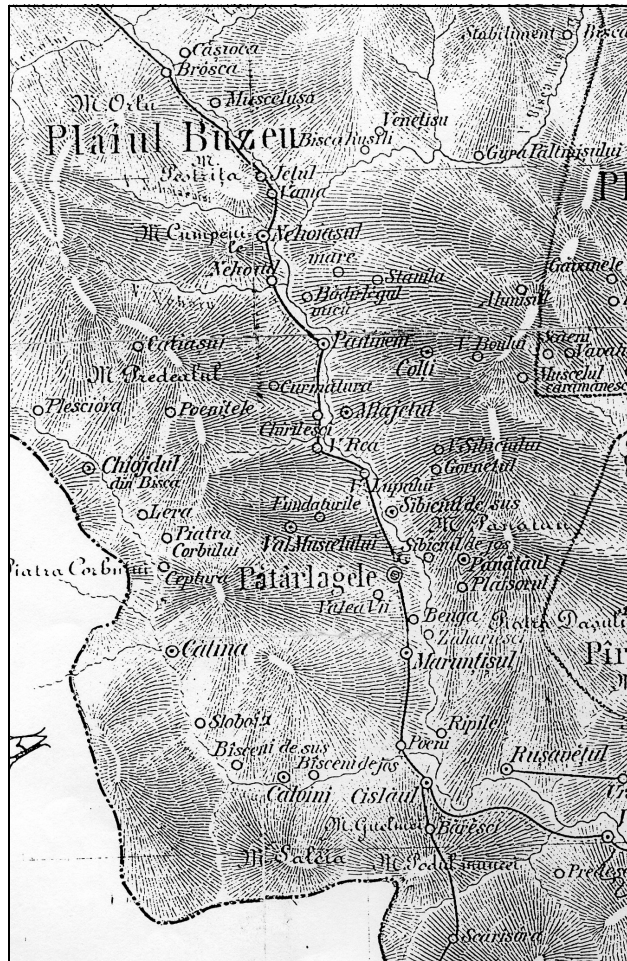


Fig. 1 – The Iorgulescu’s map of 1881 showing Plaiul Buzău.

Meanwhile the Pappazoglu map of 1864 (Fig. 2) is not dissimilar although hachuring does not ‘saturate’ the map as much as Iorgulescu’s and leaves continuous unshaded bands to highlight the main watersheds and valleys (with more rivers shown explicitly – rather than vaguely inferred). Settlements fit more accurately with the valley systems and the situations of both Benga and Valea Lupului could be taken as evidence of their old sites further back from the Buzău river than is the case today. However it is remarkable that Crâng (as Cringu) is located on the wrong side of the Buzău in the place of Sibiciu de Jos while the true place for Crâng is labelled Vale Muscelului which should of course be placed to the west of Fundăturile (accurately located in this instance). But the greatest surprise is the portrayal of the main road on the left (eastern side) of the Buzău with the road that Iorgulescu showed as terminating at Rușavăț continuing to Râpile, Tega, Zaharești (as Daharești), Sibiciu (Sibiu), Mlăjet and a place called ‘Pătîrlagele’ opposite Nehoiu. The road is then shown continuing along the eastern side of the valley to the Hungarian frontier. By contrast the axis connecting Cislău, Pătârlagele (Paterlagi), Valea Lupului, Pălțineni and Nehoiu axis is shown roadless – and likewise the extensions both northwards to the frontier and southwards to Viperești, Măgura, Căndești and Vernești (though strangely the road is shown crossing the river to Măgura and avoiding the need to cross the Bălăneasa tributary). There is no documentation to support the implied redrawing of the route map between 1865 and 1881 so the presumption is that the Pappazoglu map is at fault. And although we have reason to highlight the significance of the site of Râpile (Ripele) in the

context of early settlement of a commanding site, it is surely flattered by Pappazoglu who shows a major road junction where the Bâsca Chiojdului branch road (to Calvini, Cătina and Chiojd) leaves the main road continuing up the Buzău valley.



Fig. 2 – The Pappazoglu map of 1864.

COMMUNICATIONS AND ADMINISTRATION

The Austrian map of Wallachia in 1867 by K.k. militärische-geographische Institut (along with later editions in 1874 and 1881) is interesting in showing much more of the complex route pattern across the rugged Subcarpathian terrain (Fig. 3). Along the main valley improvement is evident as the single lines in 1867 are progressively doubled in the later editions. In 1867 there are apparently roads on the both sides of the valley – certainly to a point just north of Mlăjețu (Mlajetu) where the road on the left side of the Buzău swings northeastwards and terminates in the valley of Stănila. But in 1874 there are signs of improvements between Viperești and Cislău and between Benga and Crivineni while in 1884 an improved road runs continuously along the right (western side) to Păltineni with signs of an extension under way to Nehoiu. Local roads (all shown by single lines) are shown in Valea Lupului, Valea Mușcelului, Valea Sibiciului and Valea Viei but more significantly along the Bâsca Chiojdului (from a junction near Poienile de Jos (or Gura Bâscii) giving access to Vălenii de Munte via the tributary valley of the Zeletin. Roads are also shown running from Sibiciu de Jos to Plăișor and the Bălăneasa valley at Lunca Frumoasă (north of Măgura) via Punga and also from Sibiciu de Sus to

Gornet to reach the hill villages of Colți commune via Muscelu Cărămănești. But although it is shown prominently in all three editions of the map, there is no mention of this route in the written history of the area and its evident disappearance during the twentieth century points to the increasing relative isolation suffered by Gornet during this period. Rather different was the Punga road that was used until the communist period as a short cut to Măgura for peasants travelling by cart to their land in the plain (awarded under the 1923 land reform), especially for villages on the eastern side of the Buzău valley. However it is surprising that the Austrian maps do not show the access from Pătărlagele to Mușcel and Chiojd extended by the latter's connections with Ploiești via Vălenii de Munte, although the village name 'Calea Chiojdului' at the far (western) end of the former Valea Mușcelului commune testifies to the existence of such a route.

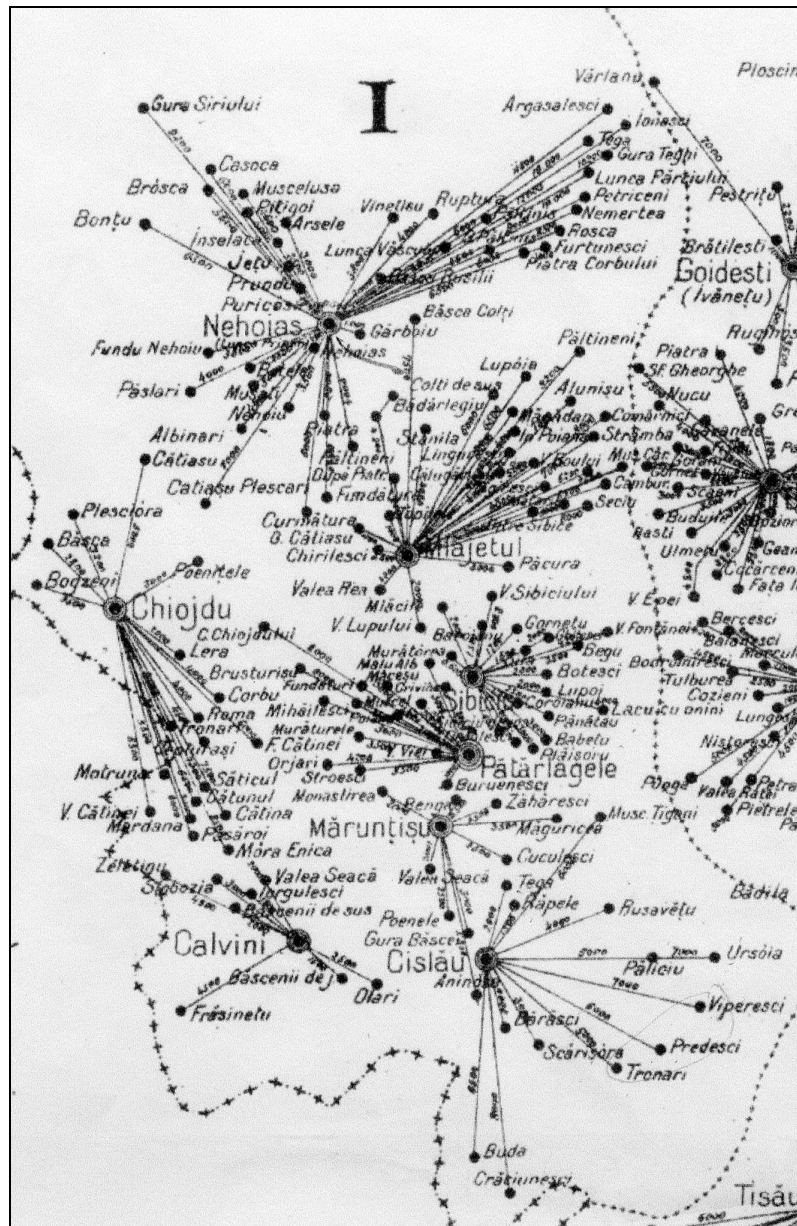


Fig. 3 – The Austrian 1:300,000 topographical map of 1867.



Fig. 4 – The Interior Ministry map of 1904 showing a proposed division of Plaiul Buzău.

Interior Ministry maps are useful for showing administrative arrangements for each ‘plai’ in terms of its constituent communes and villages. The 1904 map shows the actual pattern for Plaiul Buzău with 159 settlements: the communes of Colți and Nehoiașu (as Nehoiaș) with 17 other villages, Cătina with 13, Gura Teghii (as Gura Teghi) with 12, Pălănieni and Pănătău with 11 each, Mlăjețu (Mlăjețu) and Pătârlagele (Pătârlagele) with nine, Calvini and Mărunțișu with eight, Valea Mușcelului with six, Chiojd (Chiojdu), Cislău, Rușavăț (Rușavățu) and Sibiciu with five each and Viperești with two. However a subsequent version (Ministerul de Interne 1904) provides for an additional ‘plai’ based on Cislău to include the communes of Calvini, Cătina, Chiojd, Mărunțișu (now spelt Mărunțișu), Rușavăț and Viperești (as Viperesci) (Fig. 4). This would have been wholly at the expense of Plaiul Buzău, based on Pătârlagele): reduced to the eight outlying communes of Colți, Gura Teghii, Mlăjeț, Nehoiașu, Pălănieni, Pănătău, Sibiciu and Valea Mușcelului (Valea Mușcelul). Including all the commune centres this would have given the proposed Cislău ‘plai’ a total of 53 settlements and Pătârlagele 106. The plan was never implemented and no documentation has been found to cast any light on its rationale or any discussion relating to it. However the relevant map is much clearer than its predecessor and the distinction made between ‘sat’ (village) and ‘cătun’ (hamlet) is quite obvious with the lower status for Babețu, Baroianu, Brusturișu, Buruenești, Calea Chiojdului (as C.Chiojdului), Crivineni, Cuculești (as Cuculesci), Ghilești (as Ghilesci), Măceșu, Malul Alb (as Malu Alb), Mlăcile, Murăturile, Sila and Valea Rea – plus another 15 outside our study area (11 in Colți, four each in Cătina and Nehoiașu and three each in Gura Teghii and Pălănieni).

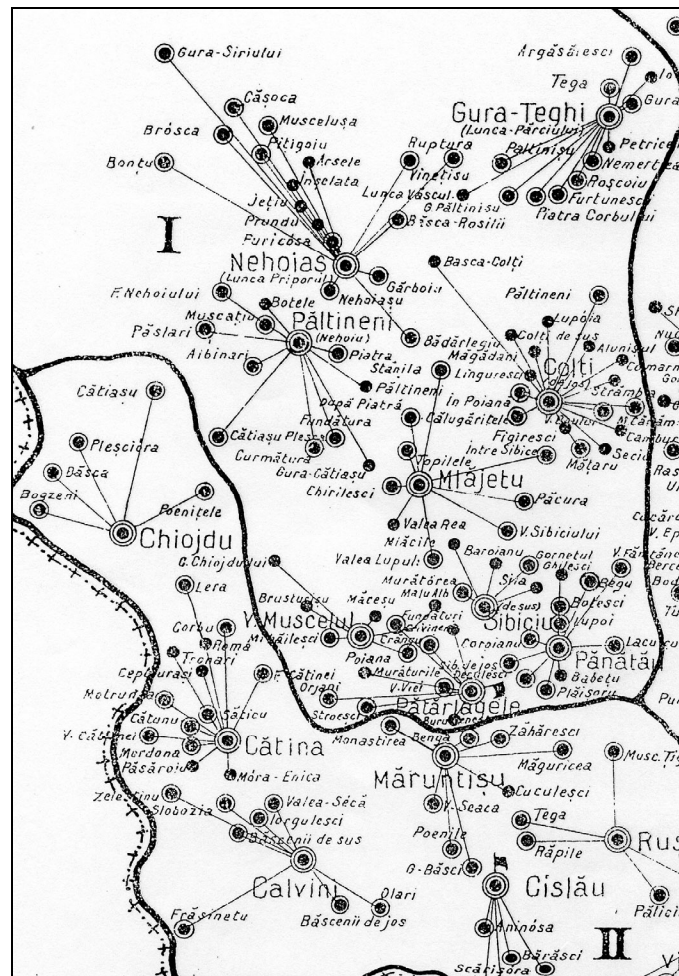


Fig. 5 – The Interior Ministry map of 1908 showing the proposed commune reorganisation for Plaiul Buzău.

A further map (Ministerul de Interne 1908) indicates a different type of administrative reform: retaining the ‘plai’ boundaries but reducing the communes. Within our study area the main change would have been the elimination of Pânătau and Valea Muşcelului communes and their absorption by Pătârlagele and Sibiciu respectively (while Valea Sibiciului village would have transferred from Mlăjet to Sibiciu commune) (Fig. 5). Elsewhere Nehoiiaşu would have absorbed Gura Teghii and part of Păltineni (the rest going to Mlăjet), while Chiojdu would have absorbed Cătina and Cislău would have taken in both Ruşavăţ and Vipereşti. There would have been a big difference between the northern communes (Nehoiiaşu and Mlăjet with a total of 70 settlements; averaging 35 each); Pătârlagele and Sibiciu with 36 (averaging 18) and Calvini, Chiojdu, Cislău and Măruntişu with 53 (averaging 13.25). Distances from the commune centres would have been quite considerable in the case of Nehoiiaşu with some 15kms to reach Gura Teghii and Siriu while Mlăjet would have been a similar distance from Aluniş and other villages like Comarnici, Muscelu Cărămăneşti, Păltineni and Strâmba in what is now Colţi commune. Meanwhile Pătârlagele and Sibiciu stand out as highly compact communes with the greatest distances being some six kilometers from Pătârlagele to Calea Chiojduului and Sibiciu to Lacu cu Anini and Valea Fântâni. In the south Cislău would have been eight kilometers from Crăciuneşti, Muscelu-Ţiganu and Vipereşti, while Chiojdu would have been a similar distance from Cătina. But once again the proposals were not acted upon and after the First World War there was, if anything, an increase in communes in the area with the appearance of Tega. The proposals

were even more radical than those implemented under communism in 1968 for although Mlăjet, Păltineni, Rușavăț, Sibiciu, Tega and Valea Mușcelului disappeared at this time, Cătina, Colți, Gura Teghii, Pănătău and Viperești were all retained along with Siriu in the far north.

ROMANIAN TOPOGRAPHICAL MAPS

By now the topographical maps have greatly improved in detailed and accuracy and the first Romanian series are being issued. The provisional map series (Institutul Geografic al Armatei 1900) includes intricate drainage system and contouring systems as well as portrayal of the main wooded zones and the settlement morphology with linear structures most evident along the main route on the western side of the Buzău valley (Fig. 6). Very striking is the appearance of the planned settlement of Satu Nou complementing the older village of Benga on the rising ground; although Mărunțișu has evidently achieved the same adjustment to the main line of circulation by retaining a single unit of settlement through an eastward extension downhill from the church built on the edge of the forest. However we also present an extract from the subsequent definitive map (Institutul Geografic al Armatei 1906) (Fig. 7).

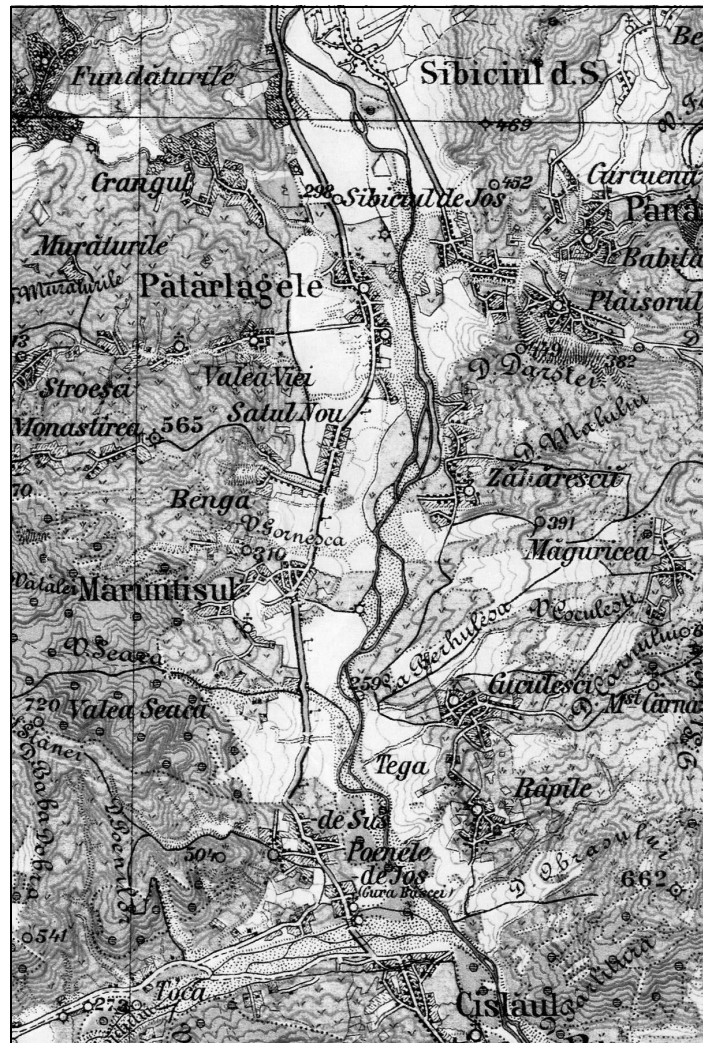


Fig. 6 – The Romanian 1:50,000 provisional map of 1900.

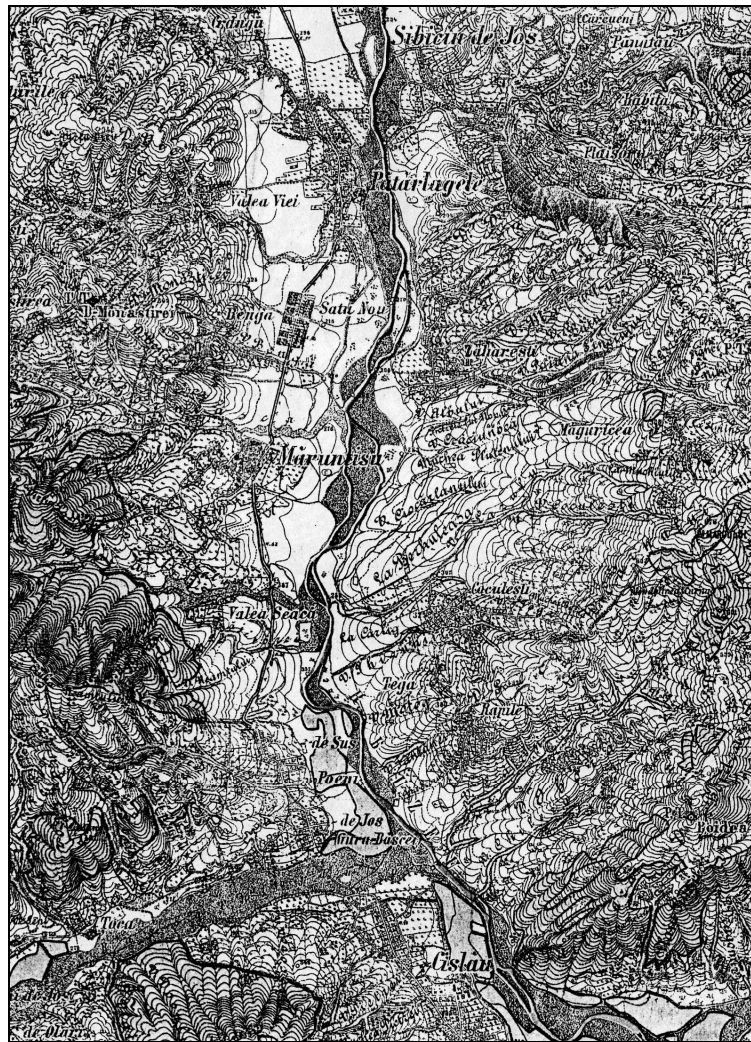


Fig. 7 – The Romanian 1:100,000 topographical map of 1906.

All the official villages are shown along with topographical names and the main land uses. However our black and white representation does scant justice to the extremely attractive map with dark green colouring for the main wooded areas (most extensive to the west of Măruntisul and Valea Seacă) and a lighter green for the grassland areas. The evident late nineteenth century focus on the more marginal lands is brought out by the prominence of the Pănătău valley with an expanding core of settlement extending almost continuously from Sibiciu de Jos to Pănătău, Plăişor and Corcoianu. It is not clear to us why settlement at Sibiciu de Jos and Pănătău is emphasised by black shading while Sibiciu de Sus is in yellow only (apart from the house symbols).

These two maps may be complemented by other contemporary productions, most notably an official communications (Ministerul Lucrărilor Publice 1911), showing the modern system of transport involving the newly-constructed railway as well as the road along the western side of Buzău valley, with a key bridge at Pătărlagele now in place (Fig. 8). Valea Muşcelului's 'Calea Chiojdului' is also shown (along with the more northerly route to Chiojd from Mlăjet via Curmătura and Poienițele) as is the direct route along the Sibiciu valley leading to Păltineni (Colți) and Gura Teghii that had presumably been important historically for Sibiciu's transhumance activities generating the links with Gura Teghii documented in the late Medieval period. There were also other options in this area

through links through Valea Sibiciului with the Bâsca Rosilii valley at Gura Păltinișului via Lupoia and with Bozioru in the Bălâneasa valley via Muscelu Cărămănești; the route to the latter via Gornet (mentioned above) does not appear although the army map shows paths over Vf. Fulgoiu. Meanwhile the Punga/Lunca Frumoasă route between the Buzău and Bălâneasa valleys is not clearly shown – and neither is the connection between Valea Fântâni and Bălânești (though it appears on the army map) – but there is a connection via Lacu cu Anini and Nistorești and also a link from Zaharești to Rușavățu (for Pârscov and Măgura) via Măguricea and Muscelu-Țiganu.

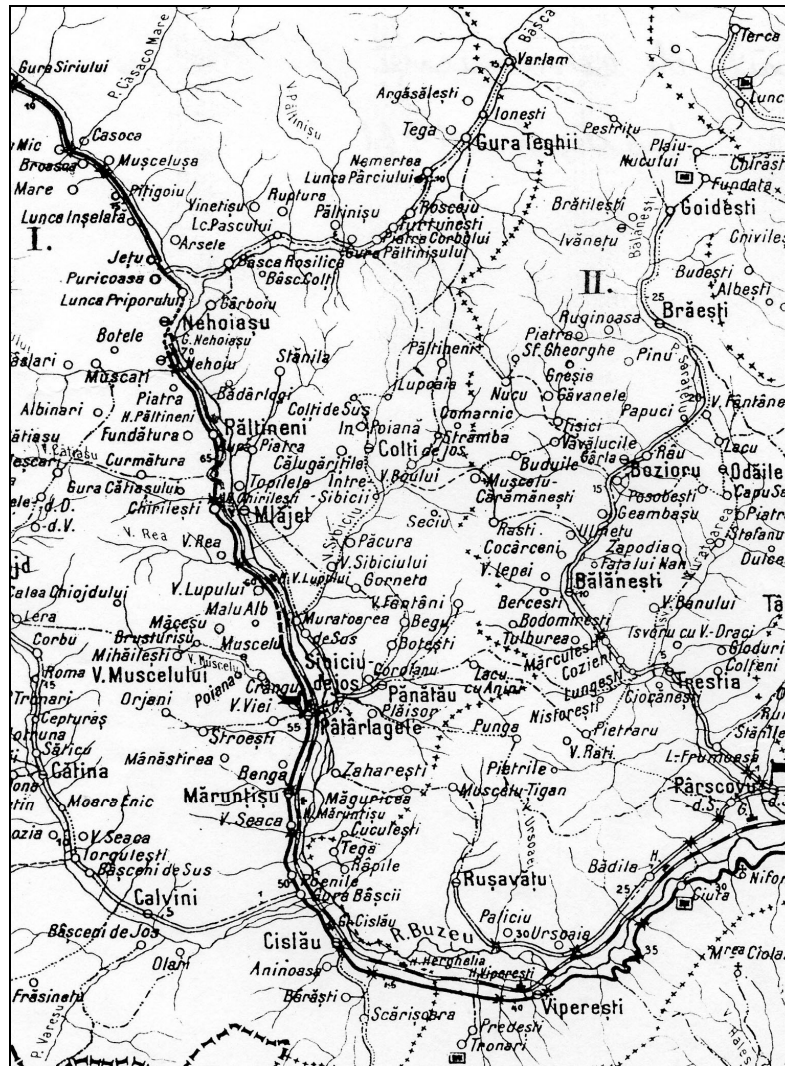


Fig. 8 – The Public Works Ministry communications map for 1911.

The topographical series of the communist period (Direcția Topografică Militară 1961) shows more advanced survey methods for the contouring; with more detailed and portrayal of settlement, landuse and communications (including a high density of paths which earlier maps show in a highly-selective fashion) (Fig. 9) made possible by a scale of 1:25,000 compared with 1:50,000 for 1906 and 1900 and 1:300,000 in 1867. Land use contrasts can be seen through the larger, more widely-spaced open circles (for individual trees scattered across pasture and areas with a bushy vegetation) and the smaller one (for fruit trees); while arrowheads indicate exploited woodland, dashed lines on small plots

show cropping and unshaded areas indicate grassland ('pajiște'): both grazings and hay meadows. The decline of settlement at Orjani, Mânăstirea is evident (but also Murăturile, Orjani and Stroești just beyond the limits of the specimen area) with all but Stroești then lacking roads good enough for regular vehicular access) in contrast with the main valley axis through Crivineni, Pătârlagele (now Pătârlagele), Lunca (the renamed Benga/Satu Nou settlement) and Mărunțișu. At the same time the extremely loose concentrations of settlements (reflecting the smallholding basis of most dwellings) seem to anticipate the 'sistemizare' projects of the 1970s–1980s which greatly under-estimated both traditional values and economic necessity underpinning subsistence farming outside the main rural growth points of which Pătârlagele itself became an outstanding example. The map invites comparison with Figs 6–7 which are rather denser and less easy to read although not without its aesthetic qualities. However the 1961 map generates some conflict with local conventions since the name Valea Seacă is misplaced (it should relate to the houses on the main road to the southeast) while the name for Valea Gorneasca shown south of Mânăstirea should be shifted down-valley because the various headwaters are known locally under separate names.

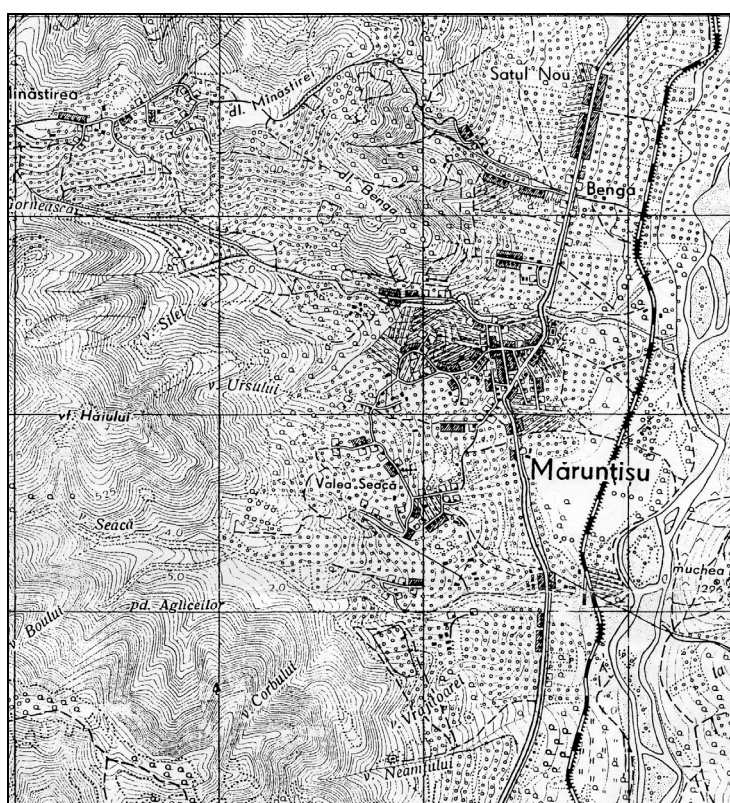


Fig. 9 – The Romanian Army 1:25,000 topographical map for 1961.

CONCLUDING DISCUSSION

Our study area was not selected on the basis of the cartographic evidence and we presume that the material available is fairly typical for rural areas of Romania, with coverage by large scale maps at reasonably regular intervals from the mid-eighteenth century; while since c.1900 there has been a steady succession of quite detailed maps including (though not until the topographical series can the maps be regarded as fully accurate or inclusive and other sources may be needed to obtain a clear picture.

However in the absence of other documents we were able to take the Specht map of 1790–1 – along with Bauer (1778) – and the first Romanian topographical series (1906, but based on 1895–8 data) to assess the settlement changes of the nineteenth century, with the Harta Rusă (Anon. 1853) as a basis for splitting the century into two halves. Other evidence is very helpful where available e.g. the dates for the consecration of new churches. Collectively the maps help to determine the age of villages which are consistently shown. Thus while a ‘clăcași’ community may indeed have taken root at Valea Seacă during 1830–60 (after Iorgulescu 1892, p. 317), the Specht Map of 1790–1791 is proof that the village is older. And although Râpile is thought to have existed from the sixteenth century, the first documentary evidence is a symbol (though not a name) on the Specht map. Of course, the absence of a settlement from a map is no reliable evidence that it did not exist unless the map is large in scale and provides a comprehensive topographical picture.

Some major inaccuracies have been noted e.g. names for pairs of settlements are sometimes transposed and mistakes may be uncritically copied by one map from another: hence the village of Racoș – about which nothing is known – is shown by Ruhedorf (1788) and then seems to have been ‘copied’ by Dirvaldt (1810). No other documentary mentions are available and no structural evidence has been found in the relevant area and we therefore conclude that this settlement never existed. Map content may reveal different names for the same village and some (still) inexplicable cases when names were transferred from one village to another. This can create great confusion even though the period in question seems to be restricted to a part of the nineteenth century when Zaharești was known as ‘Tega’, while the present Tega was known as ‘Prvățești’. And again, Măruntșu carried the name ‘Pătârlagele de Jos’ during 1833–64 when the present Pătârlagele was differentiated as ‘Pătârlagele de Sus’; yet at other times the present Pătârlagele has itself been divided into upper (‘de Sus’) and lower (‘de Jos’) sections. Specific names have often arisen in connection with sectors or quarters of certain villages. The name ‘Tega’ may have been used for merely a part of Zaharești (Iorgulescu 1892, p.488), although the quarters of this village are normally recognised by residents as: Bejani, Bogdănești, Linia (or La Linia) and Pe Muchie. Meanwhile Poienile breaks down into Poienile de Jos (or Gura Bâscii), Poienile de Sus and Țoca; Râpile comprises Luntari, Pâslari and Pe Față; and Măguricea’s sectors are Gorlani, Panaițeși and Pe Pisc. These sections of villages may be seen as distinct because of a physical feature e.g. the northern part of Gornet is known as Peste Izvor which means that it lies ‘over the little brook’.

Some other names relate to the former social status and in particular the distinction between ‘clăcași’ and ‘moșneni’ households: it would appear that at Zaharești a large area in the centre arose as a ‘moșneni’ settlement associated with arrivals from Transylvania; while ‘clăcași’ settlements were added to the north on the land of Vărbila monastery and to the south on the land of Crețuleasca family according to authoritative local opinion although another idea suggests that only the southern part comprised a ‘clăcași’ community. Finally, confusion may also arise in the case of placenames that occur more than once in Buzău county and even in the area quite close to Pătârlagele e.g. with ‘Mușcel’ which occurs not only in Valea Mușcelului but also in the case of Muscelu Cărămănești in Colți commune and Muscelu-Țiganu in the old Rușavăț commune (now Viperești). Although the local ‘Mușcel’ is differentiated by the diacritical marking this is not necessarily applied consistently. Some quite invalid interpretations arise from confusion over placenames and their location. For example, some regard Benga (now officially Lunca) as a very old settlement (pre-1545) because of the reference by Manolescu (1965, pp. 259–303) to its medieval trade contacts with Brașov. But the village in question was in Buzău district (‘raion’) whereas any settlement in the Pătârlagele area would have been part of the Cislău district at the time (Benga in this district is credited with a trading relationship with Brașov in 1550). However our experience indicates that although there are many difficulties careful study of the documentary and oral evidence (and especially the map evidence) can contribute to the development of more detailed and accurate historical geographies of rural Romania.

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Received July 12, 2009

THE POLITICS AND ITS ROLE IN THE CONFIGURATION OF ARCHITECTURAL LAYERS. A CASE-STUDY: BUCHAREST

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Key-words: politics, urbanization, architectural layer, build-up area, Bucharest.

La politique et son rôle dans la création de couches architecturales. Etude de cas: Bucarest. Le développement de l'espace bâti et de l'infrastructure de la ville est la conséquence de l'évolution de la puissance financière de la ville. En Roumanie, l'industrialisation et l'importation de modèles architecturaux influencés par des décisions politiques sont les plus importantes caractéristiques des villes contemporaines. C'est pourquoi, la présence de nombreux couches architecturales (nord-américaine d'entre les deux guerres mondiales, architecture de la période staliniste soviétique, de la Corée du Nord et de la nouvelle architecture américaine) est considérée étroitement liée avec la politique de ce pays pendant le 20-ème siècle.

CONCEPTUAL FRAME

The urban layout is the result of a complex of factors that act simultaneously and whose intensity varies depending on the political and ideological context. These impact factors can be distributed into two categories:

– natural factors (seismicity, relief, climate etc.), that act in a constant manner, granting the urban layout certain particularities in terms of the adaptation of constructions to the natural environment. These particularities refer to the height regime, main building material, shape of roof tops, colour etc.;

– anthropic factors, through by the political and ideological decisions, grants the urban layout a *volunteering aspect*. The intensity of the action they undertake varies depending on the political and ideological circumstances from a given period of time, thus giving the urban layout a *historical aspect*. Thus, the borrowing of political and ideological models results in assuming the cultural patterns as well, and they reflect in literature, music, theatre, but also in the manner of dressing, gastronomy and, last but not least, in architecture.

Assuming a particular architectural style is tributary to a particular political and ideological pattern, which has characterized a certain historical period. At the same time, it is also the result of the dynamics of the ethnic make-up of the urban population which is, in turn, subordinated to political and ideological factors as well. A society based on a centralized political model, subscribed from an ideological point of view will favour certain immigration culturally imported vectors to the detriment of others. This is the case of Eastern-European societies after World War II which subscribe to the Soviet cultural model, or it is the case of fundamentalist Islamic states which reject the cultural Western model. At the other end of the spectrum there are the democratic states which favour immigration and the surging of global affluxes from all directions which reflect both on an economic as well as on a cultural and on an ethnical level by modifying the ethnic structure as a result of immigration and of the surging of ethnic neo-minorities. This results in a segregation of the urban

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space by locating according to preference in certain quarters of portions of the urban matrix, thus granting them distinct architectural characteristics¹.

As a consequence, we define the term “architectural layer” as being an ensemble of buildings with a residential or industrial purpose built in a particular historic period, in a particular political and ideological context. These are testimonies of the urban history, of the development stages the city has been through and of the different influences which have acted in time on them.

The volunteering factor has manifested itself through the building of architectural edifices and influencing their physiognomy, as well as the other way around through the ordered wrecking of a political and ideological nature which have marked, alongside natural disasters, the overall urban history. Known throughout the world are the wrecking of the Buddhist statues from the Bamiyan river valley (Afghanistan) following the orders given by the Taliban fundamentalist-Islamic authorities or of numerous places of worship in Bucharest, especially in the 1980s as part of the “urban systematization” politics promoted by Nicolae Ceaușescu (Tab. 1 and Fig. 1)

Table 1

Places of worship in Bucharest demolished and relocated between 1950–1989
as a consequence of political and ideological decisions

Name	Documentary attestation	Year of demolition / relocation	Placement
Places of worship in Bucharest demolished			
“Stejarul” Church	1717	1955	Behind the Royal Palace (National Art Museum)
“Brezoianu” Church	1710	1958	Brezoianu Street
“St. Nicolae” Church	1564	1968	“Crângași” Cemetery
“Enei” Church	1724	1977	4, Biserica Enei Street (Universității Square area)
“Buna Vestire” Chapel	1946	1981	Rahova District
“Izvorul Tămăduirii” Chapel	1943	1982	Crângași District
“Gherghiceanu” Church	1939	1984	5, Apahida Street
“Albă-Postăvari” Church	1568	1984	The western part of the city, near “Antim” Church
“Cotroceni” Monastery	1589 1679–1681	1984	Inside Cotroceni Palace courtyard Rebuilt after 1990 and dedicated in 2009
“Spirea Veche” Church	1765	1984	The western part of the city, near “Albă-Postăvari” Church
“Izvorul Tămăduirii” Church	1785	1984	72, Puțul cu apă rece Street
“St. Nicolae Sârbi” Church	17 th century	1985	Pitagora Street crossing with Văcărești Road
“St. Mina” Chapel	1892	1985	Institute of Forensic Medicine “Dr. Mina Minovici”
“St. Nicolae-Jitnița” Church	18 th century	1986	Văcărești Road
“St. Pantelimon” Monastery	1750	1986	“St. Pantelimon” Hospital
“Doamna Oltea” Church	1947	1986	Barbu Văcărescu and Lacul Tei Bvd. Crossroad
“Olteni” Church	1696	1987	Olteni Street
“Văcărești Monastery” Ensemble	1716–1722	1984–1985	On Dealul Văcărești in the southern part of the capital; representative for the 18 th century Romanian architecture
“Bradul Staicu” Church	1740	1987	30, Bradului Street
“St. Treime-Dudești” Church	1804	1987	Dudești District
“St. Vineri-Herasca” Church	1645	1987	Unirii Square area

¹ Thus, in the capital of Romania there are mosques, a Lutheran Church (who was founded in 1574), a Church for the Armenian community (its first documentation dates from 1685), an Orthodox-Bulgarian Church (1841), a Greek Church (1900), an Italian Church (1913), an Anglican Church (1920), as well as a Temple for the Jewish community documented ever since 1866.

Table 1 (continued)

“St. Spiridon Vechi” Church	17 th century	1987	Națiunilor Unite Square. Rebuilt after 1990
“Olari” Church	1758	1986	180, Moșilor Avenue
“St. Treime-Dudești” Church	1804	1987	Dudești District
7 th day Adventist Church		1986	
Synagogue		1986	Unirii area
Places of worship in Bucharest relocated			
“Schitul Maicilor” Ensemble	1726–31	1982	Spirii Hill. The Church has been moved and restored
“Mihai Vodă” Ensemble	1589	1984	Uranus District. The church has been relocated behind the blocks of flats on Splaiul Independenței Street
“St. Ion-Moși” Church	1808	1982–1983	305, Moșilor Avenue
“St. Ilie-Rahova” Church	1747	1984	21, Rahova Avenue
“St. Gheorghe Nou-Capra” Church	20 th century	1986	159, Pantelimon Avenue
“Cuibul cu Barză” Church	1860	1987	97, Știrbei Vodă Avenue
“St. Ion-Piatră” Church	1756	1986–1987	I. C. Brătianu Bvd.

Updated source: Simionescu, C. (1995), Bucharest. Churches, Monasteries, and Holy Places, pp. 138–151.

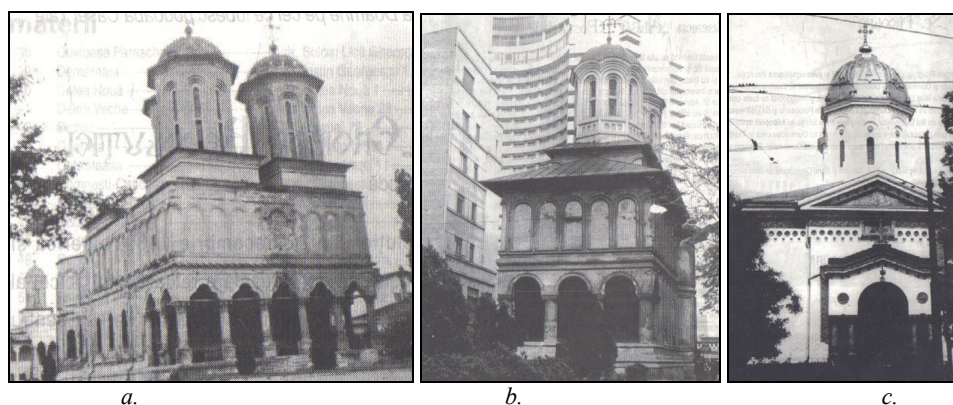


Fig. 1 – Historic buildings (monasteries and churches) demolished by political decision:
 a. Văcărești Monastery, b. Enei Church, c. Sfânta Vineri–Herasca Church.

Source: Simionescu, C. (1995), Bucharest. Churches, Monasteries, and Places of Cult, p. 142, 143, 151

In the following we will try to emphasize the impact political and ideological decisions have had on the urban layout and on the capital city of Romania in relation to certain historic periods seen as characteristic when related to the aim of the present study.

THE APPEARANCE AND DEVELOPMENT OF BUCHAREST IN THE MIDDLE AGES

Romania’s Capital city – Bucharest reflects the country’s main characteristics: situated in the south – south-eastern part of the country and having an ethnically compact Romanian population, it has led to a particular managing of the territory, mainly visible through the configuration of communication networks and through the layout of the other metropolises of regional importance.

Although the first written references as a small settlement date back to Prince Vlad Țepeș’s reign (1459), and the first recordings as a city from 1533, Bucharest has had its ups and downs in terms of evolution up until the first half of the 19th century, having been subject to numerous natural and man-inflicted disasters: sacked and burnt by the Turks (1554 and 1595), by the Tartars (1596, 1659 and 1738),

plague epidemics (1706, 1718, 1738, 1792, 1812–1813), cholera (1831), famine (1660, 1718), fires (1658, 1719, 1804, 1847), tremors (1793, 1802, 1838, 1892, 1940 and 1977), floods (1839) or wars (1769–1774, 1787–1791, 1806–1812, 1916 and 1944). So, despite the fact of having been proclaimed as the perpetual Capital city of Walachia in 1659, the city's population had dropped significantly from circa 100,000 inhabitants in 1640 (Bakšić, quoted by Ghinea, 1996) to merely half in the late 1600s (Anton Maria del Chiaro, quoted by Ghinea, 1996), and in 1831 the city's population was estimated at 58.794 inhabitants (Giurescu, 1979). Bringing down the Turkish-Phanariot regime in 1821, and crowning the first prince of local lineage in Walachia (Grigore Ghica the 4th, 1822–1828) has marked the invigoration of Bucharest's political and administrative role and had a major impact on the city's urban development. It is in this period that streets are being paved with stone, numerous palaces are being built (Ghica, Suțu, Știrbei), *Eforia Spitalelor* (1831) is being set up alongside *Filantropia Hospital* (1839), a modern water supply system is being built for the town through metallic pipes (1844), so in less than three decades the city's population is doubled, reaching 121,734 inhabitants in 1859.

The unification of the Romanian Principalities as well as the naming of Bucharest as their common Capital in 1862 has played a determining role in the detaching of Bucharest at the top of the urban hierarchy, since its demographic evolution had registered a constant soaring rhythm: 177,646 inhabitants at the time of the War of Independence (1878), 184,488 inhabitants in 1889, 282,078 in 1899 (estimation made by Ghinea, 1996), reaching 341,321 inhabitants according to the census conducted on the 30th of December 1912. At the same time, the hypertrophy index related to the second largest city (Iași) is registering a phenomenal rise from 1.21 (1831) to 4.27 (1912). The increase in population associated with the urban development has led to the compiling, at that time, of the first topographic plan (Fig. 2).

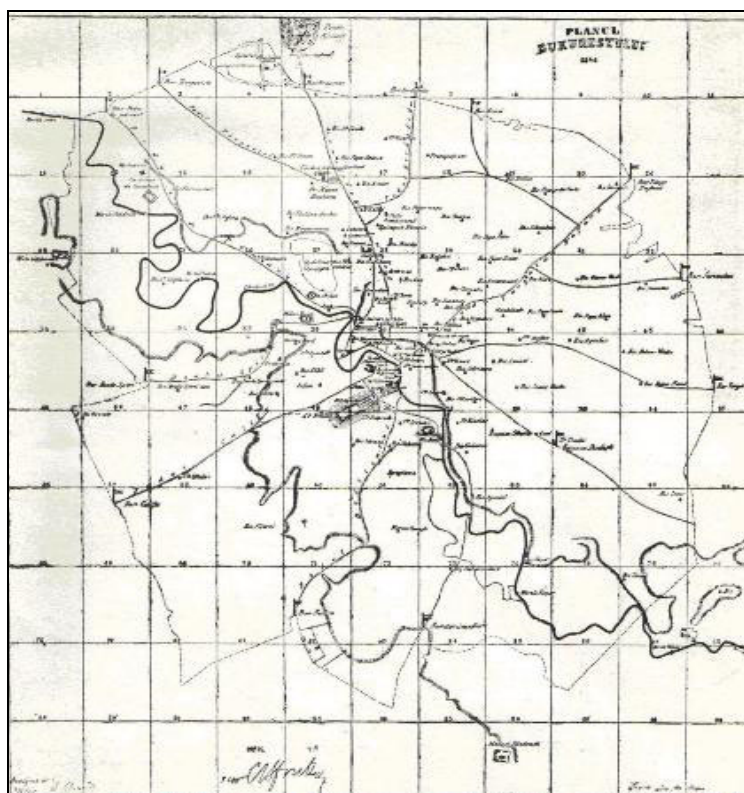


Fig. 2 – The First Topographic Plan of Bucharest (1846)

Source: Directory plan for the systematization of Bucharest Municipality (1939), p. 135

If until the 7th and 8th decades of the 19th century the city still bore a rural appearance, and cattle still roamed the city streets in what seemed a casual way (Fig. 3) the city's new status as a Capital and the independence gained in 1877 have reflected themselves in every way, bringing about not only significant demographic increase, but also a sustainable development in terms of urban planning, fit for its new role as the Capital City of an independent European state.

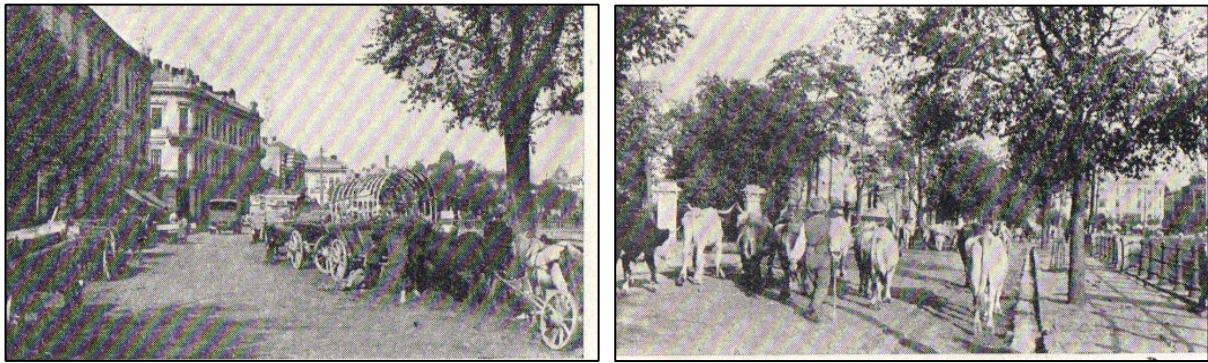


Fig. 3 – Traffic in the central area of Bucharest along Dâmbovița River in 1877.
 Source: Directory plan for the systematization of Bucharest Municipality (1939), p. 159

New streets were being built and paved, emphasis was being laid on brick building and imposing edifices were being erected (The University of Bucharest – 1869, Filaret Railway Station – 1869, Northern Station – 1872, Foișorul de Foc – 1890, Romanian Athenaeum – 1888, The Palace of Justice and the Carol I Foundation (Central University Library) – 1893, The Palace of Agricultural Office – 1898, The Romanian Savings Bank Palace, The Mail Palace (today the “National History Museum” of Romania) and Cantacuzino Palace (today “George Enescu” Museum) – 1900, City Hall Palace – 1910 etc. new squares and public gardens are being opened, public gas (1871), as well as electrical lighting (1882), public transportation was introduced (the horse tram in 1894), and in 1880–1882 complex works of straightening, modernizing and deepening of the Dâmbovița River have been carried out by building a vast network of bridges and canals, thus preventing floods and epidemics effects from taking their toll.

THE INFLUENCE OF WESTERN CULTURAL PATTERN

Between the 1912 and the 1930 census there is a doubling of the population, reaching the number of 639,040 inhabitants, and the degree of hypertrophy opposed to the second largest city increases from 4.27 to 6.21 at the same time the building site are grows from 6,706 acres in 1894 to 9,244 acres in 1935, especially due to migrations into the Capital during the Great War. It is at this same time that the first laws are passed in order to limit chaotic development within the city limits (the Law of Bucharest Delimitation – 1895 and the Law for the Organization of the Communal Administration of the City of Bucharest – 1926) (tab. 2).

Hereby, the build-up area was characterized by a chaotic layout, the building spaces stretching in a tentacle-like pattern in the border perimeters of the core area and alternating with large spaces meant for agricultural use (Fig. 4).

Table 2

The increase in the build-up area of Bucharest Municipality (1894–1935).

Period	Initial Area (ha)	Final Area (ha)	Increase (ha)	Growth Rate (ha/year)	Causes
1894–1911 (17 years)	2,714	2,802	88	5.2	Reduced increase due to the implementing of the maintaining city's boundaries (1865)
1911–1926 (16 years)	2,802	3,741	933	58.3	Accentuated increase as a result of the Great War which has led to migrating flows into the Capital.
1927–1935 (8 years)	3,741	3,860	119	17	Reduced increase due to the implementing of the Law for Organization of the Communal Administration of the City of Bucharest (1926)

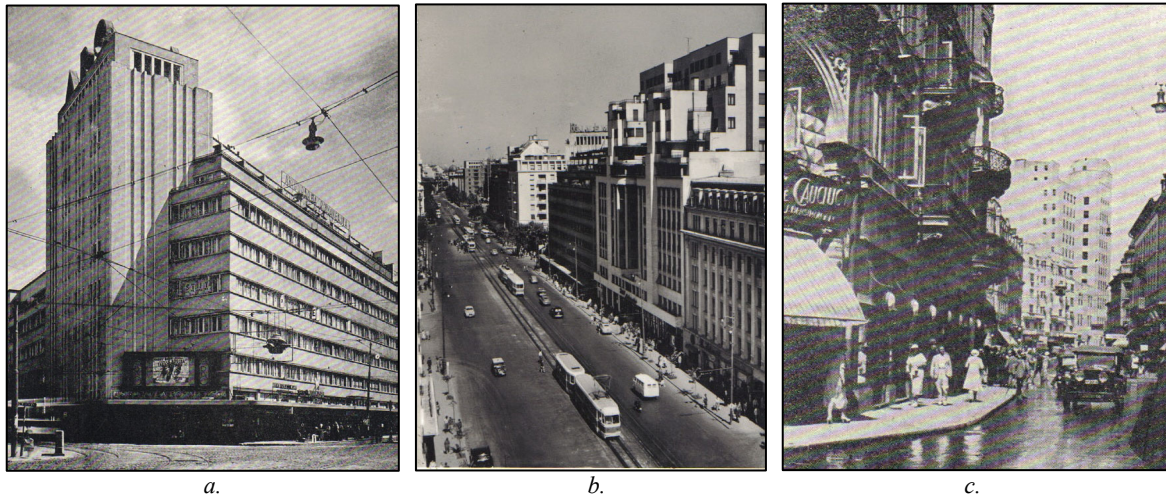
Updated source: Directory plan for the systemization of Bucharest Municipality (1939).



Fig. 4 – The build-up area in Bucharest in 1930.

Source: Directory plan for the systemization of Bucharest Municipality (1939), Annex 1.

The industrial development associated with the investment of Western-European and North-American capital typical for the inter-war period, has favoured the import of the North-American architectural pattern which, given the circumstances of a powerful industrial development that has characterized the U.S.A. in the early 1900s, has been adopted by large European cities. At Bucharest's urban level this architectural model has come to mean the flanking of great streets and boulevards in the City centre (Calea Victoriei, Magheru Boulevard) with high bloc-like (generally P+10) buildings (Fig. 5). A representative building for this architectural model, in Bucharest, is Palatul Telefoanelor (The Telephone Palace), built between 1932 and 1933.



Figs. 5 – Main buildings illustrating the North-American architectural pattern in the first decades of the 20th century (a., b. Magheru Boulevard, c. Calea Victoriei – background: The Telephone Palace).

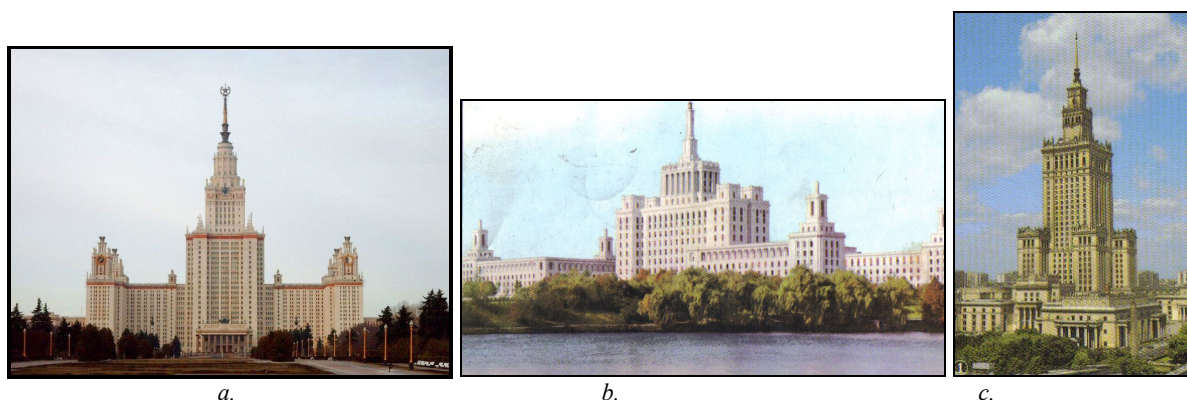
Source: Directory plan for the systematization of Bucharest Municipality (1939), p. 160.

THE SOVIET-STALINIST CULTURAL PATTERN AND ITS REFLECTION IN THE URBAN PHYSIOGNOMY

The ideological and political discontinuity brought about by the end of World War II which was reflected in all aspects of the economical and social existence, is best noticed in the building area field by the imposing, in an almost violent manner, of a new foreign architectural pattern: the Soviet one. The process has been also favoured by the damages caused by the 10th of November 1940 earthquake as well as by the bombings conducted by the Anglo-American Air forces in April and July 1944 and by the German Air forces on the 24th of August 1944.

The planned development overpowered by the political factor, the control imposed by the state over production and exchange means, the orientation towards an egalitarian development of all the administrative and territorial units, without keeping in mind their different potential and the specific, the stop of the metropolis expansion by way of migration limitation, agricultural development underlined by collectivisation, the close correlation of these states' production rate with the economical and military needs of the "Big Brother", the autarchy and the break with the Western world, as well as the ambitious programmes for the economical and social development and modernization that have underlined an original geopolitical context which, has individualized and brought forward the East European Countries.

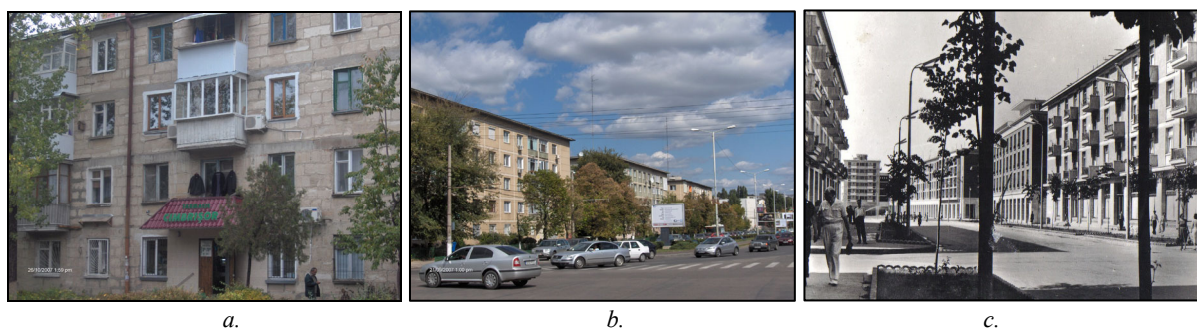
The „export in ideologies” has been reflected on a political, as well as on an ideological, social, institutional, cultural, psychological and architectural level. The cities in this entire area tend towards a uniform physiognomy equally determined by the uniformity of the outskirts, made up of large, prefabricated buildings, following the model of soviet cities, and by the implantation of soviet-style monumental buildings. “Casa Scântei” (today “Free Press House”) built between 1952 and 1957 and destined to house the publishing of “state press” especially “Scânteia” Newspaper under the patronage of the Central Committee of the Romanian Labour Party is a hallmark for this type of architectural model (Figs. 6).



Figs. 6 – Main buildings illustrating the Soviet architectural pattern (a. „Lomonosov” University in Moscow, b. „Casa Scânteii” in Bucharest, c. The Palace for Culture in Warsaw).

Photo: Radu Săgeată

The consistency of this architectural layer is, however, far more evident on a residential level, for it is in this time that the great residential area of Bucharest is outlined, and was to be made up of block-like buildings, starting with labour-style blocs in Ferentari Quarter, and the standard housing in Bucureștii Noi Quarter, and moving on to the new dormitory-like quarters of Titan, Drumul Taberei, Berceni, Colentina, Pantelimon, Militari, or the living areas alongside the great streets and boulevards: Mihai Bravu, Ștefan cel Mare, Grivița, Rahova, Giurgiului, etc. (Figs. 7).



Figs. 7 – Soviet-style apartment blocks (built between 1950 and 1960) (a. Chișinău, b. Bucharest, c. Galați).

Photo: Radu Săgeată

At the same time, the population is increasingly growing from 992,536 inhabitants in 1941 and 1,041,807 in 1948 to over 2 million inhabitants in the 1980s, but the degree of hypertrophy between Bucharest and the second largest city, which had reached a maximum value (8.83) at the end of the Second World War, is starting to drop (Tab. 3).

The tendencies to reform the Communist political system that have marked the 8th decade of the past century have led to a political openness of Bucharest to the *North-Korean – like Communism*, the only compatible form with the vernacular one. Once extrapolated in an architectural sphere, this tendency has come to mean the introduction into Bucharest’s architecture of North-Korean elements, strongly visible in the entire architectural perimeter stretching between Unirii and Libertății Boulevards and Alba Iulia Square.

Table 3

The demographic evolution of Bucharest Municipality (1831–2006).

Year of reference	Population	Growth rate (inhabitants/year)	Hypertrophy index
1831	58,794		1.21 – Iași
1859	121,734	2,247.8	1.85 – Iași
1878	177,646	2,942.7	
1889	184,488	622	
1899	282,078	9,759	
1912	341,321	4,557.1	4.27 – Iași
1918	382,853	6,922	
1930	639,040	21,348.9	6.21 – Iași
1941	992,539	32,136	
1948	1,041,807	7,038.7	8.83 – Cluj Napoca
1956	1,236,608	24,350.1	7.61 – Cluj Napoca
1966	1,451,942	21,553.4	7.36 – Cluj Napoca
1978	1,858,418	33,873	6.67 – Iași
1984	1,978,654	24,515.7	
1986	1,989,823	5,584.5	5.7 – Brașov
1989	2,036,894	15,690.3	5.8 – Brașov
1992	2,067,545	10,217	5.89 – Constanța
1995	2,054,079	- 4,488.7	5.89 – Constanța
1998	2,016,131	- 12,649.3	5.79 – Iași
2002	1,926,334	- 22,449.25	6.00 – Iași
2007	1,931,838	1,100.8	6.1 – Iași

Source: Processing data based on Censuses and Statistic Yearbooks

THE NORTH-KOREAN ARCHITECTURAL PATTERN

The focal point of this great architectural ensemble is the Parliament Palace (Fig. 8), whose building began in 1983, but has not been finished even to this day. The build-up surface (300,000 m²) ranks it second in the Guinness World Record Book after the Pentagon Building when talking about administrative buildings. In terms of volume, its 2,550,000 m³ rank it third after the building for space spacecrafts assembling in Cape Canaveral, Florida, and after Quetzalcoatl pyramid in Mexico. The building has approximately 1,000 different rooms, of which 440 are offices, over 30 halls and salons, restaurants, the rest being common rooms.



Fig. 8 – The Parliament Palace, illustrative building for the North-Korean architectural model.

Photo: Radu Săgeată

BREAKING DOWN IDEOLOGICAL BARRIERS. GENERALISATION OF GLOBALISING STREAMS AND ETHNICAL-SOCIAL SEGREGATION OF THE URBAN SPACE

The political and ideological fault line that has marked the collapse of the communist political system in 1989 has reflected itself in a natural way on an architectural level, by abandoning the North-Korean model and reorienting itself towards the North-American contemporary architecture. In other words, the last decade of the past century is characterized by the globalization of the North-American architectural model as a natural consequence of the disappearance of ideological borders; Romania is a part of this whole process. Concrete and glass buildings have been built, having a mainly services-oriented function (bank headquarters, offices, hotels etc.), similar to those in the great North-American, European and Asian metropolises but lower in height, adapted to the seismic risk to which the Romanian Capital is subjected (Fig. 9).



Fig. 9 – The North-American contemporary architectural model in Bucharest (a. BRD Tower and Bucharest Tower Centre on behind, b. Charles de Gaulle Tower, c. Euro Tower – the first “green” office building in Bucharest).

Photo: Ines Grigorescu

At the same time as the building area is developing as a consequence of globalization and localization of direct foreign investments, a phenomenon of urban space segregation manifest itself. This phenomenon appears to have at least two distinct components: an *ethnic* and a *social* component.

The *ethnic* component is the result of the manifestation, on an urban landscape level of ethnic neo-minorities which undertake commercial and business activities in Bucharest. Around 20,000 foreigners live in Bucharest at present, and they have grouped themselves, depending on race, in different quarters, leading to a social and spatial segregation of the urban tissue. The Chinese have not chosen randomly the area of Obor – Colentina – Voluntari, just as the Arabs have not chosen randomly the area of Crângași – Militari – Drumul Taberei, since the activities they undertake are linked to the business unfolded in Europa Shopping Centre, as well as in the Grozăvești – Regie Campus. The Chinese Dragon, the Islam specific colour green, the Indian yellow, or the cedar of Lebanon are but a few of the symbols that have penetrated the Bucharest urban landscape, just as words such as *tavern*, *paprika*, *shaorma*, *croissant*, *hot dog* or *hamburger* have already become a part of Romanian vocabulary. The veils so emblematic for Islam, as well as elements of the Indian or Japanese traditional clothing are present and no longer raise eyebrows in urban Bucharest. To this, one may add traditional architectural elements of different cultures that have a great visual impact in the building area and that have an important contribution to the outlining, in Bucharest, of that certain “cosmopolitan landscape” so specific to the great European metropolises.

Most of the foreigners in Bucharest live in the 2nd sector and especially in the area of Colentina – Voluntari. Chinese people can be seen anywhere, but large numbers of them are being found in the areas that host the huge shopping centres of “Dragonul Roșu”, “Europa” and “Niro”, which have known a great degree of development in the past years.

Starting from these placement opportunities and from the high potential for absorption of Chinese products on the Romanian market, a China Town-like Chinese quarter has begun to be set up in the area around Dobroești commune, East of Bucharest. It is estimated that the Chinese community – the largest one in the world, was made up of approximately 35.4 million people at the end of 2004 (The Chinese Committee for Foreign Affairs, The State Committee of the People’s Republic of China, quoted by Cojocaru, 2007). Among the most famous China Town – like quarters in the world are those on the American continent, from San Francisco, New York, or Toronto, which have begun their ascension in the 18th–19th centuries. The project concerning Bucharest, initially estimated to cover around 30 hectares, would be organized in three distinct areas: a commercial one, already in use (“Dragonul Roșu” Trade Centre), a business area (“China Business Centre”), and a residential area, made up of twelve blocs of 600 flats. The quarter would enjoy the benefits of a kindergarten, parking lots, international and traditional restaurants, a hotel, a mall as well as an exhibition centre in “China Business Centre” of approximately 100.000 m², where Chinese and European economical missions, the bilateral Chamber of Commerce as well as several Chinese companies would unfold their activities (Cojocaru, 2007). Romania’s Capital thus reaches towards the status of an investment pole for China in the East-European space (Fig. 10).



Fig. 10 – Chinese architectural influences in Bucharest.

Source: www.chinatown-project.bucharest.ro

Although trade and the food industry rank at the top regarding favourite investment destinations for Arab investors, approximately 10% of real estate investments are initiated by Arab citizens. The trade and hotel group Sir, which has two branches in Bucharest (Lujerului and Orhideea) is a great example to illustrate the above said. It is also estimated that one in 10/15 major real estate investments in Romania is conducted by an Arab citizen.

The other component of the segregation, the *social* one, is based on financial segregation. Thus various communities which face serious social problems such as unemployment, deficient technical-edilitory infrastructure, high crime rate etc., emerge. At the opposite side, the high-income population displays a tendency to migrate towards the periurban spaces thus favouring the development of *gated communities* which belong to the elite, wealthy people that can afford to create urban areas of a high quality, and to cut themselves apart from the rest of the population. Although at first specific to areas in northern Bucharest (Filipescu, Pipera, Primăverii, Tei, Băneasa districts) (Fig. 11) due to an already existent infrastructure dating back to before 1990 (the high concentration rate of embassy headquarters and diplomatic missions, residential areas and services that have entailed the development of super-specialized services meant for a wealthy clientele), this type of communities have extended to other areas of Bucharest in the form of new real estate projects.



Fig. 11 – Gated communities in “Pipera” District.

Photo: Ines Grigorescu, Radu Săgeată.

Having this configuration, the present-day urban landscape of Romania’s Capital is the result of multiple influences whose impact has cemented in time, with variable intensities and interaction periods. Within this complex process of interactions, the political factor is the most important one: it either acts in a direct manner by “importing” foreign architectural models, fashionable at a certain moment in history, as a part of an alternative for a politically controlled development with complex consequences on an economical and social level (the soviet architectural model, the North-Korean one etc.), or it acts in an indirect manner by way of communities made up of immigrants that have emigrated due to political causes (political refugees) or economical ones (in this case the economical factor is tributary to the political one since economical evolutions are a consequence of political circumstances). The phenomenon is not a new one, but it has its roots deeply implanted in the communist era, when the policy of “leftist globalization” meant an ample campaign of recruiting for the upper educational units of foreign students, especially Arabs, coming from areas newly influenced by the socialist doctrine or that embraced this political orientation (Palestine, Syria, Algeria, Libya etc.).

To this, other waves of refugees have added (Polish, at the beginning of World War II, later Greeks, during the Civil War in Greece; Koreans, during the Korean War; Chileans of Marxist orientation persecuted by the dictatorship of Augusto Pinochet after the fall of Salvador Allende’s regime in the early 1970s; Kurdish members of the Kurdistan Worker’s Party who have found in Romania a fertile battlefields in order for them to assert their national identity on a Marxist basis etc.)

After the year 1990, the focal point of their business shifted towards commercial activities, leading to a multiplication of entrepreneurial businesses in the proximity of university campuses, which have undergone further on a process on centralization in trade centres such as “Sir” or “IDM”.

Future evolution tends to continue these tendencies. Romania’s integration into the European Union has turned out the country into an attractive destination for the emigrants coming from less developed countries in the space outside the EU. The fact that Romanian legislation still has very few restrictions concerning labour force outside the EU tends to transform Romania not only into a target destination for the immigrants, but especially into a gateway for their entrance in the Union’s space of influence.

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Received January 15, 2009

PARTICULARITIES OF THE FUNCTIONAL PROFILE AND URBAN RELATIONS IN POST-SOCIALIST LUGOJ MUNICIPALITY

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Key-words: functional profile, urban functions, urban relations, economic transition, Lugoj municipality.

Quelques considérations sur le spécifique du profil fonctionnel et des relations urbaines dans la période post-socialiste de la municipalité de Lugoj. Le profil fonctionnel d'une ville est déterminé par son héritage historique, son évolution sociale et économique, par ses traditions mises en évidence petit à petit et par les effets des systèmes politiques qui l'a gouverné à diverses périodes. Le profil fonctionnel de la ville de Lugoj est le résultat de son évolution historique à partir de la vieille fonction de marche jusqu'aux fonctions urbaines actuelles, dominées par l'industrie et des services. La dynamique fonctionnelle de la ville a été influencée par la position de la municipalité en ce qui concerne le rôle politique et administratif dans cette partie du pays. Ainsi, à bref délai, ses fonctions de marché, celle commerciale, politique et administrative ont été complétées par d'autres fonctions, générées par l'évolution économique de la ville. La méthodologie de recherche utilisée est basée sur l'étude bibliographique, l'analyse des données statistiques et l'étude du terrain. On expose, d'une manière objective, quelques considérations sur le profil fonctionnel de la ville en accord avec la restructuration urbaine, de l'économie planifiée à celle de marché, spécifique pour les sociétés développées. On analyse ainsi, les fonctions urbaines dans le contexte des principaux domaines d'activité économique aussi que dans le contexte de la polarisation spatiale de celles-ci dans l'espace rural de la proximité de la municipalité Lugoj.

1. INTRODUCTION

The function of a town is the outcome of its urban activities based on the time-related traditions, the main occupations of its population, as well as on the social, economic and cultural conditions specific to the urban space. Generally, town functionality is influenced by the particularities of its geographical position, historical evolution, human and natural resources, the historical individuality of human settlements and, last but not least, by the main changes characteristic of the period of transition to the market economy in Romania. The age of a town or a city accounts for the development of industrial, social and cultural traditions, which often influence the functions of the geographical anthropic space. The perpetuation, consolidation, diffusion, dilution or disappearance of these traditions has a direct bearing on the qualitative and functional management of the town.

2. THE GEOGRAPHICAL POSITION OF LUGOJ AND ITS PLACE WITHIN THE LOCAL, REGIONAL AND NATIONAL URBAN SETTLEMENT SYSTEM

Lugoj is a middle town situated in the western part of Romania, on the banks of the Timiș River. From a geomorphological viewpoint it lies at the contact between the Lugoj Plain and the Lugoj Hills, a location which has in time favoured complementarity between the town's main resources and economic activities. At regional level, Lugoj lies in Timiș County, at a distance of about 60 kilometers from Timișoara, a distance that conveys its spatial equilibrium between Timișoara and Caransebeș. Situated in the Danube–Criș–Mureș–Tisa (DCMT) Euroregion, Lugoj has developed important economic, social and cultural links with many towns from this region. Nowadays, Lugoj is

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an important regional urban centre (documentary attested in 1334 as *Lucas*) (Vlăsceanu, Ianoş, 1998), a competitive town (Popescu, 2007) in the western part of Romania which has recorded a positive economic evolution after 1990. This evolution is reflected in its present functions, as well as in the relations established with its surrounding area.

Lugoj holds the second rank in the urban hierarchy, a position argued by its spatial and functional complexity (Spânu, 2003). In time, its geographical and cultural position in this part of Romania have played an important role in the development of social and economic processes and, moreover, in coping with the difficulties of transition and in adjusting to the market economy.

3. THE FUNCTIONAL PROFILE AND URBAN FUNCTIONS OF LUGOJ MUNICIPALITY

The function of a town depends on the specific activities developed within the urban area, and has a higher or lower impact, or even a dominant importance for the social and economic context of a locality. The problematique of urban functions has aroused the interest of many researchers engaged in the study of urban settlements. In the specialist literature, urban functions are defined as the main human activities developed within a town or city over a certain period of time and which determine the extent and specificity of its urban development. Urban functions depend on the town's geographical position, climate, natural resources, the main environmental features and the historical evolution (Erdeli *et al.* 1999). At the same time, they are playing economic, social, cultural, commercial and other roles (Ielenicz *et al.* 2007), the idea of urban function underlying the construction of the “*whole edifice of the functional territorial analysis and, especially, of the urban one*” (Ianoş 2005, p. 55). *Types of functions in Lugoj (cf. General Urbanism Plan, Lugoj, 1997)*: inside the urban territorial system to meet people's basic needs, such as dwelling, working, transport, education, health-care, culture, communication, entertainment, etc; outside the urban territorial system: agriculture, forestry, transport, recreation and also interurban cooperation between the local communities; *priority functions*: residential and economic-productive activities; *complementary functions*: urban management and administration, commerce, education, health-care, entertainment, etc.; *auxiliary functions*: services (sewage, water, gas and electricity supply); *special functions*: urban security and protection. All these functions make the object of urban analysis, but from a geographical viewpoint the only criterion defining the urban function is the active population (Ianoş 2005). So, in the light of the above considerations, the following functions can be distinguished even if, generally speaking, not all urban activities generate urban functions. However, according to the specialist geographical literature it is industry and services (commercial, cultural, sanitary, transport, entertainment, etc.) that are dominant urban functions.

3. 1. The industrial function

A diachronic approach to the town shows the industrial function to be outstanding. It has developed in time from old local handicrafts to the planned economy of the communist regime and currently to the market economy in the conditions of neoliberal trends in Romania. The fact that the industrial function in Lugoj has continued to exist, despite the new processes of deindustrialization, reindustrialization and tertialization, was made possible by the privatization of the industrial sector, and by foreign investments. In Figure 2, which illustrates the structure of Lugoj active population, industrial employees are seen to be the dominant segment (Voiculescu, 2004). As a matter of fact, this type of demographic structure is the only one which can objectively express the main functions of the town. A comparative approach to the evolution of this indicator shows the industrial function to have prevailed both before and after 1990 (the totalitarian regime collapsed in 1989). In 1988 industrial employees formed the majority of the active population, just like in 2006, when 8,799 out of a total

workforce of 16,727 people were employed in the industrial sector and in constructions (The National Institute of Statistics, Regional Directorate of Statistics, Timiș County, 2008).

Though this indicator has a balanced evolution, yet a significant decreasing trend has been registered in the primary sector. Statistical figures constantly show that the tertiary sector evolves hand in hand with industrial progress. The constancy of these figures is argued by the fact that local deindustrialization has evolved in parallel with urban reindustrialization through foreign investment. Thus, while old factories were being closed down, new ones opened, absorbing the free labour force. All of the town's factories were being restructured. The period of transition to the market economy has contributed to the dilution of some old and fine industrial traditions. An example is the only Natural Silk Spinning Factory in Romania, dating almost 100 years back, which had to be closed down. The old unit became S.C. Filseta S.A., specialized only in textiles, but its success is uncertain. On the other hand, new big concerns and international brands develop businesses in Lugoj municipality. The town's industrial landscape is marked by new production units that have emerged after previous ones had been restructured e.g. Mondial S.A., which became part of the Villeroy and Boch German Concern. The same situation in the case of S.C. Rieker, S.C. Lugomet and S.C. Silcom. The new industrial units, established independently of the old ones, would create the impression that new industrial areas are emerging in which S. C. Werzalit Lemn Tech, S. C. Autoliv, etc. (Fig. 1) are operating.

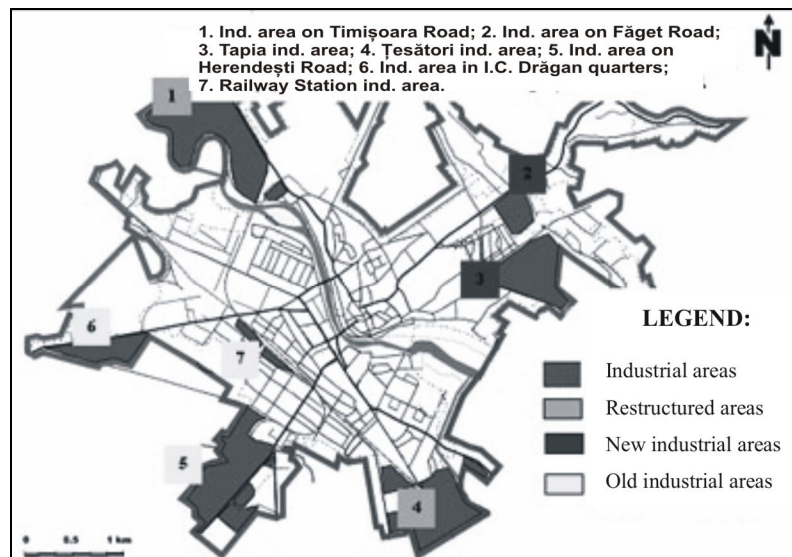


Fig. 1 – The distribution of industrial areas in Lugoj, 2009.

Summing up, we would say that the industrial function of Lugoj follows on the lines of the old traditional occupations of the local population. The industrialization drive promoted by the communist regime required a larger labour force, so that new population fluxes came to town.

For instance, in 1987 the hardcore of the town's industry was machine-building, textiles and food. Other branches were less well-represented, the industrial branches diversification index varying between 5 and 10, the industry/demography ratio being well balanced (Ianoș 1987). For all the industrial slowdown registered by Romania's towns after 1990, this function still exists (Voiculescu 2004). Beside industry, the tertiary sector (mainly commercial services) is very well developed.

Looking at the structure of the active population it appears that more than 40% work in the tertiary sector. Industrial activities are developing on industrial estates, the industry having always played an important role in the development of Lugoj. The *Atlas of Romania, 2006*, which presents a comprehensive picture of the Romanian national territory, shows that the processing industry in Lugoj

formed a major part of the town's economy. In 2002, about 60% of its economy was privately held, with 50% and 75% of the population being employed in the industrial sector. Industrial branches are: machine-building, electronic and electrotechnical items, building materials, wood processing (furniture and other wooden products), textiles, food, etc. The main fluxes of goods, raw materials and labour come from Caransebeş, Reşiţa, Timişoara, Făget and Buziaş; the surrounding rural settlements (Jabăr, Ştiuca, Herendeşti, Coştei, Balinţ, Topolovăţ, Belinţ, Chizătău, Căpăt, Sinia, Sinersig, Boldur, Darova, etc.) being the main labour suppliers.

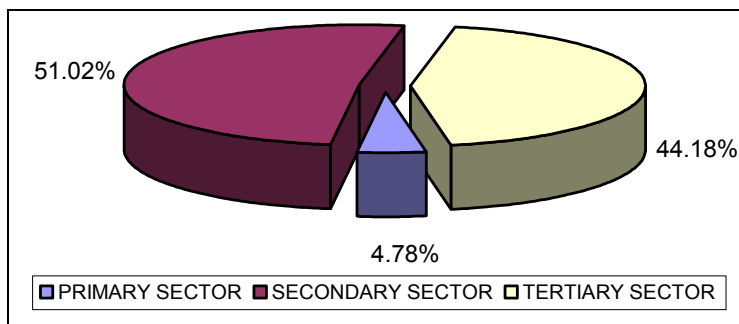


Fig. 2 – The structure of Lugoj population by economic sectors, 2002.

3. 2. The tertiary sector

Local services, particularly commercial ones, have surged, similarly have health, education, recreation, culture, entertainment, and other community services. For instance, the cultural function has attracted the interest of many authors and researchers who used to publish studies both before and after 1990, an indication that cultural topics have always been of primary interest for the local cultural personalities (Luchescu, 1975).

3.2.1. The commercial function

Commercial activities are aimed at meeting the demands of the town population and of its adjoining countryside. In Lugoj, supermarkets prevail to the detriment of retail traders and big commercial units. Major complexes are Artima, currently replaced by competitive supermarkets, such as Carrefour Express. Other complexes are Profi and Plus (Fig. 3) and a Mall is being planned to open. The main types of commercial units are: class A situated downtown, classes B and C at the town periphery or in the districts. The structure of commodities shows foods, household items and textiles to prevail. Since the range of items is pretty limited, people often go shopping in Timişoara's hypermarkets (Metro, Selgros, Real, Billa, Praktiker, Iulius Mall, etc.) (Ianoş, 2004). However, having in view the demographic size of the local population, the goods available in Lugoj's shops are fairly sufficient to meet people's demands.

The food market and the local animal fair continue an old tradition. Market days are Tuesday and Friday, attracting beside townfolk also the neighbouring rural population who is coming to town to buy or sell different products and goods. This segment of the population adds to congestion in the downtown local market and to traffic jam. Future urban development strategies should deal with these problems in order to avoid dysfunctions, especially road traffic. The main street structures can hardly cope with the increasing number of private cars. In addition, there are numerous vehicles crossing the town to other destinations. We would suggest that future urban planning and development strategies take into account the possibility for a hypermarket to be built at the town periphery to serve both the Lugoj population and the inhabitants of the adjoining rural area.

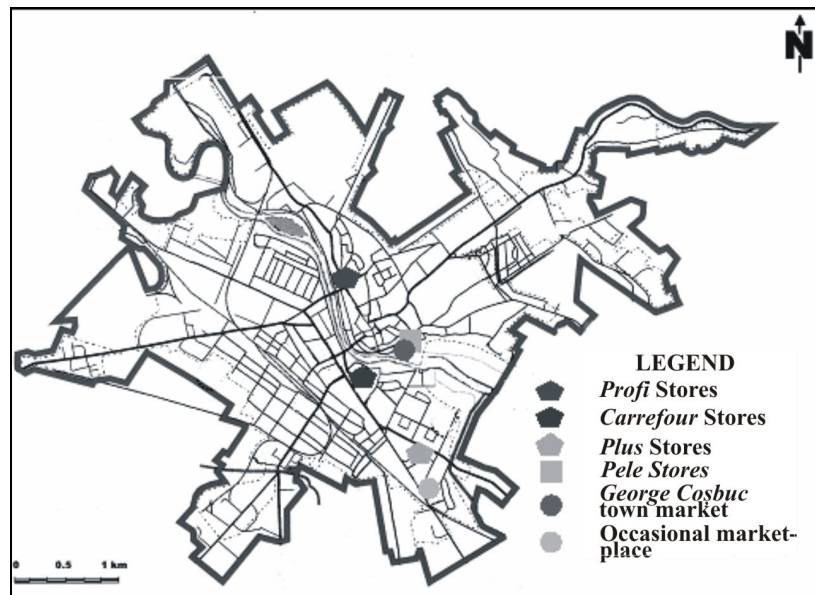


Fig. 3 – Commercial units.

3.2.2. The cultural function

As already discussed in this paper, cultural activities in Lugoj have always been outstanding. Its cultural and historical heritage, has made the town occupy a front position in this area and despite the censorship imposed by the communist regime, the cultural legacy has survived from oldest times to the present-day, reality illustrated by the works of those authors who lived in this particular geographical space, e.g. Luchescu (1975, 2004), Stratan, Muntean (1981), Popescu (1993), Luchescu, Muntean, Lăzărescu (1994), etc. Their books depict the cultural phenomenon in Lugoj, a town they considered to be the old cultural centre of Banat province. Cucu (1970) shows the town to be both an important cultural and industrial (natural silk manufacturing) centre. Numerous local cultural personalities have contributed to the process of cultural diffusion¹. Outstanding cultural institutions are: *Traian Grozăvescu* Municipal Theatre, which currently hosts four international music and drama festivals, the House of Culture, the Museum of History and Ethnography, the Municipal Library, the House of Music, many memorial houses, etc., all of which have an old tradition in the cultural life of the town.

The post-1990 period has brought about major changes in the town's cultural area, e.g. the establishment of the *Drăgan* European University, set up with the help of sizeable investments made by Iosif Constantin Drăgan, a renowned man of culture in Lugoj. Thus, the town has acquired a new status, that of local and regional university centre. His endeavour to change the cultural landscape, to transform the urban image, in the process of urban renewal and regeneration is ongoing (Voiculescu *et al.* 2009).

3. 2. 3. The educational function

Apart from culture, and often subordinated to it, is education, Lugoj being a focus of attraction for local students, for people from the surrounding rural areas and from other parts of Romania. Education has an old-standing tradition here, many local cultural personalities having learned in its schools. The town boasts all types of educational units: kindergartens, primary schools, gymnasiums, colleges and high schools, as well as a university with different profiles and specializations to meet the local job-market demands (Figs 4, 5). There are also vocational schools. Learning is delivered also in

¹ Outstanding among them are: Filaret Barbu, Valeriu Braniste, Coriolan Brediceanu, Caius Brediceanu, Tiberiu Brediceanu, Eftimie Murgu, Cassian Munteanu, Traian Grozăvescu, Anișoara Odeanu, Timotei Popovici, Victor Vlad Delamarina, etc.

German for the German population colonised on the left bank of Timiș River at the beginning of the 18th century. The German sections and classes of the *Coriolan Brediceanu* National College, *Iulia Hașdeu* National College, and *Anișoara Odeanu* Secondary School attract numerous students. In order to meet the students' cultural demands the *Filaret Barbu* Fine Arts School was founded after 1990, with a music and arts profile and specialization courses. *Drăgan European University*, founded after 1990, offers specialization courses in law, economics and public administration. Its influence has increased and enlarged over the years, developing into a local and regional centre of Banat province. In view of the above, we may say that the town discharges indeed an educational function. Other educational units are the Children's Club and a number of firms specialized in various training programmes intended to suit the local job-market and the residents of Lugoj.

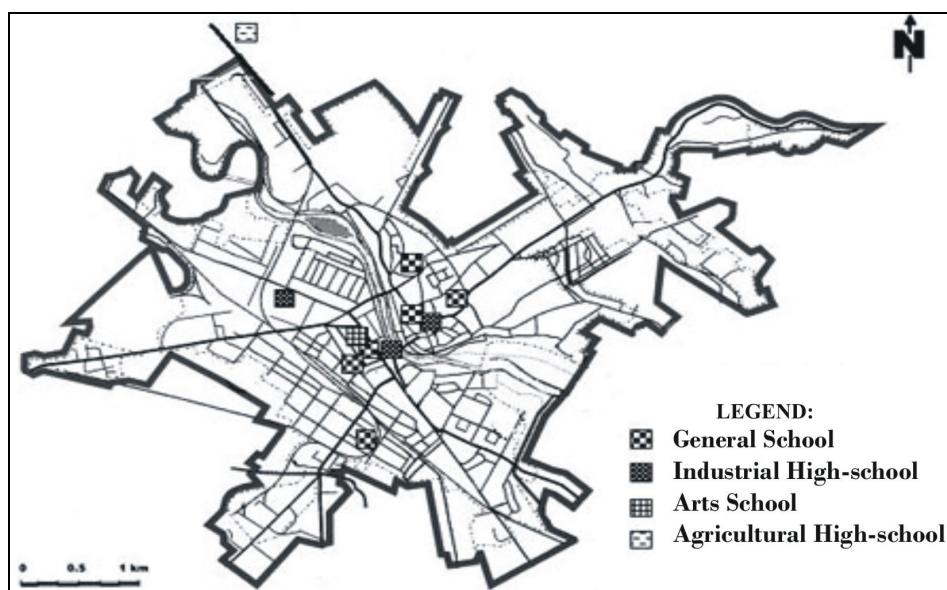


Fig. 4 – Educational and profile units in Lugoj before 1990.

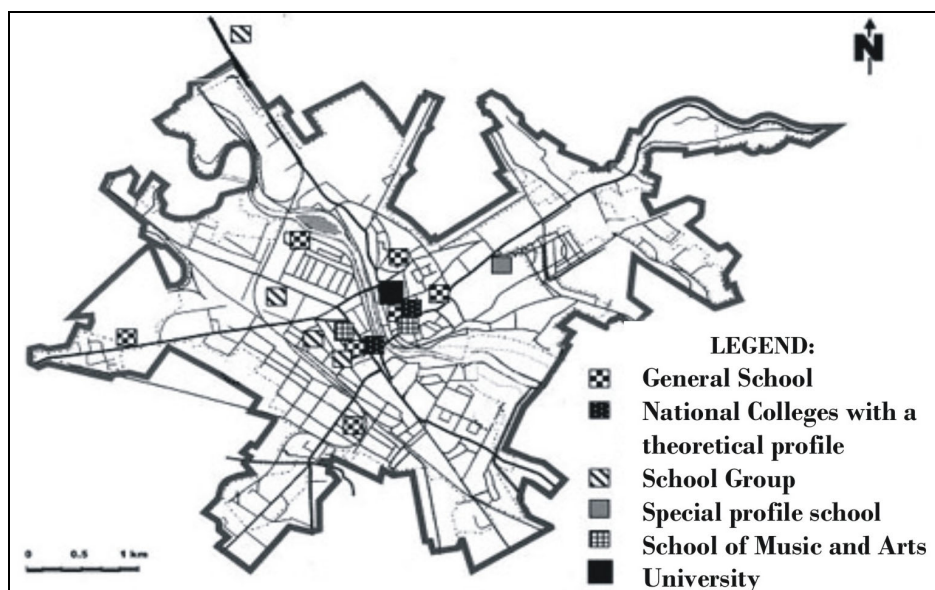


Fig. 5 – Educational and profile units in Lugoj after 1990.

3.2.4. Medical and sanitary services

Medical services, just as the previously discussed ones, are engaged in satisfying social needs. Assistance is offered in medical units and in other institutions specialized in dealing with the problems of the locals. There are 28 medical units, part of them (pharmacies) (Fig. 6) located especially in the central sector of the town (*source: www.cjt.ro*).

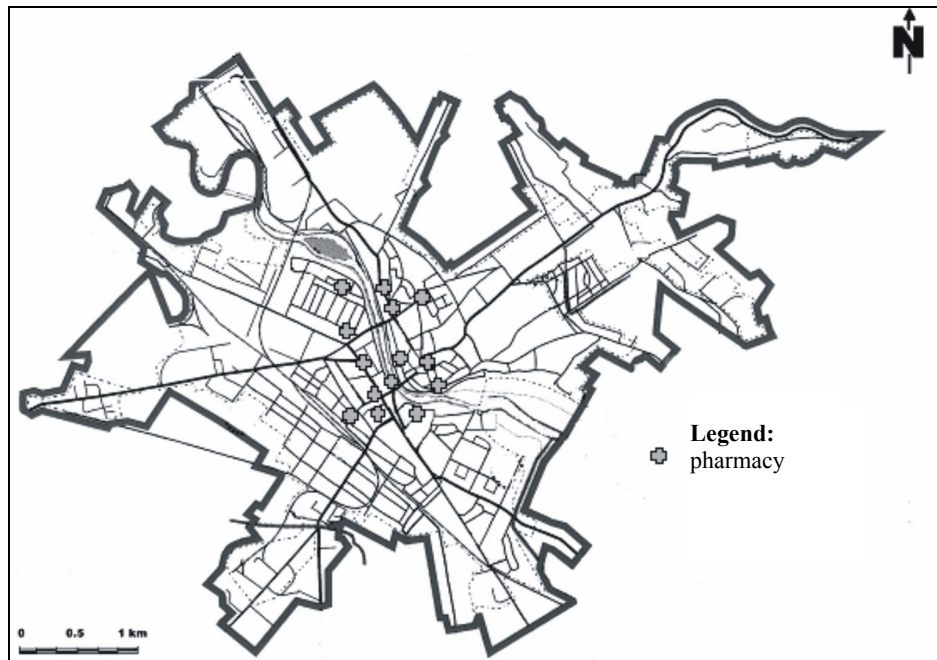


Fig. 6 – The spatial distribution of pharmacies in Lugoj (2008).

3.2.5. Recreation and entertainment

Recreation and entertainment is provided by several profile institutions, e.g. the House of Culture, the Municipal Theatre, the Municipal Library, two Sports halls, etc. There are numerous green areas close by the River Timiș, which runs through the town, as well as several parks (Table 1).

Table 1

The main green areas in Lugoj.

Type	Name	Area (sqm)
Parks	Pool District Park	21,000
	George Enescu Park	20,000
	The Railway Station Park	18,000
	The Prefecture Park	17,000
Squares	Cornet Square	8,500
	Abator Square	3,000
	Unirii Square	6,000
	Piața Poștei Complex	5,000

Source: Lugoj Town Hall, 2008

Another recreation site is Cotul Mic Island bordered by two tributaries of the River Timiș. Here are complex endowments for summer activities: sports grounds, swimming pool, beach, etc. The area still has a good potential for investments (Fig. 7).

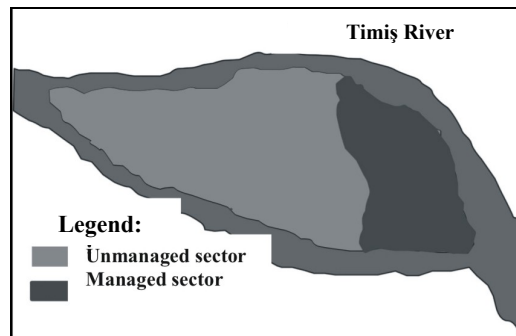


Fig. 7 – The Cotul Mic Island in Lugoj.
Source: Jucu, 2008, p. 63

3.2.6. The Public administration

The political-administrative function of the town has been analyzed diachronically by many authors interested in spatial organization at national level. In the past, the political-administrative function of Lugoj had a broader scope and breadth, the town having successively been the capital of Caraș and Severin counties. After the 1968 reorganization the town became part of Timiș County, with Timișoara as capital-city. Although Lugoj has lost this status in the territory, yet many administrative institutions (the City Hall, Social and Community Assistance services, the Court of Law, Public Finances, Political Parties, etc.) have continued to serve both its own inhabitants and those of the surrounding rural area.

3.2.7. The functional complexity of Lugoj

The functional complexity of Lugoj is emphasized by all the features of a town's functional mechanisms and by all the activities which define certain functions (see Sorina Voiculescu, 2004, in a complex study of cities and towns from the West Plain of Romania). The main function of Lugoj is the industrial one, especially the processing industry. Several diagrams show the share of industry within the urban functions of the town in terms of the structure of its occupied population (Fig. 8).

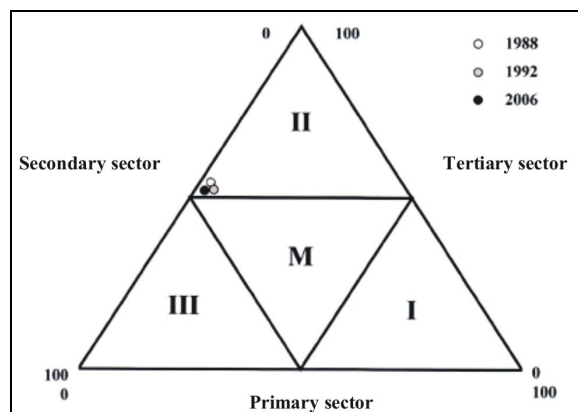


Fig. 8 – The position of Lugoj municipality on the above diagram of urban functions.

Functional complexity is created by the intertwining of all the previous functions discussed so far and, moreover, by the extent to which the town polarizes its surrounding area. Future decisions within a sustainable management context should take into account the historical background, the social and cultural particularities, the cultural legacy, and the main demographic and economic assets.

All these will help preserve the old functions and create opportunities for new ones to develop, liable to ensuring the town's spatial and functional viability.

4. URBAN RELATIONS

The relations established within an urban space represent all of the complex relationships between the functions exerted within some zones, localities, or within their influence areas; they also reflect relationships with the population, with the economic activities and with the natural environment. These relations individualize a town's urban structure. Types of relations: between population and the town functions, between the natural environment and the town functions. The following types of relations are acting in Lugoj municipality: between the town and its influence area; inside the town's administrative territory; inside the urban space and with other urban areas (*General Urbanism Plan of Lugoj Municipality*, 1997). The population of a town depends on the functions exerted by it, which respond to the needs of the community. So, the direct relations established between the population and the economic sector are job-creating and secure people's incomes.

The functions of the town are influenced by the natural environment and by its connections with the main urban activities. The natural environment represents a prerequisite for the residential framework and is the locus of natural resources. The relations existing between industry and resources, between people's daily resources of food, water and energy ensure the urban system's functionality. On the other hand, functions are interconnected by complex relations, controlled by adequate mechanisms which make a human settlement viable. So, the relations between the industrial function and the residential one are governed by the relation between the work-place and the residential place. In urban areas, complex relations develop between industrial and residential quarters, as well as between these and other functional sectors, e.g. commercial, services, recreation, education, transport, etc. The sustainability of these relations depends on the infrastructure and logistics of the town and on the particularities of the urban management at a given moment.

In the case of Lugoj, the relations established between the urban and the rural space represent the totality of relations established inside the respective localities in terms of residence, agricultural production, industrial activities, etc. Based on these well-know relations, it is easy to determine the convergent and divergent fluxes of population and goods between the urban settlement and its surrounding area; also, it is easier to decide upon transport capacities, collective services, equipments within the system, to avoid or minimize massive depopulation of some rural areas or the overpopulation of towns (Erdeli *et al.*, 1999). These complex relations are of cooperation in the sphere of production, culture, social life, administration, etc., as well as between the local urban space and other localities. For instance, Lugoj, which is a middle town subordinated to Timișoara, develops good relations with other towns, too, e.g. Caransebeș, Buziaș and Făget. At regional level, relations are more difficult to determine because they are less clearly defined.

However, there are many towns and cities in Romania which supply Lugoj with important fluxes of goods, energy and information (Ianoș, 1987). The town also develops direct or indirect political-administrative relations with Bucharest, Romania's capital, as well as regional cross-border economic and socio-cultural cooperation with towns from neighbouring countries, e.g. Vyrshet in Serbia, Szeged in Hungary, etc., and with twin towns in Europe. Spatial relations have also been developed with the rural settlements located in its proximity, as well as with small towns and cities at regional, national and European levels. Particularly important are the relations established among the town's functional

sectors. There exists a direct connection between the economic traditions of the town and its contemporary industrial development, between cultural values and the contemporary social and cultural identity, as well as between local decision-makers and current evolution trends. Important relations are established between production forces and human resources, between the local labour force and the fluxes of raw materials and goods. The viability of these relations is ensured by a specific logistic, the functionality of which is adapted to the specific of the town. For instance, the residential system is interconnected with urban utilities (electricity, energy, water and gas), with more or less specialized services, with transport and communications systems, etc. In urban areas a connection exists between residence, education, work, traffic and other services, as well as between industry, agriculture and urban utilities, or between residence, work-place, recreation and entertainment (*cf. General Urbanism Plan of Lugoj Municipality, 1997*).

Spatial relations between the urban and the rural local environments are reflected by the dynamics of the labour force going to and from town, by fluxes of raw materials, goods and information services, etc., these relations individualising the sphere of influence of Lugoj municipality (Ianoş, 1987)(Jucu, 2004).

5. CONCLUSIONS

Lugoj is currently discharging two main functions and several secondary ones with a lower share in space. If before 1990 the town was a locality in which the industrial function prevailed, after the fall of the communist regime this function could be maintained due to the economic restructuring process and to foreign direct investments (Ianoş, 1987, Cucu, 1970, Cucu, 1995). In 2006, Lugoj was notable for its processing industry (Rey *et al.* 2006).

On the other hand, the upsurge of the tertiary sector enables the town to provide services not only to its urban population, but also to the village-dwellers in its proximity. Commercial activities have in time evolved from the old borough-related function discharged at the contact of the great geographical regions or at the cross-roads.

In our case, the favourable geographical position of the town at the contact between the Lugoj Hills and the Lugoj Plain and at the cross-roads of the main transport axis (Cucu 1970), has played a major role in its spatial evolution and, furthermore, in the development of commercial activities. These are argued by the convergence and intersection of some major transport axes which have facilitated links between the western part of Romania and its other regions. The cultural function of the town is discharged by profile cultural institutions which organize cultural events and festivals, as well as by local cultural personalities. *Drăgan European University*, founded after 1990, made Lugoj a university centre of local and regional importance. The functional complexity of Lugoj and its urban relations have determined its rank in Romania's urban hierarchy, directly influenced by the town's political-administrative function of county-capital held over time in different historical and political contexts (Ianoş, Tălângă, 1994, Rusu, 2007, Săgeată, 2006).

Nowadays, industrial and services functions, sustained by the complex processes of deindustrialization, reindustrialization and tertialization (in commerce, social life, financial-banking, education, culture, and other areas) are dominant in Lugoj municipality. The specific activities of the tertiary sector unfold within representative institutions which personalize the local urban space, generating a type of townscape characteristic of the period of transition from the centralised socialist economy to the market system.

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Received September 2, 2009

THE MORPHO-STRUCTURE OF ARAD CITY AND CURRENT PROBLEMS OF URBAN DEVELOPMENT

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Key-words: morpho-structure, urban space, population, Arad.

La morphostructure de la ville d'Arad et les problèmes actuels du développement urbain. La morphostructure urbaine actuelle de la ville d'Arad, résultat de son évolution historique, est relativement claire. Au centre de l'agglomération urbaine se trouve la cité, autour de laquelle gravitent les autres quartiers comme sous-systèmes urbains, au nord et au sud de la rivière Mureș. Dû à leur développement indépendant, ceux-ci présentent des caractéristiques distinctes, tant fonctionnelles que d'image, ce qui confère au système urbain un caractère polynucléaire. Cette décentralisation permet aussi une décentralisation fonctionnelle du noyau central. Simultanément, il existe aussi la tendance de dissolution de ces noyaux, alors que la texture urbaine devient relativement unitaire. Le rôle principal dans la consolidation et l'organisation de l'agglomération urbaine revient au réseau d'artères de circulation, établi dans un système radiaire pendant les périodes antérieures. La nécessité de répondre à des fonctions différentes a déterminé la parution de types distinctes de morphologie urbaine. Quoiqu'ils varient d'un district à l'autre dans le même quartier, toutefois les étapes évolutives de l'agglomération urbaine ont indiqué l'existence de quatre types morphologiques principaux. La physionomie spécifique de la ville d'Arad est marquée justement par l'interpénétration (parfois contrastée) de types morpho-structuraux distinctes.

ECONOMIC, SOCIAL AND POLITICAL CONTEXTS OF THE URBAN EVOLUTION

In a paragraph dedicated to the city, Daniel Payot (2001, p. 37) makes a remarkable analogy between the complexity of the relations established within a city and a text "which has been woven out of a multitude of singular threads" and which still remains "legible, meaning understandable, allowing routes or segments of sense to be traced in it, so that, probably, no single segment succeeds in defining the whole". In this respect, the city cannot be understood but as a complex whole, "for it is not a homogeneous unit susceptible to present itself in an absolute way from its origin and in its exhaustive significances and in the integrality of its history, being more likely the simultaneous meeting place of all evolutions that have been taking place in it".

Reviewing the economic, social and political facts that have played an important part in the development of the city has an obvious relevance in grasping the essential links between the physical and the human space, in deciphering the trajectories traced at a certain moment in the city's evolution by a social or political event. The economic, social and political complex that emerges in a city also leaves its mark upon the urban physiognomy, generating different directions occurring in certain situations in the development of the city.

For example, the commercial function of Arad, essential in the genesis of the city (due to its special location at a crossroads and to its status as a trade center) came second in the 19th century, being replaced by the industrial function. In fact, the emergence of Arad's industry is not based on the classical principles of location (near the centers of raw materials exploitation, or in areas with a qualified labour force), but mainly on political decision. For example the economic interests of the Austrian Empire, which had to modernize this area in order to make it profitable economically. For the machine-building industry, largely developed in Arad during the 19th century, the raw materials were

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brought from rather a short distance (Reșița or Hunedoara), and the qualified workforce was employed from among German, Czech, Slovak or other colonists. But the industrial function of the city, which would grow all along the 20th century, caused a certain type of representation regarding its status and functional role. During the socialist period, the industrial concentration in Arad reached 83.3% of the Arad County industry, affecting post-1989 economic restructuring (Ianoș, Tălângă, 1994, p. 39). However, this situation might have a positive impact on the urban space in that the desolated industrial areas (some placed near the city centre) could be a source of building space in the future. As a matter of fact, significant agricultural activities and some pretty large agricultural areas found in Arad represents another opportunity for the real estate sector and the future development of the city.

Arad's condition as an important railway junction has largely influenced the way in which city planning has been conceived. Recent proposals suggest moving the railway outside the city. The railway and the rail bridge to Aradu Nou have recently stirred discord between the Regional Railway Department of Timișoara and the Local City Council. When the rail bridge over the River Mureș was under restoration, the authorities came up with the idea of having it placed somewhere else and have the railway from Aradu Nou (that crosses Micălaca district) moved outside the city. Eventually, for financial reasons and the bridge and the railway have remained in place. However, this issue has resuscitated old animosities against Timișoara and triggered a competition between the two urban centres. On the other hand, it is also true that many Western cities gave up this kind of very expensive operations. In the end, the railway may play a positive role in structuring the urban space.

In fact, the history of Arad records many projects of rebuilding, remodeling or even having the city moved elsewhere. Beginning with the imigration' of the city from its ancient site near Glogovăț (12th century) and continuing with Maria Teresa's plans to move it in "the plain of Zimand", up to the 20th-century plan of "building a new centre" based on "the new socialist-city type", all these projects make up the history of Arad's urban "utopias". According to architectural projects this centre had in the foreground a large square for people's meetings and it was conceived to be placed on the site of the present historical centre (Gheorghiu, 2002, p. 124). However, such utopian approaches did have a certain impact upon the social organism.

The urban ambient, largely conceived based on architectural models alien to the Romanians, on the balanced weight of the two ethnic groups (Romanians and Hungarians) which have been living here for a long period of time, and the importance of the city in the struggle for the national emancipation of the Romanians, are apparently unconnected elements. However, sometimes they do determine a certain social responses to some political involving related to the urban space. An example is the issue of locating the Statue of Liberty, commemorating the 13 Hungarian generals executed in Arad at the end of the 1848-1849 Revolution. The initiative to restore the statue, which had stood in the midst of Avram Iancu Square until 1925, belongs to the Hungarian community. The number associated to the 13 generals, which corresponds (accidentally?) to the 13 provinces of "Saint Stephen's Hungary" (Greater Hungary), and the claim for the former location, which has a symbolic name for the Romanian community, were the main objections raised against the Hungarians' initiative. In this context, an identity mark associated with it has distinctively different connotations for the two communities and relates to the city's symbols – always passing through the filter of collective imaginarieness. We believe that the solution found is the right one. The new monumental space, called "The Reconciliation Park", is Pompierilor Square, where both the Statue of Liberty and Romanian replica referring to the 1848 Revolution, stands all the chances of becoming the most representative monumental space in the city and its important identity mark.

Speaking of identity symbols representative for Arad urban space, one cannot overlook the issue of the limit traced (or not!) by the River Mureș between the two historical regions: Banat and Crișana. The issue is important because the identity assumed by the inhabitants of a city may influence its evolution. In this respect, things cannot be irrevocably cleared up. As four districts of Arad are located south of the Mureș and ten north of it, it is fairly difficult to assert that some are located in Banat, and

the others in Crișana. One may rather conclude that Arad city lies in a transition or transient space between the two historical regions, with the River Mureș being the very axis which has been attracting a multitude of settlements on either bank (Rusu, 2000, p. 120).

CURRENT URBAN MORPHOLOGY

The present-day urban morpho-structure, the outcome of a historical evolution, is relatively clear. In the middle of the urban space there is a *linear central core* (Revoluției Boulevard), surrounded by the other districts, acting as urban cores themselves, which gravitate around it: Aradu Nou, Subcetate, Sânnicolau Mic and Mureșel south of the Mureș and Centru, Drăgășani, Pârneava, Gai, Bujac, Aurel Vlaicu, Grădiște, Micălaca, Poltura and Șega, north of the river. Because of their independent development, these districts have distinct features, both functionally and aesthetically, granting the urban system a *polycentric* character. This decentralization allows for the functional decongestion of the central core. At the same time, there is a tendency towards dissolving the above-mentioned centres, and create a relative unitary urban texture. The main role in coagulating and organizing the urban agglomeration belongs to the network of thoroughfares, *radially* built even in previous periods (Fig. 1).

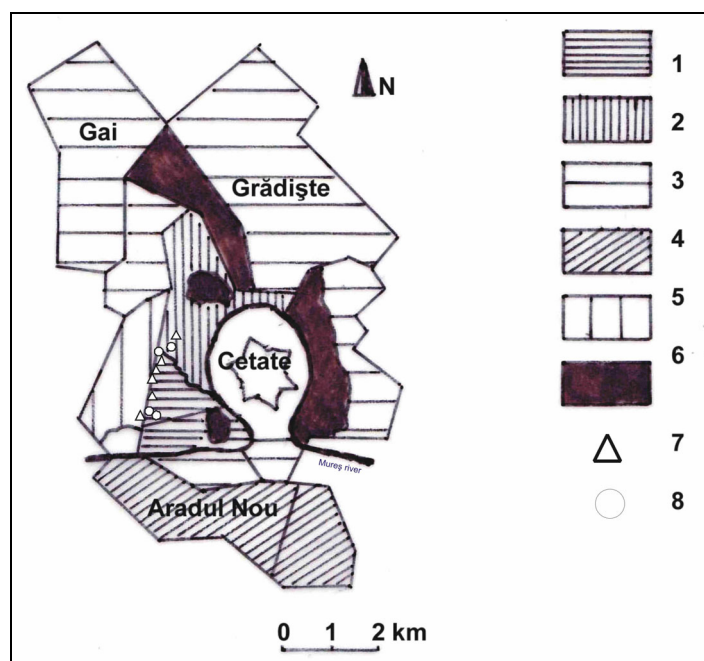


Fig. 1 – Main types of buildings in the city of Arad.

- 1, one-two-storey buildings specific to shopping-artisanal center (18th-19th centuries); 2, one-three-storey-buildings with continuous street fronts (19th century); 3, houses with a rural aspects in peripheral districts; 4, wagon-type Swabian houses; 5, villas from the inter-war period; 6, blocks-of- flats quarters and districts (1950-to date); 7, architectural monuments (18th-19th centuries); 8, contemporary monumental buildings (1950-to date).

The *linear* central core lies in the immediate neighbourhood of the Mureș loop. The main avenue of the central area (Revoluției Boulevard), oriented from north to south, concentrates the majority of the city's political, administrative and cultural institutions. Farther on, is Drăgășani district, conceived mainly during the 18th and 19th centuries, having a chaotic street texture; it represents the oldest part of the central area. The central avenue is limited to the north and south by two rectangular squares.

Avram Iancu Square, remarkable for its architectural composition, represents a passage between the central avenue and Drăgășani district. The position of the Theatre contributes to the success of the urban composition of the square fronts. It takes part both in defining a side of the square and in setting up a beautiful end of perspective of Revoluției Boulevard. Podgoriei Square lies at the northern end of the central avenue. It is a point of convergence for the roads coming from Oradea, Deva and Nădlac, and is valued for the new Romanian Orthodox Cathedral, and represents the other end of perspective of the central thoroughfare.

The necessity for satisfying different functions has determined the emergence of distinct types of urban morphology. Although these are quite different from district to district, and even within the areas of one and the same district, yet the evolution stages of the urban agglomeration have marked the existence of *four main morphological types*.

1) The type conceived in the 18th century and the first half of the 19th century is dominant in Drăgășani district, namely relatively narrow streets without vegetation, one-or-two-storey buildings forming continuous street fronts. On the outskirts of the other historical districts, there still exists a number of ground-floor buildings, the street having a narrow front and a rural aspect, dating from the same period of time.

2) The morphological type specific to the second half of the 19th century and the beginning of the 20th century, is represented by many-storey buildings that in most cases form continuous fronts, stands out compactly in the central area of the city and scattered within all its historical areas.

3) The districts consisting mainly of houses and gardens, dating from the first half of the 20th century and especially from the inter-war period, are Șega, Poltura, Grădiște and Mureșel; the houses are sometimes placed in the middle of the courtyard and are no more than two-storey high. Towards the outskirts, this morphological type often looks half-rural, including large plots with rather isolated gardens and houses, and lacking the public utilities associated with urban comfort.

4) The fourth morphological type is represented by buildings from the communist period, basically many-storey residential units, social and cultural structures, and modern production units. They form either large districts (Micălaca, Aurel Vlaicu, etc.), or lie isolated within the historical urban texture (streets such as Banu Mărăcine and Ștefan cel Mare, areas like Faleză Sud-Alfa, Confecții, the perimeter close to the railway station, etc.).

The specific physiognomy of Arad city is shaped precisely by the relations between the four main morpho-structural types. A contrasting relation is visible especially where the socialist blocks-of-flats adjoin the historical areas. Yet, the central area has remained relatively unitary from the point of view of composition (although the buildings present many different architectural styles) and it might become a true architectural reserve of the 18th and 19th centuries. However, these historical areas require big restoration projects. Although they have already begun, being implemented in the case of some symbolic buildings (the Administrative Palace, the Palace of Culture), the situation is not at all satisfactory, for instance in Drăgășani district. It should be remembered that restoration practices recommend interventions upon entire areas, and not just upon the architecture of certain representative buildings. Restoration should also have in view the city planner's outlook in order to adjust the urban texture, the product of obsolete functions, to the present-day urban functions, capitalizing on the distinct expressiveness of these structures.

A priority task is to modernize various buildings, including the blocks-of-flats, but updating works may sometimes radically alter the architecture of a structure. Noteworthy, especially after 1990, preference has almost exclusively been given to the individual dwelling type. The "villa" syndrome has reached also the periphery of Arad, but the architecture of these structures is alien to the traditional type of city dwellings. Such changes may in the end challenge what is called the city's personality.

PROBLEMS OF URBAN PLANNING

The build-up area of the city covers 4,618 ha. All the outlying districts, isolated from the central core, had been fully integrated in the urban area until 1950, when Aradu Nou and Sânnicolau Mic districts were eventually attached. Because different isolated territories have been added to the build-up area in the course of centuries, one can notice, on the one hand, a large area where the urban texture has obvious continuity, comprising the city center and the districts of Drăgășani, Pârneava, Grădiște, Șega and Poltura, and on the other hand, there are districts such as Bujac, Gai, Aradu Nou, Subcetate, Sânnicolau Mic, and Micălaca, which are somehow isolated from the central core.

It is obvious that a homogeneous and ordered urban structure provides an equal share of services within the territory. It is thus a rational provision, to cover the urban space, in every aspect: transport, energy supply, sewage networks, etc. Nevertheless, the multinuclear character of the city and functional decentralization, which have developed throughout its history, are essential features once urban functions have become increasingly more complex.

The way in which the present structure functions suggests that completing the current radial-shaped thoroughfares, linking the peripheral districts with the central core, with other thoroughfares, and connecting the peripheral districts with each other is imperative. These connecting thoroughfares should have either tangent or similar routes to several imaginary circles, with the fortress in their center. A first step to this end is to build an outer ring in the northern half of the city, linking Gai, Grădiște and Micălaca districts at their ends. However, this thoroughfare is meant to shift the intense traffic from Deva and Oradea to Nădlac customs-point, from the city center. The high traffic from Timișoara is still an issue, because it crosses the city center since no shortcut ring has been built as yet. The completion of the outer ring in the southern part of the city has a distinctive significance in increasing the city's geometrical coherence and assuring a fluent connection with its neighbouring Timișoara. It is also true that finishing of this ring needs bigger financial resources, it including the building of a new bridge over the Mureș River. However, facilitating relevant economic flows to Arad and giving the city a modern road infrastructure would bring important benefits.

Solutions of detail should observe the city's tradition which suggests the adoption of ordered units, with well-defined composition axes in space, large thoroughfares bordered by green areas. The ends of perspective, the crossroads and the inflexion areas are marked by representative architectural buildings. A rational approach to the location of residential units in the neighbourhood of historical units is highly recommendable. There are several achievements in this field, an example being the railway station area (Gării district, Fig. 2). There one may see a junction between the old and the new realized by neutral buildings, which take over elements of the existing composition and ensure a graphical continuity with the present. However, in most cases, *the integration by contrast*, often annoying, neglects the sentimental component of the historical formation of the city. The alignment of buildings on streets, the precise construction of urban images, and the homogeneity of the cornice are compositional aspects that have nothing to do with the principles of open urban planning, including green areas and dynamic images, specific to the new structures built over the last four decades. One of the major drawbacks in coagulating the urban agglomeration into a unitary system is the railway running through the city from north to south, and separating more than two thirds of its in the west from less than one third in the east. That is why, ever since the end of World War II, projects kept proposing the removal of the railway and the railway station and their reconstruction eastwards, outside the city (Gheorghiu, 2002, p. 124). The main railway station of the city is not located on the shortest route from Deva to Timișoara via Arad. Therefore, most passenger trains on this route stop only in Aradu Nou railway station in order to avoid the time-consuming operations in Arad's main railway station.

Apart from it, the railway crosses residential units in Aradu Nou and especially Micălaca districts, producing perceptible noise pollution. Unfortunately, the experience of several cities in the developed countries indicates that operations to remove the railways outside the city are very costly and, for the time being, the local government cannot afford it. The solution for the noise-affected districts would be to use phonic curtains or screens, systems that have proved their efficiency in many countries around the world.

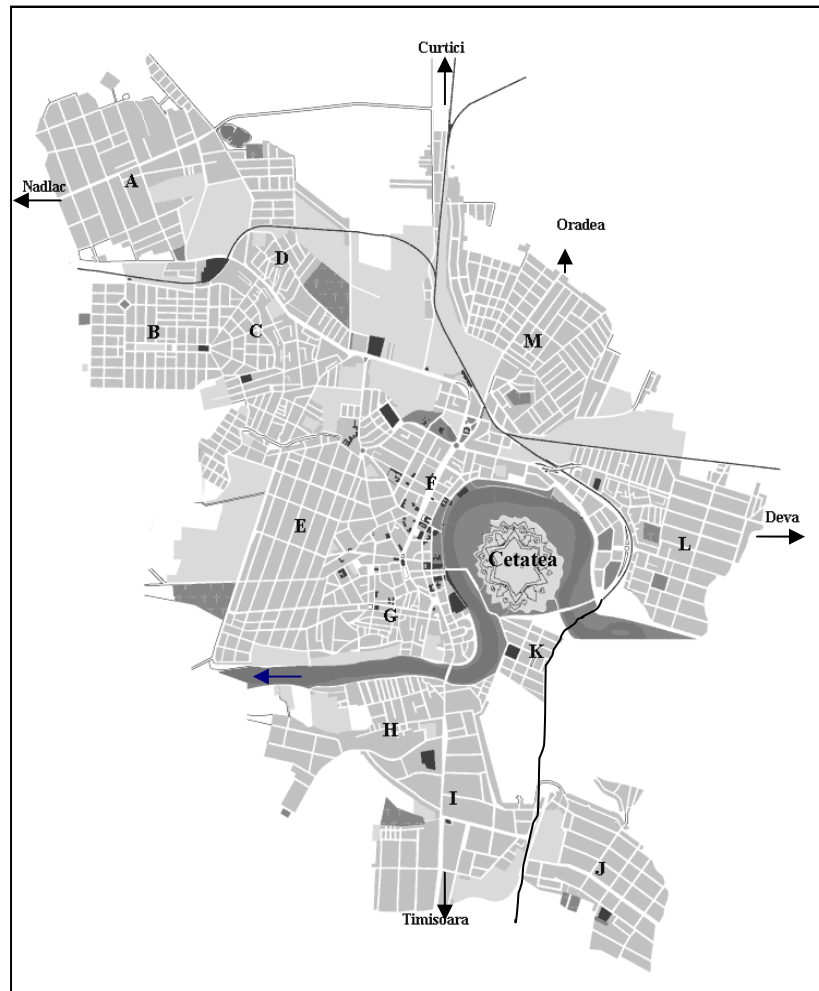


Fig. 2 – Current plan of Arad city.

Districts: A-Gai; B-Bujac; C-Șega; D-Poltura; E-Pârneava; F-Centru; G-Drăgășani; H-Mureșel; I-Aradu Nou; J-Sânnicolau Mic; K-Subcetate; L-Micălaca; M-Grădiște.

The railway of east Arad may have a restrictive role, but it may also play a part in the future evolution of the city. The areas now used by the railway may well represent an attractive construction site as the build-up area is expected to become more densely populated.

Arad has one of the lowest population densities in Romania. In 1974, it was referred to as “the most extended city of the country, apart from Bucharest” (Cucu, 1974, p. 283), with a raw density of 5.2 inhabitants/ha. Several factors had contributed to this situation: the relatively large uninhabited space in the meander area of the Mureș River, the high number of half-rural districts added to the city in a relatively short period of time, and Arad’s large agricultural area (12,500 ha in 1970).

Table 1

Population density in the cities of Romania (2005) (by administrative area)

City	Population density (inh./ha)
Baia Mare	5.91
Arad	6.48
Satu Mare	7.66
Cluj-Napoca	17.71
Timișoara	24.57
Constanța	24.86
Iași	34.17
Craiova	37.17
Ploiești	39.90
Bacău	40.64
Pitești	41.36
București	80.94

Source: *www.insse.ro*

In 2004 although the population density increased (6.48 inhabitants/ha raw density and 37.4 inhabitants/ha net density, see Table 1), yet it still is one of the lowest among Romania's cities. Density distribution by district is of the core-periphery type (Table 2, Fig. 3). The highest values (over 50 inh./ha) are found in the ring-like area surrounding the meander of the River Mureș. Highest values (in Aurel Vlaicu district) are registered somehow outside the above-mentioned area, because of the blocks-of-flats built there. The peripheral districts have extremely low density values, because of the suburban individual dwellings, where agricultural land prevail in-between the houses.

Table 2

Arad city. Distribution and population density by districts (2005)

No.	District	Population	Area (ha)	Population density (inh./ha)
1.	Centru	39,522	510	77.5
2.	“Drăgășani”	6,370	113	56.4
3.	Pârneava	21,022	383	54.9
4.	Aradul Nou	15,697	553	28.4
5.	Mureșel	1,336	230	5.8
6.	Sânnicolaul Mic	3,805	275	13.8
7.	Aurel Vlaicu (Poltura)	37,769	231	163.5
8.	Șega – Cadaș	5,074	238	21.3
9.	Gai	4,129	444	9.3
10.	Bujac	8,202	205	40.0
11.	Grădiște	14,161	673	21.4
12.	Micălaca	33,229	653	50.9
13.	Subcetate	598	110	5.4

Source: *Pavel, Rusu, 2007, p. 63.*

In order to mitigate this situation, the new residential units of Arad should be organically integrated into the city structure. It would be desirable, if possible, to make utmost use first of the available spaces existing in the built-up area, and build new structures only afterwards. The fact is that the rural environment around the city (including some urban peripheral districts) being confronted with depopulation and underdevelopment, while the new residential promotions are wasting space, derailing the building market and eventually the city as a whole. At about 6 km outside the city, is the so-called “West District” commissioned in 2001. It covers around 30 ha and consists mainly of

individual dwellings. The first projects, made in Italy, glaringly ignored the local conditions and realities (Gheorghiu, 2002, p. 157).

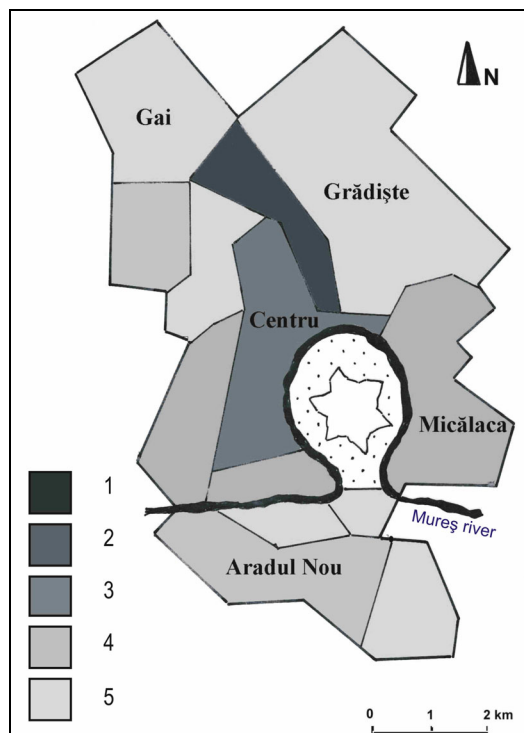


Fig. 3 – Population density in Arad city (2005)(inh./ha).
1. over 100 inh./ha; 2. 75-100; 3. 50-75; 4. 25-50; 5. under 25.

CONCLUSIONS

The current morpho-structure of Arad city, the outcome of its historical evolution, is relatively simple: a central core, around which the other districts gravitate as “urban subsystems”. Because of their independent development, these districts present distinctive features both in terms of function and architecture, giving the urban system a multinuclear character. The specific physiognomy of Arad is shaped exactly by the (sometimes contrasting) mixture of distinct morpho-structural types. Although the central districts still comprise worthy urban buildings, yet in the absence of restoration works, their aesthetical aspect is rather poor.

Urban space organization issues:

- a) the design of several thoroughfares to connect the present districts in a radial manner, in order to provide better links between the urban subsystems which gravitate around the central core;
- b) the completion of the outer ring in the southern part of the city to divert the high traffic from its central area;
- c) the railway crossing Aradu Nou and Micălaca districts is both a restrictive and ordering factor in the organization of the urban space, but for the time being high costs prevent the implementation of projects to remove it from the city;
- d) the location of new residential units, their integration into the urban system and the imperative of saving urban space as there are many districts with very low population density and available building space.

Eventually, the morphological evolution of Arad cannot be taken out of the economic, social and political context of the geographical space it is located in. The future evolution of the city would imply harmonizing it, on the one hand, with *organic development*, which makes the urban process lasting and sustainable, and on the other hand, with *planned development*, which is meant to order, in space and time, the sequences of the city's general development.

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Received 7 September, 2009

AN ANALYSIS OF DEVELOPMENTS IN THE BIHOR (RO) – HAJDÚ-BIHAR (H) EUROREGION

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Key-words: SWOT analysis, euroregion, Bihor county, Hajdú-Bihar County.

Analyse du développement de l'Eurorégion de Bihor (Roumanie) et Hajdú-Bihar (Hongrie). L'inefficacité et la désintégration de l'ancien système administratif de l'Europe Centrale et de Sud-Est, combinées avec la configuration institutionnelle de l'Union Européenne ont conduit certaines régions, différentes comme structure démographique et développement socio-économique, d'établir des relations de coopération transfrontalière. Dans cette acception, le but de cette étude est fourni par les caractéristiques communes du développement régional et, aussi bien par les provocations communes dues au phénomène de cohésion territoriale, culturelle, sociale, que par les politiques d'environnement menées par les deux proches autorités administratives-territoriales, pour lesquelles la seule séparation qui existe est la frontière. Les pays participants, la Roumanie et la Hongrie, à travers le temps, ont déployé leurs propres plans nationaux de développement. L'intention de ceux impliqués dans le plan de développement régional au niveau de la frontière roumano-hongroise n'est pas de concurrencer les documents nationaux, ni de mêler les procédures de mise en application, mais de les compléter et les améliorer au niveau local, afin que se développe une région efficace et, de plus, se réduisent les différences sociales et économiques existantes dans les deux départements.

AIMS, MATERIALS AND METHODS

The term cross-border cooperation describes the collaboration between two or more adjacent local and regional entities situated in different, but neighbouring, states. These associations can be based on short-term structures, which are usually built for a single purpose, or can be permanent long-term structures, in which case they address various issues. Most of these permanent cross-border associations are named Euroregions. A Euroregion can broadly be defined as follows: "A Euroregion is a transfrontier institution, with or without legal personality, involving public and private participants, which establishes transfrontier relations of a promotional nature between local, regional or national authorities, always with the approval, or under the auspices, of the central government."

This generic definition covers diverse forms of cooperation which differ in terms of actors, organizations and fields of cooperation. Because of these differences, it is difficult to determine what exactly can be called "standard model" of a Euroregion, which makes it necessary to revert to such a broad definition. The level of integration of transfrontier regions varies considerably from case to case, being conditioned by internal factors, such as historical background, geographical and demographic dimensions, as well as the relationship with the central state, on the one hand, and with external factors, on the other hand.

Despite these differences, Euroregions have some characteristics in common which can be summarized as follows:

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At organizational level	<ul style="list-style-type: none"> • involvement of regional and local authorities on both sides of the national border; • cross-border organizations; • bi- or multilateral agreements between the respective national states or informal cooperation agreements between local and regional actors.
Areas of cooperation	<ul style="list-style-type: none"> • economic, infrastructural and cultural collaboration; • concrete action areas: regional and economic development; transport and traffic; environmental protection; culture and sports; health-care; tourism and leisure; agricultural development; innovation and technological transfer; schools and education; communication, emergency services and disaster prevention.
Working methods	<ul style="list-style-type: none"> • elaboration of cross-border development strategies; • exchange of information, coordination of measures and common initiatives; • participation of other local and regional institutions, such as chambers of commerce, or education and research institutions, for developing some programmes or projects.

On the basis of these data, the study makes a SWOT analysis of a border cooperation model initiated in 2002 between the local councils of two adjoining Romanian - Hungarian administrative - territorial units: Bihor County Council (RO) and Hajdú-Bihar Self-government (H).

Using some social and economic data, most of which were obtained from the national statistics centres of both regions, specific development level and economic potential indicators in this area are being discussed (Table 1).

Table 1

Characteristic indicators of the Euroregion's development level

INDICATORS	REGION	COUNTIES		STATES	
		Bihor	Hajdú-Bihar	Romania	Hungary
I. Population, occupancy, unemployment					
Total population	1,142,606	593,606	549,000	21,680,974	9,981,334
Urban population (%)	120	57	63	54.9	36.3
Rural population (%)	80	43	37	45.1	33.7
Migratory balance (%)	12	5	7	7.2	11
Active population per total (%)	90.70	56	34.7	38.8	18
Unemployment balance (on 13.12.2008) (%)	5.8	2.7	3.1	5.9	7.7
II. Economic development					
Foreign direct investments (2008), in mill. euro	24,441	7,069	17,372	21,885	500
Industrial parks	6	1	5	44	200
No. of SME* / 1,000 inhabitants	8,587	2,897	5,690	22	70
Attractiveness level (%)	57	34	23	76	44
III. Infrastructure					
Transport – public roads density (km)	3,758.7	2,247.7	1,511	79,454	116,000
Transport – upgraded public roads (2008), %	59	22	37	26.4	52.3
Drinking water network (%)	83	71	12	61	24
Sewage network (%)	15	5	10	22	37
Education (No. of kindergartens, primary and secondary schools, high schools, universities)	2,372	1,001	1,371	11,865	13,000
Health-care (No. of state and private hospitals)	35	17	18	433	179
Tourism – accommodation	121	85	36	4,226	2,527

Source: National Institute of Statistics, Bucharest and Központi Statisztikai Hivatal, Budapest.

* Small and Medium-sized Enterprises.

Looking at these indicators and interpreting them clearly reveals important differences between the economic situation of the two administrative-territorial units, caused by their peripheral position from national centres, highlighting their social and economic characteristics. The intention to redevelop and rethink what type of common actions could be good for the region is welcome. Thus, the economic situation of the Hungarian county is more favourable than that of other counties in Hungary. At the same time, Hajdú-Bihar County is better known due to Debrecen municipality, which is Hungary's second largest city. Bihar County in Romania, a medium-developed one, has attracted the interest of foreign investors. Besides, Oradea, the capital of Bihar County, a second-rank city in Romania's urban hierarchy, pushes the county to the first place among regional centres.

That socio-economic indicators in the Romanian county are lower is indicative of population tendencies. Thus, except for a few settlements located at the foot of mountains and hills, which are heavily losing their population, Bihar County is confronted with population ageing, likely to end up in the gradual loss of population, despite the faster growth of settlements. In the case of the Hungarian county, there is a growing population increase yet not so significant. These minor differences indicate another similarity between the two counties, which could be a good point for mutual relationships, that anyhow have a long-standing tradition. Perhaps, this is one of the reasons for cooperation between both counties that have developed a complex system of cross-border relations in place for many years now. The relations are being stimulated by people on either side of the frontier, moreover so as Romanian and Hungarian ethnics live on both sides of the line.

The starting point of cooperation between those two administrative-territorial units is the Carpathian Euroregion (Fig. 1).



Fig. 1 – The Carpathian Euroregion (*source: www.tradecarp.com*).

The Euroregion's great territorial extension (the central position of the two Carpathian axes shaping two distinct areas, one west Carpathian and the other east Carpathian, each with its own functions, particularities and growth targets and a large population that exceeds the total population of some neighbouring countries), made it difficult to function properly so that agreements for a common development of the region itself were facing serious problems, also for the countries involved. As a result, the municipalities located on either side of the Romania – Hungary border decided to create their own structure (Fig. 2), capable to make individual activities and cooperation relations more efficient.

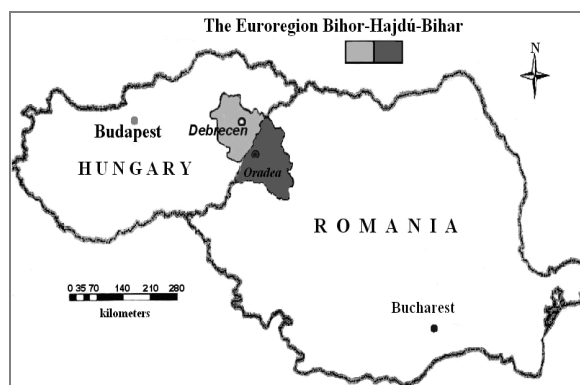


Fig. 2 – The Bihor-Hajdú-Bihar Euroregion (source: Ilieș, 2004, p.154).

Consequently, the new territorial structure is aimed primarily at stimulating new ways of cooperation between these two countries, according to established objectives:

- competitiveness, efficiency and economic growth,
- balanced development and cohesion,
- environmental protection, natural and build-up sites,
- integration.

From 2002 to-date, when the Euroregion came into being, these objectives have been effectively pursued, leading to a balanced development of the locality network infrastructure. Thus, in many localities, public transport systems, as well as the goods and passengers transport, became more economically-efficient and environmentally-friendly. Besides, excessive and uncontrolled urbanization, especially in the two county-seats, Oradea and Debrecen, could be avoided; in the rural area, the distribution of farms, by size and production type, allowed for more efficient large-scale outputs.

Solving some of these issues has led and will further lead to reducing nationalist tensions between the two neighbouring counties, at both local and regional levels, to stability and functional economic cooperation, or to other ties between them (Fig. 3).



Fig. 3 – Associated localities (source: Ilieș, 2004, p.160).

Although the two communities have complementary or similar cultural, historical and socio-economic development premises, yet the region's administrative centers being small-sized have not attracted large-scale investments, particularly in research and technology. However, according to the World Bank data on investments versus population ratio, both cities may expect investments of up to 100 million USD, there is a coherent policy to promote the region's development. Both local authorities should not forget that only some localities are competitive and attractive for foreign investments, exports and growths. Consequently, they should strive to continue to create optimum business conditions, vital for the local economy as a whole.

The region has a very diverse development potential, uneven in the territory. Nevertheless, from the large cities (Oradea, Debrecen) to the most isolated areas, local resources can be identified to ensure sustainable development. If the urban centres have plenty of development resources and opportunities, isolated areas, for all the negative effects of their geopolitical position, they have an important tourist asset, namely that of preserving folk culture and traditions.

Moreover, lying in the proximity of Central Europe, and having a very original relief (caves, defiles, etc.), a favourable climate and low heights (about 1,800 m alt. and little over, e.g. Cucurbăta Mare Peak, 1,849 m), the region has a considerable tourist potential due to its archaeological vestiges, natural reserves, glacial and storage-lakes, numerous caves, spas and health resorts, propitious conditions for mountain tourism, leisure and recreation. The region has also several ethno-folkloric areas which has allowed for the development of agro-tourism in Bihor County (e.g. Beiuş Land, "Munții Apuseni" National Park, Chişcău, Pietroasa or Padiş, etc.) and also in Hajdú-Bihar County (e.g. The National Park at Hortobágy, Hajdúszoboszló, Debrecen and its surroundings, etc.).

The data collected from the two institutions, reveal a good cooperation between the two communities based on the traditional relations between their territorial-administrative units. But, to maintain this situation at the current level, and if possible improve it, both municipalities should take into account the advantages and disadvantages of either of them, and also the threats posed by infrastructure, migration, the degree of attractiveness of their areas, and not least the environmental issues which could appear in the region (Table 2).

Table 2

The SWOT Analysis of Bihor – Hajdú-Bihar Counties

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> – Good accessibility by air (Oradea and Debrecen Airports); high density of the road and railway network (above the national average); – Important investments in the business infrastructure and the possibility for the formation of businesses clusters of enterprises with a good brand and tradition, e.g. car and equipment manufacturing, furniture, textiles and food industries; – Subsoil resources (complex ores, bauxite, thermal water); – Increasing entrepreneurial capacity; – Basic services available in urban areas; – Traditional urban centers with well-structured cross-border relations (Oradea, Salonta, Mehkerek, and Kőtegyan); – Tourism in nature and human resources appreciated both at home and abroad, put to account by numerous tourist structures; – A university centre boasting an old tradition (Debrecen), and one that has been developing over the last 15 years (Oradea) and other academic centres with a good development potential; – Complete and balanced educational infrastructure; – Tradition in advanced health services (Debrecen). 	<ul style="list-style-type: none"> – Lack of investments to develop the infrastructure of roads, railways and airports in the region; – Low investments in research and development; low participation of commercial firms in the information society; – Very few services and products with high added value; – Insufficient capacity and degradation of the sewage and water purification systems; – Underdeveloped research infrastructure; – Insufficient tourist resorts for young people; little support for the development of local/ regional conditions in this respect; – Insufficient health-care personnel, particularly in the rural areas, inadequate building structures and insufficient technical and material endowments of the medical units (especially on the Romanian side).

Table 2 (continued)

DEVELOPMENT OPPORTUNITIES	EXISTING RISKS AND POSSIBLE THREATS
<ul style="list-style-type: none"> – The use of European funds for the construction/rehabilitation of the access infrastructure (road, railway, air); – The existence of many market niches for industrial and food products, furniture items and services; – The reorientation of banks for the support, establishment and development of the small-and-medium-sized enterprises (SME) to diversify their services; – Opportunities to receive EU post-accession funds for increasing EU economic and social cohesion; – Little competitiveness of the region's enterprises in the EU market; – The EU's emphasis on the development of border regions; intensification of the economic and social relations; – Greater international interest for practicing tourism in natural parks and for cultural tourism; – Interest in developing metropolitan areas; – Increasing public and private investments in education. 	<ul style="list-style-type: none"> – Although the region is crossed by a European road, there is a risk for the regional territory to be skirted by some major European corridors; – There is considerably lower interest for servicing people than for financing sub-projects which directly help the process of the labour employment; – The SMEs are unprepared for coping with environmental issues, quality, communication, and managerial practices; – High levels of emigration, particularly of high-skilled labour; – Neglect for the cultural heritage; – The poor quality of public utilities reduces the region's attractiveness; – The closure of schools in small villages that have few students may increase illiteracy.

The above issues are simply some indicators for establishing a basis of cooperation between the two communities and their territorial-administrative units. Starting from these aspects and making a short introduction to what regional cooperation means from the Euroregion perspective, we would say that, in our case, cooperation, also means finding a common language, materialised in coherent programmes in the field of economy, tourism, culture, art and other domains. An example would be the good relations that exist between the two universities – Oradea and Debrecen – which actually date back before the Euroregion had been established, and continue within the framework of collaboration in matters of educational programmes, achievable through information transfer and human resources.

Of course, there are lots of relevant examples of cooperation between the two neighbouring counties. One of these is the occasional opening of the border crossing-point Cheresig (Romania), and its Hungarian counterpart Korosszegapati, enabling people from the two localities to cross the border more easily. The SWOT analysis made in this paper (Table 2) shows both similitudes and differences, primarily in terms of economic development conducive to cross-border cooperation, because especially in recent years, transfrontier development perspectives has made most economic actors and decision-makers from the two counties accept it.

The presence of important cross-border cooperation actors (NGOs, sport associations, travel centres, schools and universities) can represent a solid foundation for initiating and supporting joint development strategies between the communities, also including their adjacent areas.

Although differences in matters of concrete problems do exist, yet there are common views on strengths, weaknesses, opportunities and threats. In the light of SWOT analysis, we can draw the following conclusions:

- strengths – will be consolidated by the enthusiasm of participants (people and authorities), in mutually finding the usefulness derived from cooperation. In this case, direct and open communication is a precondition for raising awareness and striving to eliminate prejudices, most of them generated by history. Because each partner has his own identity, mentality and a different historical and cultural background, the authorities involved in cooperation must include in their programme the development of a new identity common to both communities, e.g. research into the cultural identity liable to strengthening a region's economic power as well;

- weaknesses – imply much organisational effort to abide by the provisions of the cooperation treaty and, last but not least, work together to make compromises;

- opportunities – reside in the elements common to both territories, and provided cooperation structures make them operational, the experience could act as a model for future cross-border

cooperation. However, since participants in cross-border cooperation speak different languages, clarification of linguistic notions is of paramount importance in order to avoid misunderstanding;

– threats – could still exist if each part is at the same time involved in cooperation projects with other territorial structures, with the sole purpose of bringing more money to public institutions.

In conclusion, consolidating economic relations will be a strong motivation of common interest. Sharing the profit of joint investments will force both administrative bodies to have closer contacts irrespective of nationality or language. In other words, business does not have a nationality, but it is a favourable framework for intercultural and interethnic contacts. It is the result of more investments in Romania, especially foreign investments, the greater involvement of the Romanian border region, which being better urbanized has a greater potential to attract foreign investments. This type of complementarity offers a solution for dealing with the high unemployment rate existing in the Hungarian border region which has a monostructural agrarian character, without the possibility for people to supplement their incomes from other industrial branches than rural tourism. Therefore, at Euroregion level, the cross-border cooperation policies promoted aim primarily at the protection and rehabilitation of environmental factors (air, water, forests, etc.) by means of globally accepted rules: common security of food, finances, health-care, etc., protection and rehabilitation of the cultural heritage, etc.

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Received 17 September, 2009

TYPES OF HYDRIC REGIME IN THE SMALL RIVER BASINS FROM ROMANIA IN TERMS OF ANNUAL AVERAGE FLOW VARIATION

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Key-words: small basins, types of hydric regime, Romania.

Types de régime hydrique à l'échelle des petits bassins hydrographiques en Roumanie. Les auteurs examinent les types de régime hydrique à l'échelle des petits bassins hydrographiques sous 100 km², selon les données des bassins représentatifs situés dans différentes parties de la Roumanie, différenciés en fonction du régime des pluies et des facteurs naturels (géologie, relief, sol, végétation). Ces facteurs, mais surtout le régime des précipitations ont déterminé, dans le cas de ces rivières, l'existence d'un type particulier de variation de débit au cours de l'année. Dans chaque type de régime, on a déterminé l'apport qu'ils ont sur l'écoulement, chacun des facteurs qui le déterminent: précipitations liquides, précipitations solides, l'écoulement souterrain.

INTRODUCTION

Knowing the type of hydric regime (flow variation / year) is a problem of major interest not only for water management, but also for other areas, e.g. social–economic, energy, irrigations, etc. In view of it, the type of flow variation/year in small basins (under 100 km²), was established at the hydrometric stations of representative basins.

Representative basins are situated in different zones of the country with distinctive rainfall regime and natural factors (geology, relief, soil, vegetation) (Miță 1996). The rainfall regime of rivers has a certain type of flow variation over the year (TFV). Calculations for this study covered the 1975–2002 interval at the majority of hydrometric stations.

1. THE CHARACTERISTIC AVERAGE YEAR

Establishing a river TFV at a certain hydrometric station, involved analysing the average monthly values of the 28 years (1975–2002) take into calculation.

The hydrograph of a real year (conventionally called *characteristic average year*) is the year in which the annual average and the monthly average discharge values come closest to the annual and multi-annual averages registered at the respective station. Therefore, it is closest to the multi-annual average / year, both in terms of quantity and time-distribution, registered at the respective station, and can be considered typical of the respective river. Thus, the months intervals in which highest or smallest discharges constant flow periods and discharge phases characteristic of the respective river occur are highlight.

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For each characteristic average year established for a certain hydrometric station and therefore for each type of flow variation / year, corresponding to the respective station, quantitative determinations were made of supply sources: liquid rainfalls (1), snowmelt (z), and groundwater input (base). It was decided that the characteristic average year should be the hydrologic year (X–IX) and not the calendar year (I–XII) for the cause–effect analysis to have continuity (the contribution of runoff from snowmelt water).

The analysis of flow distribution / year made in this paper, had in view monthly and is not daily average values, because the longer the time intervals, the more accurate the cause-effect analysis. In what concerns snowmelt runoff (for example) before showing up in discharge after a certain time; the same in the case of precipitation falling on the snow layer. The longer time-intervals blur this time-gap between cause and effect, making the analysis between the two factors more reliable.

2. SUPPLY SOURCES

River water sources in Romania are rain, snow, phreatic and deep waters. Supply inputs come from superficial sources and groundwater sources. Establishing groundwater supply sources meant dividing the daily average hydrograph corresponding to the characteristic average year.

Separating groundwater supply from superficial supply is graphically represented by a curve which runs through summer and winter minima and through the final points of flood decrease curves (Fig. 1). In this way, the average monthly groundwater-produced drained layer was calculated.

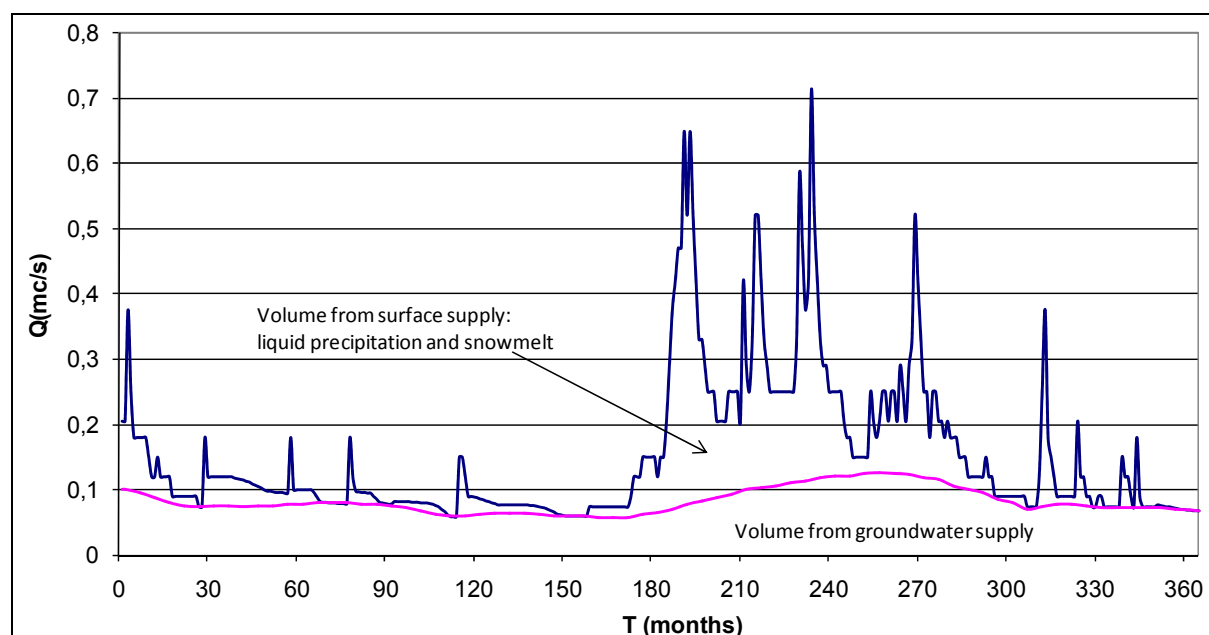


Fig. 1 – Hydrograph separation of groundwater supply.

Separating groundwater supply from the superficial supply allowed for the calculation of the layer drained by the monthly average groundwater (Fig. 2).

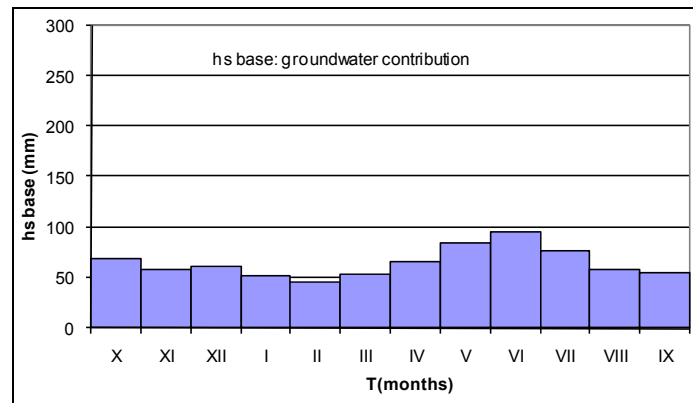


Fig. 2 – Monthly runoff variation of groundwater supply.

Extracting the layer drained by groundwater supply from the total drained layer (Fig. 3a) the layer drained by superficial supply could be obtained (liquid rainfall and snowmelt) (Fig. 3b).

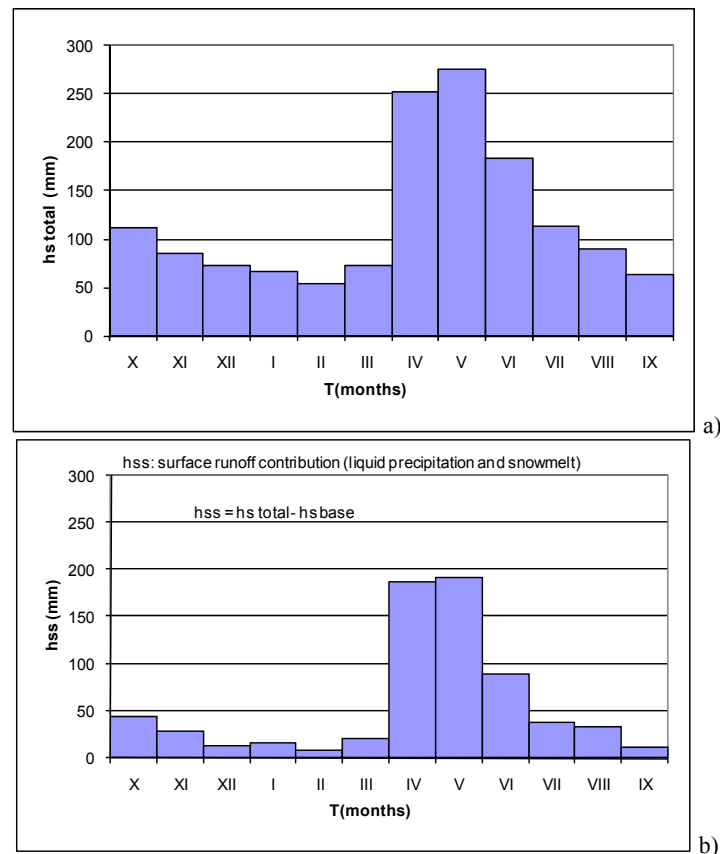


Fig. 3 – Monthly variation of total runoff (a) and surface runoff (b).

In order to separate the snow-related superficial supply from rain-triggered supply, the meteorological factors found at the representative meteorological stations of the basin, as well as snowmelt dynamics in the conditions of liquid precipitation fallen over the existing snow layer were taken into consideration.

Establishing the layer drained by liquid precipitation (Fig. 4c) was made by using the liquid precipitation layer (Fig. 4a) and the relations between the runoff coefficient and liquid precipitation at each hydrometric station in terms of the index value of the precipitation fallen for 10 days previously, API_{10} (Fig. 4b).

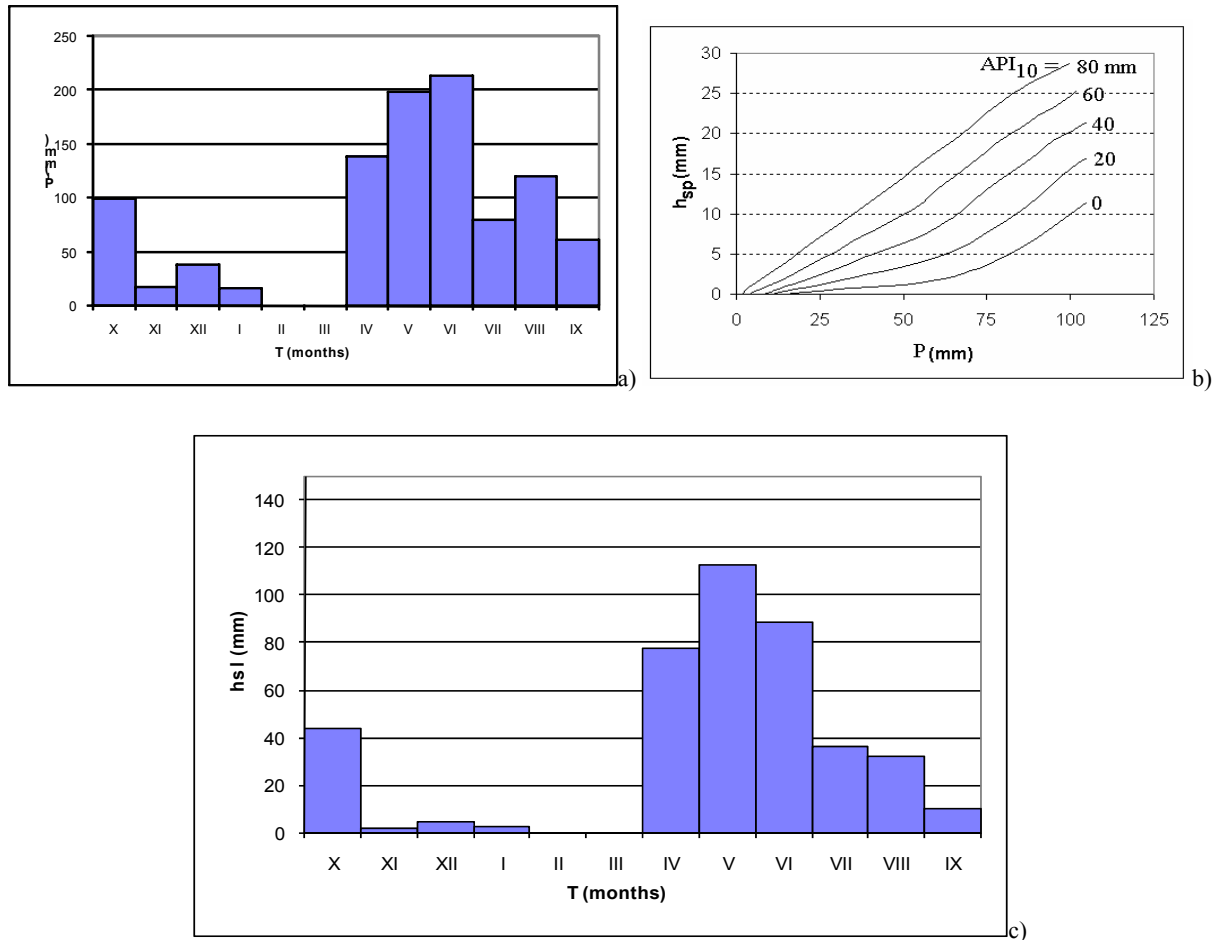


Fig. 4 – Monthly variation of rainfall (a), total rainfall-triggered runoff (c), and the relation between the runoff coefficient and rainfall for different API_{10} (b).

Establishment the snowmelt drained layer was made in two distinct stages.

The first stage looked at the snowmelt water layer, h_z (mm) (Fig. 5d) starting from the layer of solid precipitation fallen (Fig. 5a), h_{zc} (mm), daily air temperature variation (Fig. 5b) and relations between the water quantity yielded by snowmelt, h_z (mm) and the daily average air temperature in terms of sunshine duration, D ; (Fig. 5c) (Miță, Drăgan, 1986).

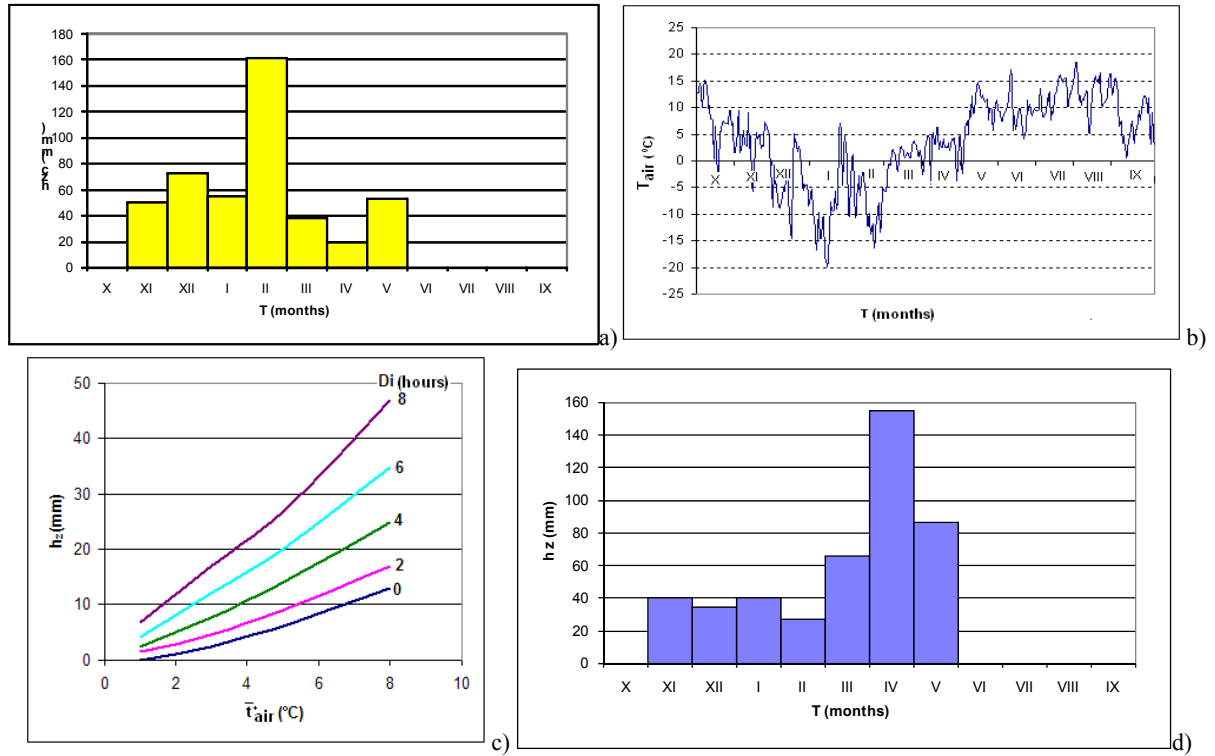


Fig. 5 – Monthly variation of snowfall (a), total snowmelt triggered-runoff (d), daily air temperature variation (b), and the relation between snowmelt and daily air temperature for different sunshine duration (c).

Starting from these values and using the relations between the snowmelt-drained layer and snowmelt-related water layer (Fig. 6a) enabled determining the snowmelt drained layer (Fig. 6b).

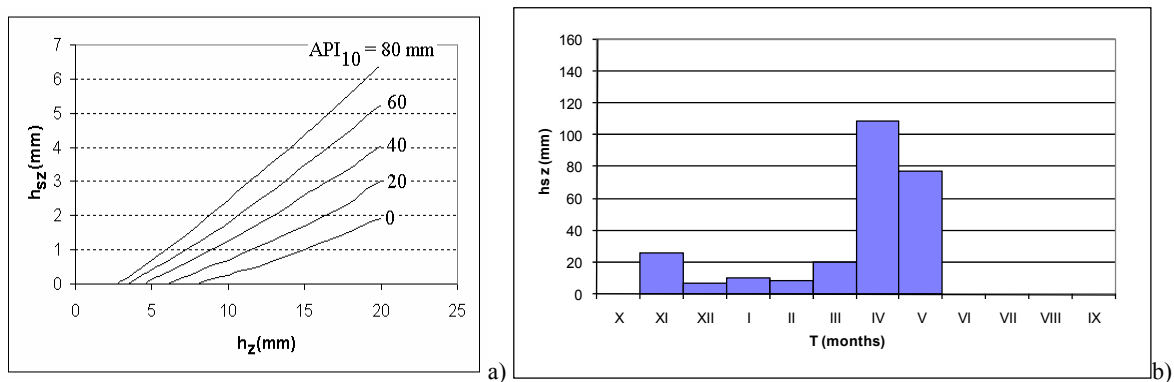


Fig. 6 – Relations between snowmelt-related runoff and snowpack water equivalent for different API_{10} (a) and the monthly variation of snowmelt-triggered runoff (b).

Finally, by combining these results and based on the monthly average values, the TFV was obtained, with highlight on the contribution of each constitutive factor to the flow: liquid precipitation ($h_s l$), snowmelt water ($h_s z$), and groundwater ($h_s base$). For comparison's sake, the values of flow elements and of supply sources were expressed in terms of layer (mm and %). The results obtained for four representative basins are illustrated in Fig. 7.

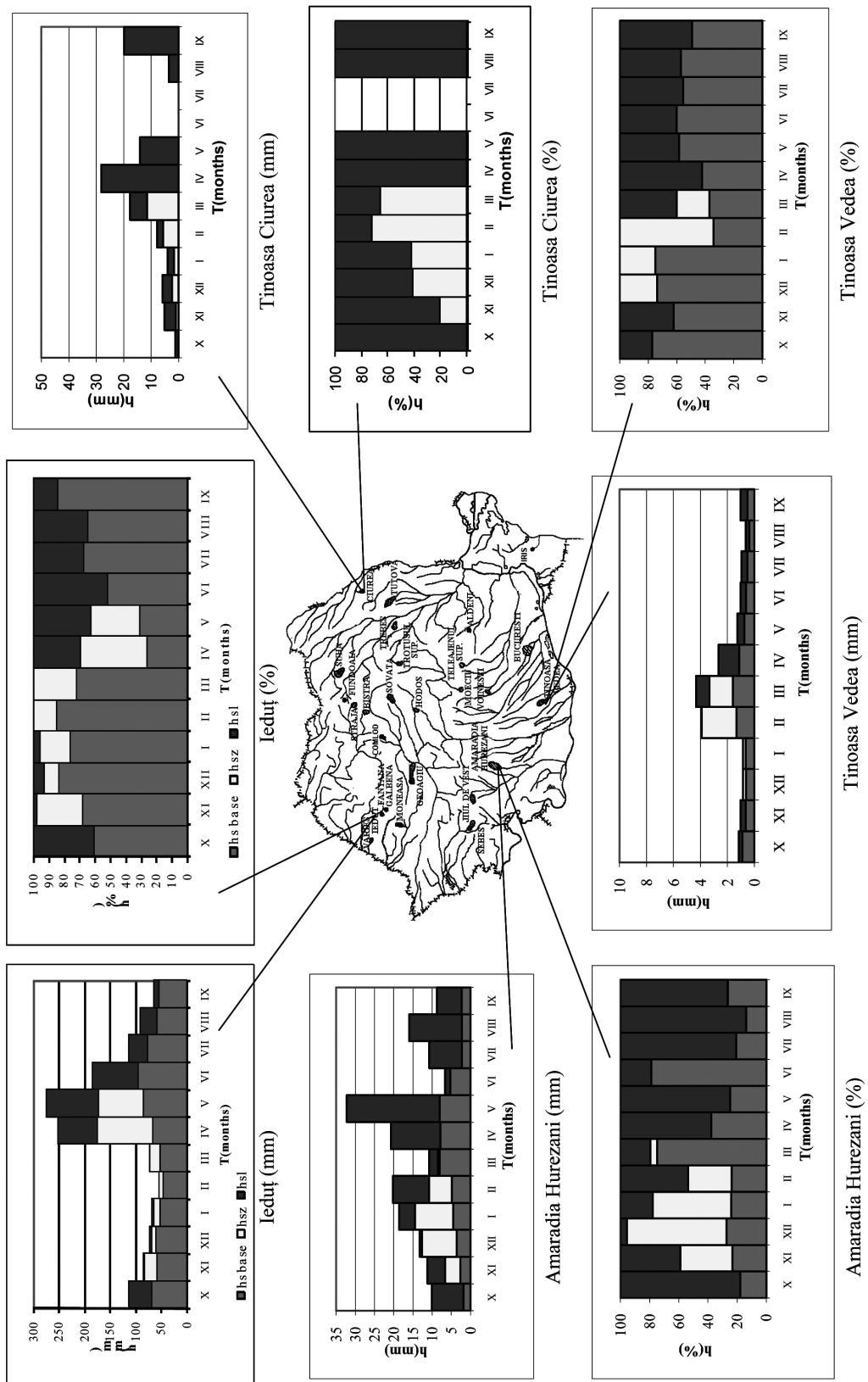


Fig. 7 – Annual cycle of monthly runoff variation (mm, %) – different variation types.

3. TYPES OF FLOW VARIATION IN THE SMALL RIVERS OF ROMANIA

Flow variation types were established by taking into account the following:

- the size of the drained layer h_s (annual values);
- time intervals in which characteristic drained layer values occur (highest and lowest);
- supply sources.

A. TFV corresponding to mountain region

I. In the high mountain region (over 1,000 m) from the West of the country (R.B. the Iedut), annual $h_s > 1,000$ mm

- Highest h_s values: months IV–V, source: rains and snowmelt
- High values: months VI–VIII, source: rains
- Lowest h_s values: months XI–II, source: groundwater supply

II. In the high mountain area (over 1,000 m) from the South – East of the country (R.B. the Jiul de Vest) annual $h_s > 1,000$ mm

- Highest h_s values: months IV–V, source: rains and snowmelt
- High values: months VI–VIII, source: rains
- Lowest h_s values: months IX, XI–II, source: groundwater supply

III. In the high mountain area (over 900 m) from the South – West of the country (the Banat Mountains) (R.B. the Sebeş) annual $h_s > 900$ mm

- Highest h_s values: months III–IV, source: rains and snowmelt
- High values: months V–VI, source: rains
- Lowest h_s values: months VIII–X, source: groundwater supply

IV. In the high mountain area (over 1,000 m) from the North – East of the country (R.B. the Straja, Suha, and Bistra) annual $h_s: 700–1,000$ mm

- Highest h_s values: months IV–V, source: rains and snowmelt
- High values: months VI–VIII, source: rains
- Lowest h_s values: months XI–II, source: groundwater supply

V. In the high mountain area (over 1,000 m) from the East of the country (R.B. the Upper Trotuş) annual $h_s: 400–450$ mm

- Highest h_s values: month IV, source: rains and snowmelt
- High values: months VI–VIII, source: rains
- Lowest h_s values: months XII–II, source: groundwater supply

VI. In the high area from the East of the country, the Western branch of the Eastern Carpathians (over 900 m) (R.B. the Sovata) annual $h_s 400–450$ mm

- Highest h_s values: month V, source: rains and snowmelt
- High values: months VI–VII, source: rains
- Lowest h_s values: months XII–II, source: groundwater supply

VII. In the low area of the Apuseni Mountains, Codru-Moma, Zarand 700–800 m (R. B. the Moneasa) annual $h_s: 400–450$ mm

- Highest h_s values: months III–IV, source: rains and snowmelt
- High values: months I; VI, source: rains
- Lowest h_s values: months VII; X–XI, source: groundwater supply
- Particularity: rain-and-snowmelt-triggered floods in January

VIII. In the high mountain area (over 1,000 m) from the South of the country (R.B. the Upper Teleajen) annual $h_s: 750–800$ mm

- Highest h_s values: month IV, source: rains and snowmelt
- Particularity: abundant flow throughout the year

B. TFV corresponding to hill and plateau regions

I. The hilly area from the South–West of the country, altitudes 400–450 m (R.B. Amaradia Hurezani) annual hs: 150–200 mm

- Highest hs values: month III, source: rains and snowmelt
- High values: months IV–VI, source: rains
- Lowest hs values: months VII–IX; XII–II, source: groundwater supply

II. Hilly area from Southern Transylvania, altitudes 600–650 m (R.B. the Hodoș) annual hs: 200–250 mm

- Highest hs values: months III–IV, source: rains and snowmelt
- Lowest hs values: months VI–VIII, source: groundwater supply

III. Hilly area from the East of the country, the Central Moldavian Plateau and the Transylvanian Tableland – altitudes 250–350 m (R.B. the Trebeș, Tinoasa Ciurea, and Comlod) annual hs: 100–150 mm

- Highest hs values: months III–IV, source: rains and snowmelt
- Lowest hs values: months VII–VIII; XII–II
- Particularities: no groundwater contribution for $F < 30 \text{ km}^2$

C. TFV corresponding to plain regions

I. The West Plain and the Romanian Plain, 120–150 m altitudes (R.B. the Varieș, Tinoasa and Vedeia) annual hs: 20–30 mm

- Highest hs values: month IV, source: rains and snowmelt
- High values: months I–II, source: rains and snowmelt
- Lowest hs values: months VI–VIII
- Particularity: no groundwater contribution at $F < 15\text{--}20 \text{ km}^2$ censed by drying up phenomena

4. CONCLUSIONS

On the basis of a very accurate hydro-meteorological data-base obtained from Romania's representative basins and the corresponding processing, the types of hydric regime in small basins have been established in terms of drained layer size (annual values), time-intervals in which highest and lowest drained layer values occur as well as the contribution of supply sources (liquid precipitation, solid precipitation and groundwater flow) in mm and also in percentages.

These basins are located in the main relief forms: mountains, hill-plateaus, and plains. Several sub-types have resulted as rainfall in the mountain region (for example) decreases from West to East.

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Received October 30, 2009

WIND ENERGY POTENTIAL IN THE EAST OF ROMANIA

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Key words: wind energy, aggregate, pilot poll, Romania.

Le potentiel énergétique éolien de l'est de la Roumanie. Dans le texte sont analysées la fréquence et la vitesse du vent, ce qui met en évidence le potentiel énergétique éolien de l'est de la Roumanie. Les plus hautes vitesses moyennes du vent (> 7 m/s) sont enregistrées à Sulina, au-dessus des eaux territoriales, sur la plate-forme continentale de la mer Noire, ainsi que dans les régions adjacentes. On peut y envisager d'installer des agrégats éoliens de différentes puissances qui produiraient d'énergie électrique toute l'année. La continuation des études systématiques théoriques est nécessaire pour le dépistage des aires avec grand potentiel énergétique éolien, des études techniques qui assureraient la fonctionnalité continue des agrégats éoliens et pratiques pour sa valorisation à divers buts: agriculture, irrigation, transport, etc. La documentation accumulée pour cet article nous autorise d'apprécier que toute contribution apportée sur le vent et ses éléments caractéristiques d'une certaine partie du pays est un support dans le but de l'usage du potentiel énergétique éolien de la Roumanie.

1. INTRODUCTION

The interest in using electric power as an unconventional energy source dates to mid-20th century when the intensive exploitation of conventional energy sources was considered to lead to their exhaustion. This made people worldwide seek productive and unpolluting alternative energy sources to replace the primary, conventional ones. Some of the unconventional energy sources, acting as substitutes for the conventional ones, are solar energy, geothermal energy, biogas, winds and wave power provided more performant technologies are used to capture, converse, produce and store this type of energy.

Of all these unconventional energy sources, wind power in wind blown (regardless of wind direction) proved to be the easiest to use.

Differences in temperature and air pressure lead to the formation of winds which blow from higher-to-lower pressure regions.

Wind energy, or the energy produced by the force of wind, has the widest development and use. Worldwide research shows it capable to provide five times more energy than is presently used. It would require 12.7% of land to be covered by parks with wind turbines.

Romania's wind energy potential is about 14,000 MW installed power and the technical capacity to produce 2,500 MW. Geographically speaking, the region with the highest wind energy potential is in the eastern part of the country, that is the Danube Delta, the Romanian Black Sea coast, the Dobrogea Plateau and the Moldavian Plateau, areas still insufficiently studied and exploited. According to the 2003 National Strategy for the Use of Energy Resources, this country's production capacities have been scheduled 120 MW by the end of 2010 and at 280 MW by 2015. An all-country analysis shows that the wind energy potential of Dobrogea region alone is of 2,000 MW installed power, that is more than two nuclear power plants the size of the Cernavodă one. This scenario is rather exaggerated, impossible to implement because there are no investments in this field.

In Romania, efforts to use the energy of wind began in 1962, when a map of major wind characteristics was drawn up (Patrichi, 1984), based on the meteorological measurements taken every hour over a ten-year period (1951–1960).

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In 2009, there are five wind-based electricity-producing centers: Tihuța (Bistrița-Năsăud) 250 kW/h, Ploiești (Prahova) 660 kW/h, Baia 550 kW/h, Valea Nucarilor – Tulcea with three aggregates of 750 kW/h each, and Corbu (Constanța) 100 kW/h.

In 2005, the wind turbine at Tihuța produced 186 MWh, the equivalent of burning 23 tones of coal (Fig. 1).



Fig. 1 – The wind turbine in the Tihuța Pass, Bistrița-Năsăud County, Eastern Carpathians.

Summing up, we would say that wind power is a promising source of electricity for the coming years, because it is ecologically clean and in never-ending supply. This has prompted us to carry out climatic studies on the wind regime in the eastern part of Romania, that is the Moldavian Plateau, the Siret Corridor and the North-Dobrogea region.

2. WIND CHARACTERISTICS IN THE EASTERN REGIONS OF ROMANIA

Studies of the wind regime in Romania have been carried out in two distinct stages:

- before 1960, when observations were made at three hourly intervals, namely 8:00, 14:00 and 20:00 and never at night;
- after 1960, when the international system with four observation times: 1:00, 7:00, 13:00 and 19:00 was adopted as well as at fact that change previous conclusions.

2.1. Annual average wind direction frequency before 1960

The analysis is based on the data obtained by five stations before 1960 and in the 1965–2004 period: Botoșani and Iași stations are characteristic of the northern and central parts of the Moldavian Plateau, Bacău station is specific to the Siret Corridor, Galați station to the southern part of the Moldavian Plateau and the Danube Corridor, Sulina station to the Black Sea shore.

Wind frequency before 1960: the northern half of the Moldavian Plateau was governed by NW winds (Botoșani 23.6%, Iași 21.5%) and SE winds (Botoșani 18.7% and Iași 13%). In the Siret Corridor, which follows the Eastern Carpathian alignment, N winds prevailed (Bacău 19.4%), next in line (17.5%) coming the NW ones. The occurrence frequencies of S and SE winds are quite significant

(Bacău 13.6% and 13.4%, respectively). In the southern part of the Moldavian Plateau dominant winds blew from the NE (Galați 19.8%) and the N (Galați 16.1%), next coming the SW winds (Galați 14.7%) and the S winds (10%).

In this case, the annual average wind frequency along these main directions follows the direction of the Danube Corridor, but it obviously depends also on the dominant airflow forced by the continental air advection generated by the East-European Anticyclone and by the position of the weather station in the narrowest sector, between the Carpathian Curvature and the Măcin Mountains named *Carpathian Gateway* (Octavia Bogdan, 1980), through which winds reach the Romanian Plain.

Farther east, in the Danube Delta, winds are more intense, Sulina station records showing that NE and N winds (18.3% and 13.1%, respectively) have the highest frequencies, while NW and SE winds amount to 12.5% each, these directions being imposed by the Black Sea currents and by the orientation of the seashore. The most important wind directions depend on the alignment of the Carpathians, the Siret Corridor, or the Carpathian Curvature and the Black Sea shoreline. In contrast with the dominant annual average winds frequency is the frequency of atmospheric calm, which varies inversely proportional, decreasing from north to south and from south to east: Botoșani 28.2%, Iași 26.6%, Galați 14.1% and Sulina 11.7% as the influence of the mountains diminishes, or is completely absent (Sulina). In the northern half of the Moldavian Plateau and in the Siret Corridor (with variously-oriented sectors) wind frequency decreases, but the frequency of atmospheric calms increases.

2.2. Wind frequency over 1965–2004

Analysing statistical data from each station (Table 1) has yielded some important conclusions regarding wind frequency in the last four decades, when the weather stations were located on representative platforms and had four observation times in their schedule. We are referring to classical observations, not to the modern automated ones which are in operation since 2001. *The northern half of the Moldavian Plateau* is governed by NW winds (Botoșani 27.2%, Iași 20.5%), S–E winds (Botoșani 17.7%) and E winds (Iași 16.2%) (Figs 2, 3).

Table 1

Comparisons between annual average wind frequencies in the two study periods: 1941–1955 and 1965–2004.

Station	1941–1955		1965–2004	
	Dominant direction	Frequency (%)	Dominant direction	Frequency(%)
Botoșani	NW	23.6	NV	27.2
	SE	18.7	SE	17.7
Iași	NW	21.5	NV	20.5
	SE	13.0	E	16.2
Bacău	N	19.4	S	21.4
	NW	17.5	N	16.5
Galați	NE	19.8	N	22.4
	N	16.1	SV	15.6
Sulina	NE	18.3	N	18.9
	N	13.1	S	17.6

Source: ANM Archive, Bucharest. Calculated percentages.

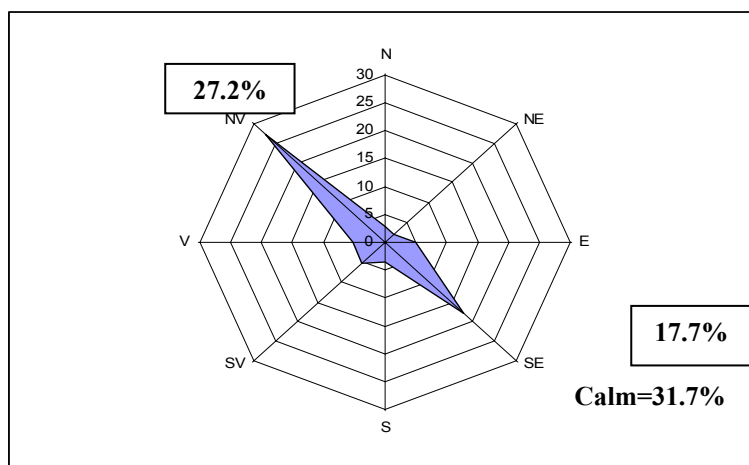


Fig. 2 – Average wind frequency – Botoșani.

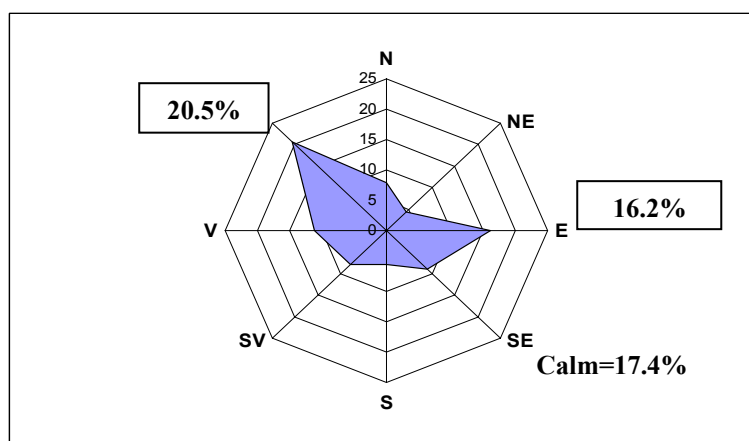


Fig. 3 – Average wind frequency – Iași.

The direction of the airflows is influenced by the Scandinavian Anticyclone, by the barrage of the Carpathians, by valley corridors and hillsides. Thus, the location of *Coasta Iașilor* weather station on a E–W direction in a hilly zone at altitudes of over 400 meters, influences the second dominant wind direction, that from the east. Similarly, *Botoșani* weather station, situated close to the Sitna Valley, a tributary of the Bahlui, both NW–SE-oriented just like the hillsides, has influenced the second down-to-uphill dominant S–E direction.

In the Siret Corridor, in the Bistrița-Siret confluence sector, winds blow mainly from the south (Bacău 21.4%), and from the north (16.5%). In this case the influence of the valley corridor is quite obvious, forcing the airflows along it (Fig. 4).

In the southern half of Moldavia, where altitudes decrease from north to south under 100 m at Galați, N winds (22.4%), and S–W winds (15.6%) prevail (Fig. 5). These directions are determined firstly by the wide open plains crossed by the Prut Corridor from north to south, the Danube Corridor from south-west to north-east and by the Lower Siret Plain which has the same inclination eastwards with lowest altitudes in the east, at the mouth of the Siret River.

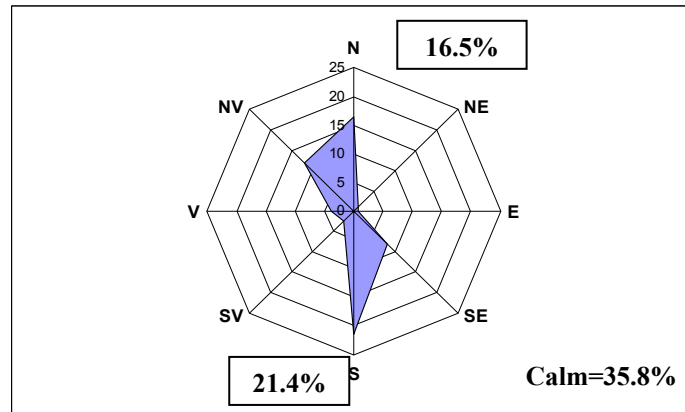


Fig. 4 – Average wind frequency – Bacău.

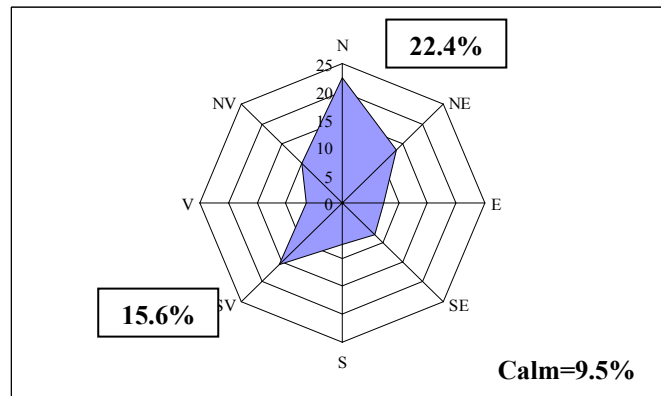


Fig. 5 – Average wind frequency – Galați.

On the northern Black Sea shores, at the mouth of the Danube's Sulina Arm, which continues 6 km into the continental shelf at the end of the limitrophe dam, winds blow mostly from the north (18.9%) and the south (17.6%) (Fig. 6), following the direction of the Black Sea shore in this sector, and of airflows governed by the East-European and Scandinavian anticyclones, and by the Black Sea coastal currents.

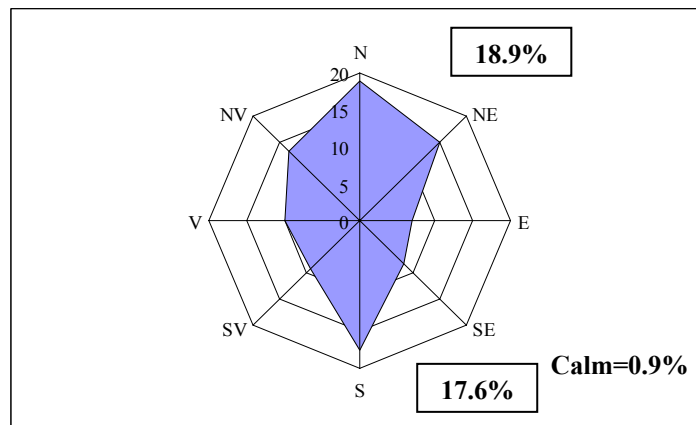


Fig. 6 – Average wind frequency – Sulina.

Summing up, we would say that the same wind directions appear to have prevailed both before and after 1960, some changes having occurred in the south of the region, at Galați and Sulina. Differences regard wind frequency, which either increased or decreased along the dominant directions.

Other important wind directions, but with lower annual frequencies (under 15%) are:

- in the northern half of the Moldavian Plateau, W and SW (about 5%) (Fig. 2);
- in the central part of the Moldavian Plateau, W (11%) and SE (9%), influenced by the Coasta Iașilor Hills and the direction of the Bahlui Valley (C.2);
- in the Siret Corridor, NW (11.8%) and SE (8%) following the direction of the Bistrița Corridor (C.4);
- in the south of Moldavia, NE (13.4%) and NW (10%) influenced by the hillsides of the Bârlad Plateau;
- on the Black Sea continental shelf, at Sulina-dam, NE (15%) and NW (13.2%) winds have a higher frequency.

An important wind characteristic in the last four decades is the atmospheric calm, which has registered some changes from the previous period, although the general variation tendency in the area has remained the same, namely, a north-to-south decrease. The highest atmospheric calm value was registered at Bacău station (35.8%), in the Siret Corridor, due to the influence of the urban topoclimate (Fig. 4).

Apart from this Corridor, in the rest of the area between the Siret and Prut rivers, annual atmospheric calm average values were as follows: 31.7% at Botoșani (Fig. 2) in the northern half of the region; 17.4% at Iași (Fig. 3) in the center; and 9.5% at Galați (Fig. 5) stations in the south of the region. The highest wind frequency being on the Black Sea continental shelf at Sulina, atmospheric calm had the lowest annual value there (0.9%) (Fig. 6).

The frequency increase of atmospheric calm on land in this time period compared to the previous one is due to the topoclimatic conditions at night, when temperature inversions take place, characterized by great air stability, high humidity and atmospheric calm. These situations have been noted only by observations made at 1:00 a.m. and 7:00 a.m.

On the waters surface, devoid of any obstacles, there is higher wind frequency and diminished atmospheric calm (Sulina weather station records), which means high energy potential. Because of the vast water body, winds frequently blow from all directions, while in where water courses are bounded by the slopes of valley corridors, winds follow the direction of the valley and atmospheric calm increases due to the shelter provided by valleyside slopes. Whenever winds blow perpendicular to the corridor they have a high energy potential.

The highest monthly wind frequency averages at each weather stations *over the year* are as follows:

– *in the northern part of the Moldavian Plateau*, at Botoșani station NW winds account for the highest monthly averages throughout the studied regions, varying between 22% and 36%. Next come the SE winds with monthly averages of 10% to 20%. For three months / year (March, April, and October) frequencies exceed 20%;

– *in the central part of the Moldavian Plateau*, at Iași station, the highest monthly frequency have the NW winds (18–25%), with over 20% for eight months / year (December, January, February, March, April, June, July and August) both in the coldest winter months and in the warmest summer months. In winter-time (November–February) E winds (6–23%) represent more than 20%;

– *in the Siret Corridor*, at Bacău station, S winds are dominant at an annual average frequency of 8–23%, representing over 20% during the four winter months (November, December, January, and February). North winds (13.5–19.3%) have frequencies of over 17% in February, March, April, May, June and July;

– *in southern Moldavia*, at Galați station, dominant N winds have monthly average frequencies of 8 to 25%; here in all the months of the year, except for November, the monthly average of N winds exceeds 20%; second in line are the SW winds with average frequencies of 14 to 25%; these winds registered monthly averages above 20% in November, December, January, and February. In winter-time, there is the influence of Mediterranean cyclones with a backward evolution;

– *on the northern shores of the Black Sea* the dominant N wind direction has monthly frequencies of 14–22%; in January, February, March, August, October and December values average over 20%, with 14–25% for the S winds, which in April, May and June record over 20%.

Usually, at each weather station the first dominant wind direction has the highest average frequency in winter (Iași, Bacău, Galați, and Sulina); the second dominant direction has highest frequencies either in winter (Iași, and Galați), or in spring and summer (Botoșani, Bacău, and Sulina). The average monthly and annual wind frequencies by dominant directions *indicate external climatic influences determined by the main air pressure centers* as follows:

– the N and NE direction have continental influences determined by the East-European Anticyclone, especially in winter when it pumps in cold air;

– the NW direction present Scandinavian and Baltic influences, best felt in the northern part of the Moldavian Plateau (Botoșani), entailing cold air and precipitation in summer;

– the S, SE and SW directions indicate the influence of Mediterranean air pumped in by Mediterranean Cyclones and by Pontic Cyclones, either with a normal evolution or more often with backward evolution. They bring warmer air and humidity, often causing violent precipitation.

Monthly wind frequency *influences disproportionately the monthly average of atmospheric calm*.

The frequency of atmospheric calm over the year varies from one month to another, being the exact opposite of wind frequency. Looking only at the highest values from each station, regardless of month, we see the same N–S decrease trend in the highest monthly average values, just like before 1960: at Botoșani 36.7%, at Iași 22.6%, at Galați 13.1% and by only 1.1% at Sulina.

North-to-south monthly average frequencies variations:

– in the northern part of the Moldavian Plateau and at Botoșani station where, apart from dominant winds no other winds have frequencies higher than 5%, atmospheric calm has the highest monthly averages in the Moldavian Plateau region. In the 12 months of the year, the frequency of atmospheric calm exceeds 24% regularly, and over 30% from July through to January;

– in the central Moldavian Plateau, at Iași station, where winds have slightly higher monthly average frequencies, atmospheric calm registers lower average values. In the 12 months of the year, the frequency of atmospheric calm is above 10% regularly and over 20% from July to September;

– in the southern part of Moldavia, at Galați station, where the monthly average wind frequency rises sharply, the atmospheric calm frequency is substantially reduced: 7–8% in the first part of the year, and above 10% from July to November;

– on the northern Black Sea coast, at Sulina dam, winds have the highest monthly average frequencies, regardless of direction. As a result, the lowest monthly atmospheric calm frequency averages below 1% in all the months of the year, exceeding 1% only in May, June and August.

In the Siret Corridor, at Bacău, frequencies of atmospheric calm and the monthly annual average frequencies are the highest throughout the study region, values exceeding 30% in all the months of the year and over 40% from June to October. The highest average atmospheric calm value in the whole of Moldavia region is registered here, with a peak in August of 50.3%, this high percentage making it easier for gases to accumulate in the air layers above the city almost all the year round.

This short presentation reveals that an annual maximum and minimum level of atmospheric calm is registered in the course of any regular year, with a maximum between July and October, which is

the warm period of the year, and a minimum in winter and spring (November to May). The highest values occur either in August, September, October or November. This is the most uneventful time of the year marked by anticyclonic weather featuring great atmospheric stability and the absence, or very few precipitation.

2.3. Comparisons between the annual average wind frequencies in the analyzed periods

Although the two periods are not homogeneous as far as duration and observation times are concerned, yet we have tried to draw up a general picture of the differences between them.

Changing the observation methods and switching from the classical system of three observation times (8, 14, 20hrs) to four observation times (1, 7, 13, 19hrs) has modified *wind frequency data*.

These modifications must be considered from two points of view:

- *introducing the 1:00 am* observation time increased atmospheric calm, which completely agrees with the topographic and climatic features of the active surface at night, when the atmospheric calm reaches a 24h-peak.

- *A higher frequency of atmospheric calm* leads to a decrease of wind frequency, irrespective of its directions, sometimes only on particular directions, depending on the local geographical characteristics. Even the dominant directions may change, for instance, the frequency of the first two dominant winds (Table 1);

- *as far as the dominant directions* are concerned, it was only at Botoșani station that both directions remained the same in the second and the first period (NW and SE). At Iași, only the first dominant direction was the same in either period (NW), the second one changing from SE to S;

- at all the other stations the first two dominant wind directions from the first period changed.

- *at Bacău*, N and NW directions were replaced by S and N ones; here, too, the N wind, which had been the dominant one in the first period, fell to second place.

Important modifications occurred also in the annual average frequencies of the dominant wind directions. For example, at Botoșani station the annual average wind frequency of the NW direction (23.6%) increased in the second period to 27.2%, the SE direction decreasing from 18.7% in the first period to 17.7% in the second period.

2.4. Comparisons between the annual average of atmospheric calm frequencies in the study periods

Also in this case comparisons give a general image of the differences between the two periods, although they are not entirely relevant (Table 2).

A brief analysis of this table shows that only in *two cases, Botoșani and Bacău, the frequency of atmospheric calm has increased in the second period*, which was expected because of the introduction of 1:00 am observation time. In the other cases there is a noticeable decrease of 5 to 10% in atmospheric calm which seems abnormal. However, with the introduction of the 1:00 am observation time also the location of the weather stations was reconsidered, fact that modified both average wind frequencies in terms of direction, and of atmospheric calm.

The best example is Sulina weather station which was moved from the outskirts of the town and relocated at the end of the Sulina dam at a distance of about 6 km from the shoreline, so that the obstacle of a town environment before 1960 did no longer exist at the new location, were *winds are blowing permanently*.

Table 2

Comparisons between the annual average frequencies (%) of atmospheric calm in the years 1941–1955 and 1965–2004.

Period	Station				
	Botoșani	Iași	Bacău	Galați	Sulina
1941–1955	28.2	26.6	22.7	14.1	11.7
1965–2004	31.7	17.4	35.8	9.5	0.9
Δ Calm	+3.5	-9.2	+13.1	-4.6	-10.8

Source: ANM Archive, Bucharest. Calculated percentages.

Note: (+) and (-) indicate atmospheric calm increases and decreases, respectively in the second period, 1965–2004.

2.5. Wind speed between 1965 and 2004

We consider this 40-year period (1965–2004) long enough to be representative for the wind regime in the eastern regions of Romania. Changes in the observation schedule and in the reorganization of the weather stations are reflected also in the annual wind speed average. The highest annual average speed over 1965–2004 was in the NW direction, in the northern half of the Moldavian Plateau (Botoșani 5 m/s and Iași 5 m/s) and in the N direction at all the other stations: Bacău 4.6 m/s, Galați 5.1 m/s and Sulina 7.9 m/s. These were dominant wind directions in all cases.

Ignoring direction, we see that *the highest annual average speed in the eastern regions of Romania increases from north to south, except for Bacău station where speed is the lowest* (Fig. 7).

Next are speeds varying between 3.7 m/s and 7.4 m/s, but it is only at Botoșani station that speed correspond to the second dominant wind direction (N). The second highest annual average wind speed increases from N to S throughout the study area: Botoșani 3.7 m/s; Iași 4.1 m/s; Bacău 4.5 m/s; Galați 4.9 m/s and Sulina 7.4 m/s (Tables 1–2, Fig.7).

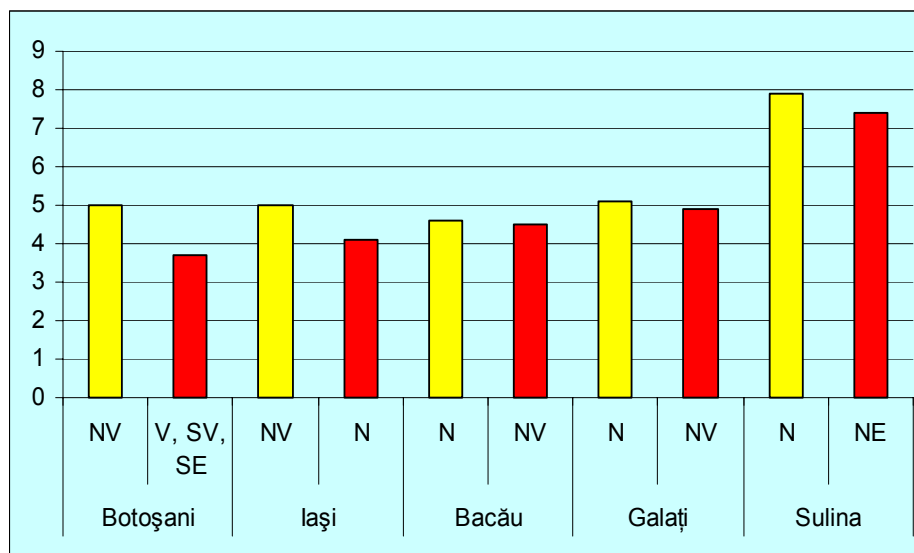


Fig. 7 – Highest annual average direction of wind speed (N to S) after 1960.

In order to have a clearer picture of wind power potential in the study region, we have analyzed the monthly and annual average wind speed values, regardless of direction. The wind speed regime over the year at each weather station is shown in Table 3, speed increasing from N to S: Botoșani 3.3 m/s, Iași 3.5 m/s, Galați 4.2 m/s and Sulina 6.2 m/s. The cause is the same: decreasing altitude and the

orientation of summits and valley corridors in the same direction as the winds, the elimination of previous obstacles in the south of the region and the presence of large water bodies (Fig. 8). Bacău station is an exception, because, being located in the Siret Corridor with a shelter topoclimate, wind speed is more similar (3.3 m/s) to that registered at Botoșani station in the north of the Moldavian Plateau.

Table 3

Monthly and annual wind speed averages in the study area, regardless of wind direction (m/s) (1965–2004)

No.	Station	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	An
1	Botoșani	3.3	3.4	3.6	3.8	3.4	3.1	2.9	2.9	3.0	3.1	3.0	3.4	3.3
2	Iași	3.5	3.9	4.0	4.1	3.8	3.2	2.8	3.0	3.1	3.5	3.6	3.4	3.5
3	Bacău	3.5	3.6	3.7	3.8	3.5	3.2	3.0	3.0	3.0	3.0	3.4	3.4	3.3
4	Galați	4.2	4.6	4.6	4.7	4.3	4.1	3.9	3.6	4.2	4.2	4.2	4.1	4.2
5	Sulina	6.8	6.7	6.7	6.5	5.8	5.7	5.3	5.2	6.0	6.3	6.7	7.1	6.2

Source: ANM Archive, Bucharest. Calculated averages.

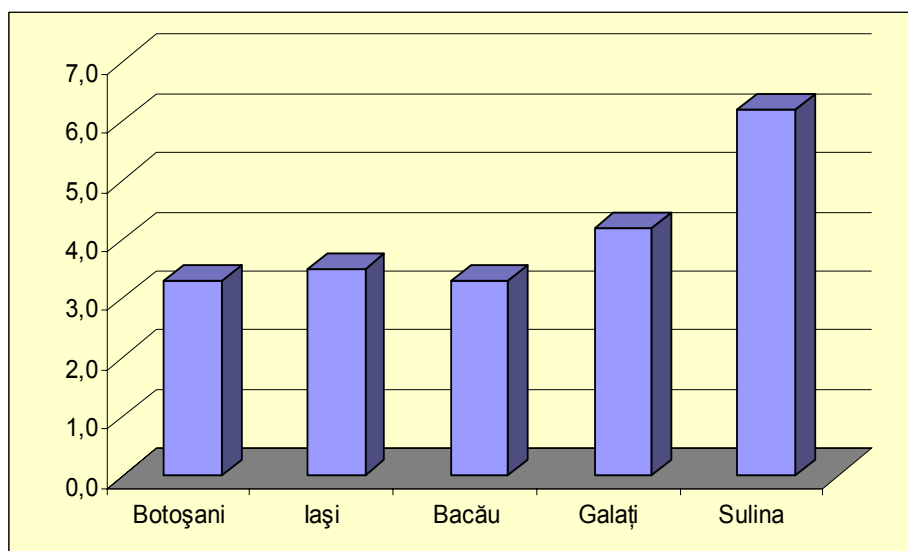


Fig. 8 – Annual average wind speed variation in the area, regardless of wind direction (1965–2004).

The annual average speed at all the stations *exceeds the 3m/s minimum threshold for a wind aggregate to function* (Fig.8, Table 3). The highest annual average wind speed (6.3 m/s) is registered at Sulina-dam. Although this value is recorded at only 3 meters above sea level, it is almost as high as that in the sub-alpine regions of the Carpathian Mountains (Bogdan, Mărculeț, 2001–2002). This shows a high wind energy potential that can be harnessed. Furthermore, in the fluvial-marine sector of the Danube (downstream of Brăila port) where wind blows both along the river and in the Siret and Prut corridors, giant wind mills can be set up to take advantage of wind energy potential.

2.6. Average energy speed

For a wind aggregate to work, the wind should blow with at least 3m/s, on average, a speed capable to generate energy (the so-called energy speed). The notion of *energy speed* designates the average speed obtained by summing active wind frequencies at speeds of 3m/s observation times,

blowing every meter, referred to the number of possible cases over the year. So, it is a question of hourly speeds necessary to keep the aggregate working continuously (Patrichi, 1983).

Our calculated annual frequency (Table 4) of active wind speeds (over 3 m/s) indicates a north-to-south frequency increase throughout the study region: 34.2% at Botoșani, 39.8% at Iași, 41.3% at Galați and 91.4% at Sulina stations.

Table 4

Frequencies of daily wind speeds (%) over 3.0 m/s (1999–2004).

Station		Months												Averages
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Botoșani	%	37.7	43.8	43.0	35.0	40.9	39.5	31.1	18.9	21.2	29.6	33.8	36.0	34.2
Iași	%	37.6	46.2	96.2	42.2	34.4	38.9	19.9	15.1	17.2	24.2	65.8	39.8	39.8
Bacău	%	34.6	39.6	51.6	35.0	35.4	22.2	17.0	14.0	18.3	20.5	38.4	35.5	30.2
Galați	%	43.5	55.1	58.1	19.4	46.3	36.1	44.6	28.5	33.3	31.1	42.7	56.5	41.3
Sulina	%	89.8	88.1	95.2	91.7	87.6	92.8	85.5	88.5	95.0	93.0	93.3	96.2	91.4

Source: ANM Archive, Bucharest. Calculated averages.

We appreciate that winds can best spin aggregates on the seaside and in the Danube Delta (about 91% of the year), where speeds are the highest.

During the year, the highest monthly average wind speed is registered in the cold season, values differing from north to south: in the north of Moldavia, at Botoșani, the highest frequency occurs in February (43.8%); in central and southern Moldavia in March (Iași 96.2%, Bacău 51.6% and Galați 58.1%); and at Sulina, above territorial waters, in November (96.2%).

The value differences throughout Romania's eastern territory depend on the times of the year, when the general atmospheric circulation intensifies in February, in connection with the activity of the Polar Anticyclones and the East-European Anticyclone which come into contact with the Mediterranean and Pontic cyclones; in March-April with atmospheric disturbances generated by changes in the general atmospheric circulation from east in winter to west in summer; in November-December with the intensified activity of the Mediterranean and Pontic cyclones. At Sulina, active speed frequencies/year (over or equal to 3 m/s) exceed 80%; 90% in 7 months/year (March, April, June, September, October, November and December) and more than 95% in 3 months/year (March, September, and November). This is in accordance with the conclusions outlined in this paper.

Within 24 hours, the differences between active speeds in the day-time and at night are the result of air masses and active surfaces warming up and cooling down, respectively.

Thus, the highest active speed frequencies in the day-time usually occur between 10:00 a.m. and 7:00 p.m., when temperature convection stimulates the development of air currents both on the vertical and the horizontal. The lowest frequencies are registered at night, between 10:00 p.m. and 5:00 a.m. because morning cooling enhances temperature inversions stabilizing air temperature. It follows that daily active speed amplitudes are higher in summer and autumn than in winter.

Here are some conclusions of our analysis:

- The eastern part of Romania has an important wind energy potential which increases from west to east and from north to south;
- the highest average wind speeds (over 7m/s) registered at Sulina, above the territorial Black Sea waters, are similar to those in the Carpathian sub-alpine regions (1,800–2,000 m altitude);
- this distribution patterns are the result of the presence of *plains and low hills* (under 500 m), in Eastern and North-Eastern Europe, traversed in winter by N and NE winds, as well as of *the presence of the Black Sea water-table*, devoid of any obstacles, which allows for high winds to develop; the

Carpathian Mountains, which act as a barrage for winds to pass farther towards the west, and the bottleneck region, the so-called *Carpathian Gateway* (Bogdan, 1980b) where air currents streamline into the narrow areas between the Carpathian Arc and the Măcin Mountains to reach the Carpathian-Balkan Depression, and gathering speed on the way. Therefore wind speed is higher in the Lower Siret Plain and in the Bărăgan Plain than in the Moldavian Subcarpathian Hills, where they overlap the mountain-to-valley winds developing in the Carpathian valleys, particularly in the Bistrița Valley (Mihăilescu 2001);

– the role of orographic barrage played by the Eastern Carpathians has a huge impact on the winds blowing in the eastern regions of Romania. N. Ion-Bordei, Ecaterina Ion-Bordei et al. (1984) have shown that this impact decreases with altitude, while the speed and frequency of the west winds increases above 3,000 m altitude.

And last, but not least, the data presented herein, as well as any further contributions to, or information on wind and its characteristic elements in a certain part of the country, will be of real help in substantiating research into the use of wind energy potential in Romania.

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Received January 19, 2009

A YOUNG RESEARCHERS' WORKSHOP ON "INTEGRATED ENVIRONMENT
AND SUSTAINABLE DEVELOPMENT RESEARCH"

December 4, 2009, Institute of Geography, Bucharest

The event was organized by the Institute of Geography of the Romanian Academy, 'Simion Mehedinți' Cultural-Scientific Foundation and the National Committee for Global Environmental Change, in collaboration with the University of Bucharest (Faculties of Geography and Chemistry) and the Center for Environmental Research, Protection and Waste Recycling.

The theme of the 9th edition was promotion of environmental research and stimulation of an interdisciplinary dialogue between PhD and MA students from various research fields: Geography, Geology, Ecology, Chemistry, Biology, Economic Sciences, etc.

Two papers *Rapid response using remote sensing. Lessons from the 2004 Tsunami* and *Geographical expedition in Kazakhstan, 2009 Travellers in the Land of the Nomads at the Aral Lake*, were presented by Prof. Dan Blumberg from the Department of Geography and Environmental Development, Ben-Gurion University of the Negev, Beer-Sheva, Israel and Anca Munteanu, Faculty of Geography, University of Bucharest, respectively.

The event was attended by 50 researchers from the Institute of Geography, the Faculties of Geography, Chemistry and Biology, the Center for Environmental Research, Protection and Waste Recycling, Faculty of Social Sciences (University of Craiova), Romanian Waters National Administration, Romanian Space Agency, Liège University (Belgium), Wilhelm Westfalian University, Münster (Germany).

Proceedings developed within three sections: 1, Environment and natural hazards; 2, Degradation, pollution and quality of the environment; 3, Analysis of space and sustainable development.

Awards were granted in terms of the scientific value of the papers, of the area discussed and the connection between the respective work and the scientific preoccupations of the personality the prize was named after Simion Mehedinți, Vintilă Mihăilescu, Victor Tufescu, Ion Conea, Constatin Istrati, Eugen Angelescu, Gheorghe Spacu, etc.

The Workshop was organized jointly with the Ministry of Youth and Sports – Direction for Youth of Bucharest Municipality. Sponsors: Terra Magazin Journal and CD Press Publishing – House.

That the Workshop was a success was attested also by the participants who attended it.

Loredana-Elena

Global Change Atlas. Einzugsgebiet Obere Donau (Global Change Atlas. Upper Danube Drainage Basin), edited by the GLOWA-Danube project (coord. Wolfram Mauser), München, Germany, 2009, 4th edition, ISBN 978-3-00-026548-8.

The *Global Change Atlas. Upper Danube Drainage Basin* was conceived and developed first in 2004, in the framework of the GLOWA-Danube project. The GLOWA-project is a collective project having as a main target the study of regional effects of global change on water resources within some selected basins, in order to define the best options for a sustainable development under these global change conditions.

The GLOWA-Danube project, as a part of the collective one, develops and applies the Global Change integrative decision-support system DANUBIA. The latter one, being a system of coupled models, puts into relation the natural and social processes with the use of river basin water resources. Therefore, it can simulate different environmental aspects (in relation to water) and verify the sustainability of several proposed scenarios. The objective of the GLOWA-Danube project is to identify some sustainable strategies for water use, through the involvement of natural science, engineering and socio-economic disciplines.

The pilot research basin is that of the Upper Danube, which can be regarded as a meso-scale study area. The impact of global changes upon different activity sectors, is investigated in the frame of some partial projects of GLOWA-Danube. Moreover, through the developed Global Change integrative decision-support system DANUBIA, simulations of consequences in the future are conducted, based on supposed scenarios. These simulations offer the possibility to test, as realistically as possible, different decision alternatives developed by decision makers and stakeholders. An additional task of DANUBIA is also the rendering of simulation results in a form which can be valued by the involved stakeholders.

The aim of the presented atlas is to disseminate some sectorial and integrative results of the project and to offer a base of discussion for stakeholders and decision makers. The published form is an open one and therefore it can be permanently improved, completed and extended, in case new scenarios are proposed or new knowledge on future trends becomes available.

The content is structured in three chapters, each including maps produced by the different scientific groups involved in the project and texts explaining the meaning and creation of the represented data.

The first chapter presents the natural and social conditions of the Upper Danube pilot drainage basin, which at the same time constitute the input datasets for the model simulations. The second chapter represents the collection of output maps resulted from the application of the several partial models of DANUBIA. The last part offers a view on the simulation results from various evolution scenarios covering the next tens of years. This chapter is meant to be dynamically developed in the future, as a consequence of discussion processes to take place with decision makers and stakeholders.

The work *Global Change Atlas. Upper Danube Drainage Basin*, unlike a classical atlas, is desired to be a dynamical instrument for supporting further discussion processes.

Marta Jurchescu

Radu Săgeată, *Globalizare culturală și cultură globală. Global și local în geografia culturală* (Cultural globalisation and global culture. Global and local in cultural geography), Editura Universitară, București, 256 p., 32 figs., annex.

The current configuration of the World, its functionality and stability are the outcome of two, seemingly contradictory, but quasi-permanent processes: globalisation and fragmentation. All along history, these two processes took on very different forms and evolved at different rates, with relevant alternations of the aggregation and dissolution of state entities, with periods of global stability and global or regional instability. An increasing process of globalisation, which has been developing over the past few decades, is based on economic, political and cultural considerations. Despite these trends stimulated by transnational economic activities, by transition to a multi-polar world and an American-type cultural expansion, regional or local feelings are getting momentum inside national states, under the general globalisation umbrella. So, the question is whether the global and regional settlement systems are affected by the two contradictory processes, or not? Whether settlements are merely the static support of such processes, or on the contrary, they continue to be the main spatial actors. Looking at the latest evolutions of mankind, one would be tempted to consider that it is globalisation fluxes in themselves, rather than the sites they originate from and are localised in, that focus the scientists' concerns. Such a shift of focus might belittle preoccupations for a concrete study of the effects of globalisation, for an analysis of its impact on the main forms of the anthropisation process represented by the human settlements themselves.

The apparently low interdependence relationship between globalisation and the settlement system is nevertheless a highly topical problem, given that the human communities are the main actors of the globalisation process. It is quite an obsession that multi-national companies are actually the elements most deeply involved in the process of globalisation, but their actions materialise mainly at the level of the populated centres. Many towns, which generate globalising fluxes are the

ones that affect and are affected by the generalised effects of some local actions. It is smaller towns that are more affected by the local milieu than by the global one, with some exceptions due to geographical position and the innovating spirit of the respective urban communities. For example, some small towns do make a remarkable contribution to the intensity of globalising fluxes; it is the case of the so-called world “technopoles”, or towns discharging dominantly academic functions. The information yielded by these centres is the driving-force behind globalisation; besides, it is in these very centres that the means of diffusion and access to information for as many citizens of the Planet as possible are improved and the information society development strategies are being developed.

The great many studies dealing with the process of globalisation have in view the political, socio-economic and cultural aspects of mankind, or of some groups of states. This kind of studies were stimulated by the meetings organised under the aegis of international institutions e.g. the UN, or the World Bank, meetings of the heads of states on sustainable development and environmental issues, and meetings of the heads of developed states (G7, G8). As a matter of fact, there are few studies tackling the significance of globalisation for the Planetary system and for the regional settlement systems. Despite life on Earth being intimately related to the individual dynamics of human settlements, the complex relationships among them and the efficient management of the area they are located in are seldom dealt with. The present study makes an introductory approach, attempting to underpin a few elements that should necessarily become part of globalisation studies in general.

Romania, a country situated in one of Europe’s hot-beds, appears to be a spectator to the ongoing processes of globalisation and fragmentation, more or less indifferent to their potential effects. And yet, both processes, coupled with the idea of security, might be quite beneficial for Romania, provided some specific “filtre-systems”, which take into account its territorial-cultural particularities, are being used. As decentralisation gets momentum, globalisation and fragmentation may have concrete effects on the national settlement system by increasing regional power centres. Decentralisation is not viewed as possible fragmentation, but rather as higher resistance to globalisation, or better said, to its excesses.

However surprising it may seem, under the new conditions of contemporary globalisation, Europe strives to find new internal solidarity links, new ways and means of increasing its spatial cohesion. Europe’s unity of culture and action may stimulate the contribution of the Old Continent to accelerating the process of globalisation in the conditions of maintaining the local and regional specific. Europe’s experience in the cultural-ethnic diversity as source of Continental synergy could be extremely useful for the Planet in finding some solutions to attenuating the toxic effects occurring in the process of globalisation. A knowledge of potentially conflictual states is particularly important both for elaborating macro-scale strategies and modelling urban national, continental and super-continental systems. An urban system lying in a conflict zone will always offer a distorted picture of reality. Some urban centres have an oversized, or on the contrary, an undersized influence in the light of their polarising areas.

The exponential force of globalisation, which some human communities can only temporarily cope with, acquires a variety of penetration forms, and the growing number of relocation centres puts such pressure that any organisation based on local or regional dominance is demolished. In this context, a series of questions obviously arise: Is there any real support for mankind’s progress through globalisation? What are the limits of globalisation, if any? Is not the structure of the globalising fluxes conducive to a hypertrophy of the services and the financial-banking systems, causing an implosion of the society? How much can mankind lose as individual progress is limited by uniformity of options for people’s development? These are but a few questions which the author of this book tries to answer.

Ioan Ianoş