INSTITUTE FOR REGIONAL STUDIES
RESEARCH CENTRE FOR ECONOMIC AND REGIONAL STUDIES
HUNGARIAN ACADEMY OF SCIENCES

DISCUSSION PAPERS

No. 90

Danube Region – Analysis and Long-Term Development Trends of the Macro-Region

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Series editor
Gábor LUX

Pécs
2013

This paper is prepared for Territorial Scenarios and Visions for Europe
ESPON Territorial 2050 Project

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ISSN 0238–2008
ISBN 978 963 9899 62 9
ISBN 978 963 9899 63 6 (PDF)

2013 by Institute of Regional Studies, Research Centre for Economic and Regional Studies,
Hungarian Academy of Sciences.
Printed in Hungary by Harthmedia Ltd., Pécs.

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This report is based on a synthesis of a number of sources listed in the bibliography, as well as original research by Institute staff. Most relevant sources are identified in the references; in particular, the report integrates relevant information produced by the Danube region initiatives, the Institute for Regional Studies, the West Balkans research project, and the Carpathian Project. The Danube Region Strategy has also been used as a source for the report. The aim of the report is not to provide a comprehensive analysis of the Danube transnational region as such, but well structured information useful enough to take into account the territorial specificities of this region when developing scenarios at the European level. The main sources used are the following:

- Danube Region Strategy of the EU;
- West Balkans and the Carpathians region research projects of the Institute for Regional Studies of the Hungarian Academy of Sciences.

Information always refers to the Danube Region, but often, also to the rest of Central & Eastern and Southeastern Europe, and in some cases, to Europe as a whole. In our research, we have mainly focused on the countries delimited in *Figure 2*; information on Austria and Germany, which are covered by the Danube Region, are mostly included for comparative purposes. Together with material for these sources, many comments and opinions are introduced by the authors of the report.

Pécs, 23 January 2013

1 The Territorial Context of the Danube macro-region

1.1 Geographical description of the macro-region

The "Danube Region", perhaps the most complicated formation of the European continent, is based on physical geographical factors (the Danube, the river's catchment area). The catchment area as a physical geographical framework *(Figure 1)* forms a kind of water use and pollution unit, a kind of focus, and through man-made transformation, it partially represents a kind of risk community as well.

For people living in the area alongside the river itself, the proximity of the Danube represents a certain historical and cultural attitude. With the exception of the close riverbank area, the region's population has only indirect, „learnt at school" Danube space consciousness. The fact that the whole Danube catchment area belongs to the catchment area of the Black Sea is recognised only after showing a certain level of interest; for the majority of people in the region, the area does not represent a unit.

The region's relief divides the Danube catchment area into several sub-catchment areas and natural units. The set of basins (Upper, Middle and Lower Danube Basin) potentially carries options for partial integration. Within some basins the intensification of co-operation may resolve the historically developed tensions, still partly existing today (*Gál* 2003).

In political sense the Danube region has always been historically fragmented and we can conclude that it is still the same even today. The majority of the small catchment area is divided among small states, representing so many competing interests (*Erdősi–Gál–Hajdú* 2002; *Gál* 2009).

Throughout its territory, the European Union excepts the creation of long-term functioning, relatively stable macro-regions (*Gál* 2001). After several years of preparatory work the Danube Region Strategy (EU DRS) was adopted in 2011 (*Hardi* 2012). When drafting the EU DRS system for the European institutions, today's articulation appeared on the basis of the relationship towards the European Union (member, official candidate, potential candidate).

Seven EU countries (Austria, Bulgaria, Czech Republic, Hungary, Romania, Slovakia, Slovenia with their total area, two provinces of Germany (Baden-Württemberg, Bavaria) and six non-members (Croatia, Serbia, Bosnia-Herzegovina, Montenegro, Moldova and Ukraine partially) are participating in the implementation of the EU DRS. In the delimited area of the EU DRS about 115 million people live, most of them citizens of the Union *(Figure 1–2)*.

The Danube region's countries and areas can also be regarded from the aspect whether they have direct interests in the Danube region, or they are "only" con-

nected to it through sub-catchment areas. All residents are equally affected by the 11 priority topics of the DRS but the depth of involvement depends on the characteristic features of their regions' development.

The division of the Danube region follows not only political–state aspects, but ethnically, linguistically, religiously and culturally it is one of the most diverse and mosaic-patterned territories of Europe. Not only in the region, but in the majority of cases in each country, ethnicities with different characteristics live together (*Horváth–Hajdú* 2011).

From demographic aspects, the Danube region represents almost all the characteristics and processes of the the continent and of the EU27. Looking at the region's basic demographic data at the country level, it can be concluded that apart from Germany and Ukraine (which are significantly different from each other), the rest of countries fit into the category with medium and small population numbers. In terms of population density – except for Montenegro – these figures cluster around the value of 100 people per km^2 (*Illés* 2002) *(Figure 2).*

On the NUTS3 level of the research territory, a difference can be seen in terms of population density between the core and periphery areas. A contiguous gradient of Danube population density may only be partially identified or delimited.

Figure 1

The Danube Region (NUTS II breakdown)

Source: Author's construction.

Figure 2

The Danube Region (countries covered by our research)

Source: Author's construction.

Such a demographic axis can most clearly be observed along the Bratislava–Budapest–Belgrade section of the Danube (*Hardi* 2002).

The high number and proportion of the Roma population is a specific feature of EU importance in the region as a whole, but especially in some regions. The vast majority of Roma, whose population is estimated at 10–12 million in the EU, live in the Danube region. Their catching up is simultaneously an issue of social, economic, social and urban importance. The European Roma strategy may create the initial conditions for progress, but it may also sharpen internal tensions in each country or region. The failure of the medium-term programme of Roma integration may start a migration process affecting the whole territory of the EU.

The option of migration relations can be presented basically in the EU member – non-EU member dimension. Within the Schengen zone, there are no obstacles limiting migration relationship, while in non-EU countries this is naturally a different matter. Working relationships are targeted not primarily at territories within the study area, but rather at the EU's core areas.

Regarding demographic forecasts (UN, EU, national) for the period until 2050, mostly declining population trends are assumed. The three types of predictive values in most cases are different, but essentially only in the degree of reduction.

The projected fall in population and the growth of the share of the older-age groups within the shrinking population necessarily influence the expected development of economic performance, as well as changes in supply, consumption needs, and even in the use of the environment.

The crucial issue is the attitude towards external migratory pressures because large masses already appear on the external borders of the region from North Africa and the Middle East. The external pressures of migration management will increasingly become a strategic issue for the next four decades.

In terms of the issues of economy and economic value production capacity, the Danube region shows the most extreme differences within the EU; and in terms of non-member regions, these extremes are even more sharp. Such a developmental and welfare slope formed in the Northwest – Southeast direction, the management of which means a challenge even up to the year 2050 (c.f. *Figure 5)*.

In 2009–2010 the emerging crisis in the real economy hit the region within the EU system the most severely. The weak economies immediately reacted to the crisis with deep recessions *(Figure 3)*.

The region's national and regional level unemployment figures in some countries (Bosnia-Herzegovina, Montenegro, Serbia) reached a critical magnitude, and in some regions have reached a dangerous level *(Figure 4)*.

1.2 Internal and external relations of the EU from the perspective of the Danube Transnational Region

1.2.1 Internal cooperation/integration

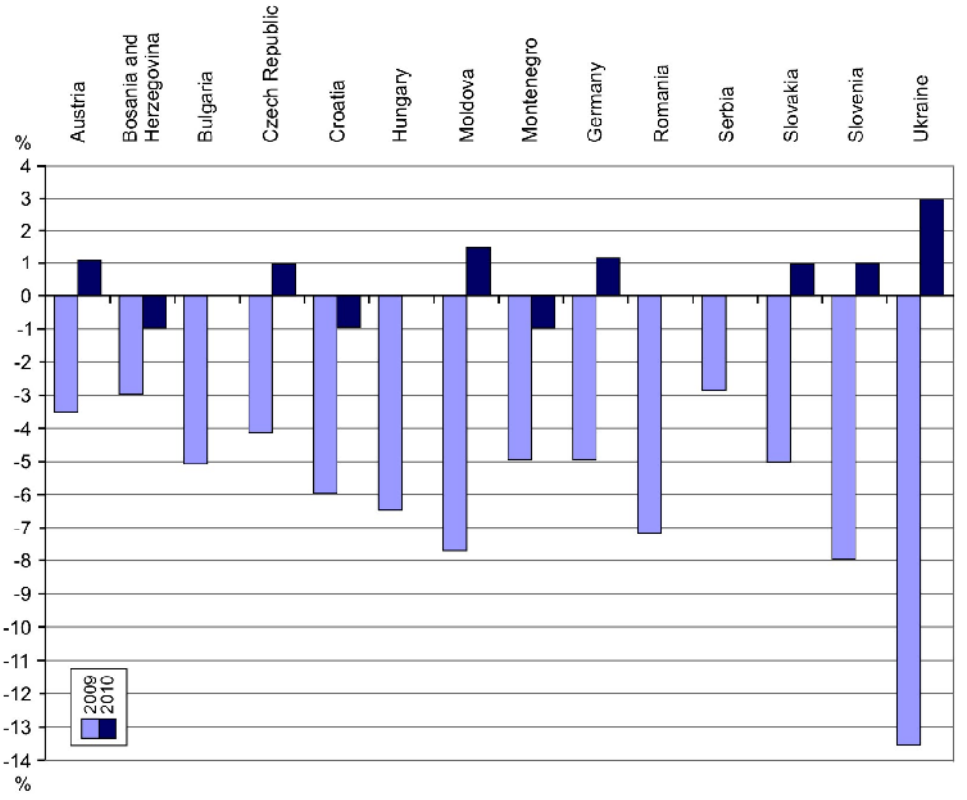
In the whole Danube Region, the EU has become the dominant factor, the operator and financing agent of external, and partially of internal integration. The relations of the new member states joining in 2004 and 2007 did not break their connections with countries which have remained outside the EU. New members help the candidate countries in catching-up, and this remained a common task even after their accession.

Croatia's accession in 2013 also indicates that the multi-faceted connection-building (both towards the EU and towards others outside it) can lead to success in accession.

The Euro-regional initiatives and the different EU funding programmes directly convey the expectations and reactions of external actors. There is almost no region in the area which is not linked somehow to the EU programmes, not receiving some kind of institutional, technical and financial support.

Figure 3

Effects of the crisis: GDP growth in the Danube Region, 2009–2010



Source: World Bank.

1.2.2 Interrelations with the EU27 and the rest of the World

Two of the Danube Region countries, Ukraine and Moldova, are included into the European Neighbourhood Policy (ENP) developed with the objective of preventing political and economic fractures between the enlarged EU and the eastern and southern neighbour states by fostering stability, democracy, prosperity and security *(Table 1).* The policy was first outlined in a Commission Communication on Wider Europe in March 2003, followed by a Strategy Paper on the European Neighbourhood Policy in the next year. The ENP is primarily functioning in bilateral contexts between the EU and each of the partner countries, building upon the commitment to democracy, plurality, rule of law, human rights, market

economy, good governance and sustainable development, with the aim of strengthening political associations, deeper economic integration and joint co-operations against the variable global challenges. The enforcement of the common interests essentially depends on the role of the European Neighbourhood Partnership Instrument (ENPI) with a budget of almost 12 billion Euros for the period 2007–2013 (nearly 32% more compared to the earlier one). 95% of these resources are spent on bilateral investments, while the remaining 5% are reserved for specific cross-border activities. The financial framework of the ENP was outlined in 2007; previously, there were separate fiscal schemes for the southern (MEDA) and eastern (TACIS) neighbourhood partnerships, and for thematic programmes as well (*Busek–Gjoreska* 2010).

Table 1

European Neighbourhood and Partnership Instrument (ENPI)
Indicative multi-annual allocations for the period 2007–2010

Programmes	Million Euro
Multi-Country Programmes	*827.6*
Inter-Regional Programme	260.8
Regional Programme – South	343.3
Regional Programme – East	223.5
Country Programmes (together for 16 states)	*4,116.5*
For Moldova	209.7
For Ukraine	494.0
Country Programme for the Russian Federation	120.0
Cross-border Cooperation Programmes	*277.1*
Governance Facility & Neighbourhood Investment Fund	*400.0*
Grand Total	5,621.2

Source: http://ec.europa.eu/world/enp/pdf/country/0703_enpi_figures_en.pdf.

On the samples of the ENP, other multilateral and regional co-operation initiatives emerged: the Black Sea Synergy (launched in Kiev in February 2008), the Union for the Mediterranean (formerly known as the Barcelona Process, relaunched in Paris in July 2008), and the Eastern Partnership (launched in Prague in May 2009). Although the institualisation of these initiatives progress slowly, and lasting conflicts and divergences hamper the efficient operations and appropriate functions in a long-term context. Joint co-operations could indisputably contribute to considerable outcomes in energy and environment policy, strengthening democratic structures and the free market, preventing terrorism, organised crime and illegal migration; as well as advances in transport, trade agreements,

mobility, technology- and knowledge-transfer, etc. It is important to underline that EU candidate states (Croatia, FYROM, Turkey and Montenegro) and countries part of the Stabilisation and Association Process (Serbia, Bosnia, Albania and Kosovo) can't apply for neighbourhood policy resources, so these initiatives are not the most effective instruments for the deeper integration of the Danube Region (EC, COM(2006)726 Final, Brussels, 4 December 2006).

2 Past evolutions of the Transnational Danube Region

Most of the Danubian countries were centrally planned economies before 1990. Nevertheless, there were some differences. The former Yugoslavia enjoyed more freedom concerning international relations, foreign trade and foreign work permits. Hungary introduced a few market-oriented measures in 1968. All these measures, however, could not change the character of the economy, the isolation from world-wide developments and technological inventions. This isolation was fatal especially for the more developed countries of the region, like the Czech Republic, Slovakia and Hungary. For example, the Czech Republic was – in the first half of the 20th century – at the same economic, technological and income level as France; while in 1990, at the end of the centrally planned economic system, the Czech economic potential was only a fraction of the French. The situation was even worse in countries where the new economic and political era started with war and destruction.

The economic and political changes in 1989–1990 opened new possibilities for the Danubian countries. The first years, however, were very difficult. The markets of the former Soviet Union were lost to these countries. The privatisation of the former state property was a rather confused process with several cases of corruption. Nevertheless, the 1990–2000 decade was one of the most dynamic periods in the history of the Danubian countries. Foreign Direct Investment was unknown in the socialist era. In this decade, investors discovered the Danubian countries as profitable fields of investment (*Illés* 2002).

Not all countries were simultaneously discovered. In the first years more than half of FDI was concentrated to Hungary where the basic institutions and legal environment for FDI was already established. The other counties caught up later with Hungary. It was, however, general that foreigners invested first in capital cities, in ports and in regions bordering EU member states. This means that investments were concentrated in a few cities and regions, but most regions remained without FDI for several years, in many cases right until the present time (*Gál–Sass* 2009). Consequently, economic growth also concentrated within capital regions (*Hardi–Hajdú–Mezei* 2009). In some cases, the capital city region

was the only carrier of economic development, and all other regions faced a decline *(Table 2)*.

This result can be interpreted also in a wider context. In the period 1995–2000, peripheral countries and especially the capital cities of peripheral countries grew more rapidly than other regions and cities of the European Union. *Table 3* presents this relation.

Table 2

The role of capital city regions in economic growth in the 1990s

Country	Capital city region	The share of capital regions in the increment of GDP (%)
Bulgaria	Yugozapaden	151
Czech Republic	Praha	65
Hungary	Közép-Magyarország	58
Poland	Mazowieckie	35
Romania	Bucuresti	278
Slovakia	Bratislavsky	38

Source: Eurostat.

Table 3

The change of the relative development level of capital cities and capital regions in the EU 1995–2009

Capital city or region	Country	Per capita GDP as a percentage of EU15 average		
		1995	2009	Change
Stockholm	SVE	196	192	–4,0
Prague	CZ	49	123	+74,0
Madrid	ESP	103	128	+25,0
Budapest	HU	49	88	+39,0
Bratislava	SK	41	121	+80,0
Bucharest	RO	13	41	+28,0
Attiki	GR	70	115	+45,0
Lisbon and Tejo Valley	PT	84	95	+11,0
Uusimaa	FINN	175	190	+15,0
Central Hungary	HU	38	65	+27,0
Mazowieckie	PL	24	55	+31,0

Source: Eurostat.

The economic and financial crisis of 2008–2010 and 2010–2011 somewhat changed this trend, but the long-term trends did not change. Capital regions have lower unemployment; the decrease of the growth rate is less than in the other regions. The main driving force of economic growth continues to be the service sector which is concentrated in the capital cities.

At the same time, however, national and EU policies have a strong influence on the territorial development of countries, cities and regions.

3 Relevant past developments and sectoral trends

3.1 The demographic features of the Danube Region

The macro-region of our analysis has 59 million inhabitants, of whom nearly 8 million live in capital cities (Budapest, Vienna, Bratislava, Bucharest and Belgrade). Between 2001 and 2011, the population of the macro-region decreased by 2 million people from 61 to 59 million. The Danube Region is the only macro-region in the EU where the population is decreasing. The decrease has both natural and migratory reasons. Natural reasons, because the number of children born is low and the death rate of adult men is high (alcoholism and smoking is also high.) Intensive international migration is a relatively new phenomenon in the region. In the "socialist" period, the countries of the region were – with the exception of the former Yugoslavia – strictly isolated from each other and from western countries. Migration to other EU countries started immediately after EU accession when the official obstacles were removed. The target countries of migration were determined by linguistic and historic affinities: Romanians went to Italy, Spain and France. Slavic migrants went to England, to Germany and to Northern Europe, Hungarians went to Austria or – in absence of language knowledge – remained at home. Apart from the most densely populated urban areas (Bucharest is an extremely densely populated city with 8,000 inhabitants per square kilometre) the region's average population density is 100 per square kilometre. The most sparsely populated areas are the Western region of Romania and the central parts of Romania with Hargita and Kovászna counties populated mostly by Hungarian ethnic minorities; and the majority of Serbian regions. Burgenland is also a sparsely populated region.

The population of the research area has decreased by 800 thousand during the past 5 years, losing one and a half percent of the total population. By monitoring the population change of some NUTS2 regions, two characteristic trends may be observed.

There are significant regional differences in the decrease of population. The decrease of the population significantly exceeds the national average in the majority of Romanian counties (especially in the southern and western parts), and in the research territories of Serbia.

Significant population growth can only be observed in some economically advanced areas. The decreasing population of Budapest and Bucharest can be explained by suburbanisation, which is verified by the significant population growth of their neighbourhoods (Pest County and Ilfov County). Besides these two agglomerations, only the Hungarian Győr-Moson-Sopron County, the Polish Kraków region, Vienna and Belgrade can show population growth worthy of note.

The region's age structure can be characterised by a balanced ratio of young and old generations, although the ratio of the below 15 year old population shows a slight prevalence over the age group over 65 *(Table 4)*.

Table 4

The age structure of the research area, 2010

Age group	Ratio (%)
0–14 years old	16.3
15–65 years old	69.8
Over 65 years old	13.9

Source: Eurostat, National Statistical Yearbooks.

Regional level data are showing great differences. Several economically advanced regions have ageing population. Besides the Austrian provinces, the population of Central Hungary, Western Transdanubia and of the neighbourhood of Bucharest in Romania are ageing rapidly. The southern parts of Serbia and the macro-region's economically backwarded territories have a deformed demographic structure with a predominant ratio of old-age population. Concerning ageing, regional level data are showing great differences.

The region's demographic process shows a strong natural decrease. The number of births in the majority of the territorial units of our research area stays below the number of deaths. The most affected areas of natural decrease are the counties of Hungary, the southern parts of Romania, Burgenland and Serbia.

It should be noted that micro-regional level analyses would show a more differentiated picture on demographic processes and their future trends.

The region's demographic processes have negative impacts not only on the overall economic development of the Region but they also generate unfavourable trends in social policy as well.

3.2 Employment, unemployment

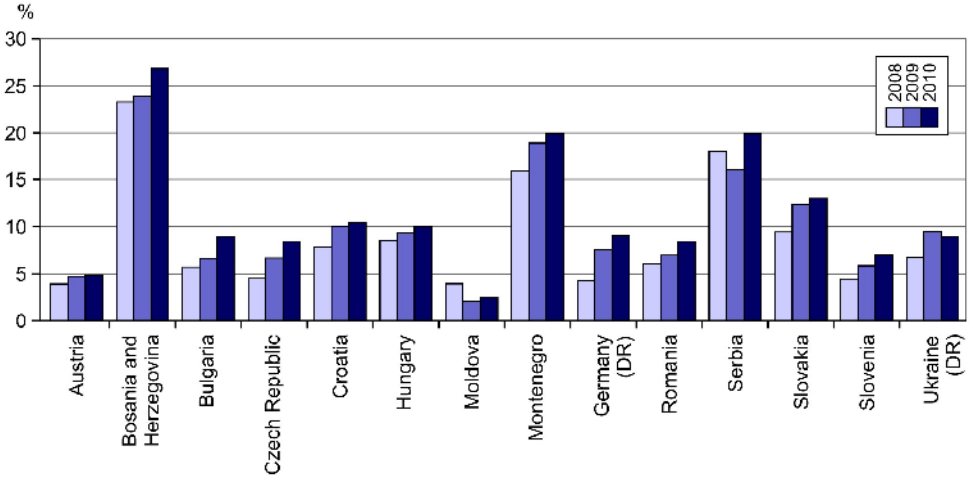
Rising unemployment is a serious problem especially for young people: in some countries, the youth unemployment rate may go as high as 40% *(Figure 4),* although the Czech Republic and Austria have a low rate. It is low-educated or professionally unskilled people who are the most badly hit.

The majority of the unemployed have a primary school or vocational school qualificationonly (in several regions, this ratio is about 70%). In general, the education level of women is lower than of men. About two-thirds of the rural population have a primary school qualification only, and this is in sharp contrast with the similar indicators of the urban population. A dichotomy between the capital city and the provincial areas can be experienced in all countries involved in our research. There are some microregions with a very poor knowledge base in Northern Hungary, in the peripheral areas of Romania (especially in the southern regions) and in the border zones between Romania–Ukraine and Romania–Serbia.

The economic activity of the population has an extreme importance both from social and economic aspects, as for the majority of people, this is the only way of earning regular income, and the ratio of active wage earners and dependants influencing the spending of incomes on household and social levels are also in strong correlation with this process.

Figure 4

Unemployment rate by Danubian coutries (%), 2008–2010



DR: Danube region.
Source: Eurostat.

The ratio of the economically active within the total population is less than the European average. The presence of Hungary's active wage earners is the lowest on the labour market. It should also be noted that a great number of jobs were lost as a consequence of the post-socialist structural crisis. Several members of the older generation who had lost their jobs chose an early retirement or live as disability pensioners, reducing in this way unemployment statistics. This is the main background of the low activity rate, as it cannot be explained merely by the number of children.

The economic restructuring in the region is well reflected by the labour market indicators as well.

In post-socialist countries, the social system of the communist era regarded full employment as a priority objective. Several state provisions granted full employment for the economically active generations. This, on the one hand, provided a kind of social security for active wage earners, but on the other hand, it lowered the economic efficiency of employment. The collapse of the socialist planned economy generated massive unemployment in these countries; therefore, nearly all member regions of this macro-region are facing this historical heritage.

3.2.1 The impact of transition

The transition process had a profound impact on the labour market and demand for skills across the region and its consequences continue to echo across the region. The restructuring of the economy led to job losses and a sharp decrease in employment in the industrial sector, in particular, as less productive sectors declined. In post-socialist countries, the shutdown of large industrial plants and the collapse of agricultural cooperatives have resulted in a massive dismissal of employment surplus. On the demand side the following factors were increasing the ratio of unemployment:

- Tensions in industrial structure.
- The shrinking size of internal markets.
- The transformation of firms.
- The new proprietary structure and privatisation of firms.

3.2.2 Peculiar features of unemployment

The informal economy: a review of the labour market could not be undertaken in a large part of the region without mention of the informal economy. By its very nature, measuring the size of the informal economy is problematic. However, it is evident that in the western Balkans, it is a substantial sector in its own right.

Unemployment and group disadvantage: labour market development is characterised by relatively low labour force participation rates and by high rates of unemployment. Levels of unemployment vary significantly across the region, but on the whole it is clear that unemployment remains relatively unresponsive to economic growth. However, a simple measure of total unemployment fails to illustrate the disadvantage that is concentrated amongst some social groups in the region.

Long-term unemployed: long-term unemployment is of particular importance in the region, given the proportion of unemployed who are confronted with it. High levels of long-term unemployment present significant challenges to bringing people back into the labour market. The loss of skills which accompanies a prolonged period outside the labour market, alongside social issues that may lead to a disengagement from the labour market, are but two of the consequences which accompany long-term unemployment. The lack of jobs in the economy, accompanied by difficulties in the transition from education to work, and weak linkages between schools and businesses are important factors which contribute to youth unemployment in the region (OECD 2010).

Minority groups: across the region, Roma are disproportionately represented amongst the unemployed. A central factor in long-term deprivation and exclusion are low levels of educational achievement and a lack of skills, both leading to unemployment.

Spatial dimension to unemployment: the transition process led to a growth in disparities between capital cities and other areas, as well as between rural and urban areas more generally. Compounding this division was the way in which those areas hit hardest by the transition process, such as rural ones through the decline of agriculture, also lacked the capacity to create effective strategies for local economic development.

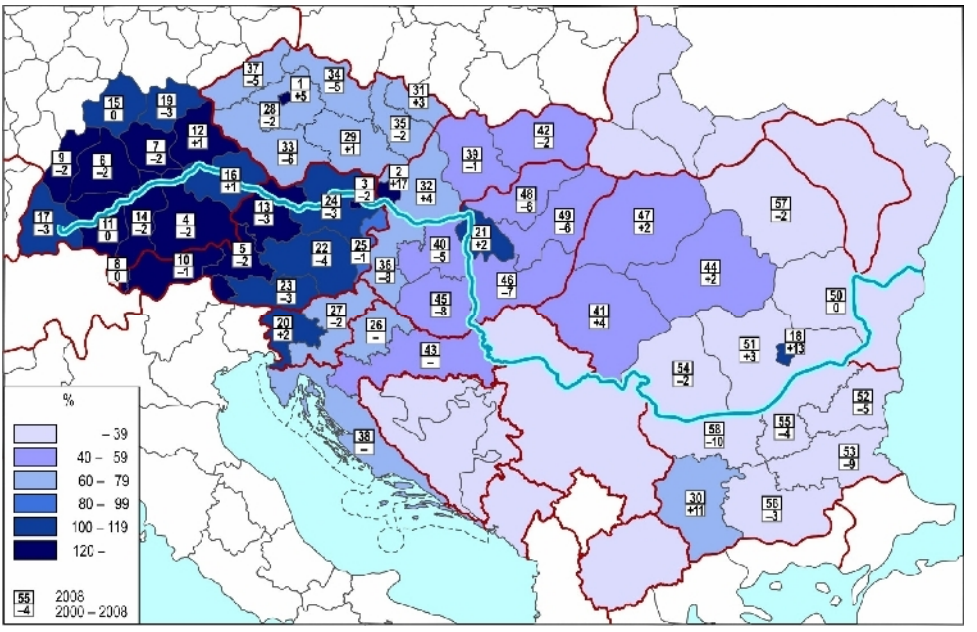
3.3 Economy, foreign investments and trade

The problems of the Danube region, as defined in the research objectives, can be evaluated within the context of broader Central and South Eastern European trends (post-socialism, European integration vs. re-peripheralisation), as well as the common problems of the European periphery under crisis. Development processes in recent years have reinforced the spatial divides emerging as a result of transition, and these divides have been exacerbated by the global financial and economic crisis (GFEC).

Within the socio-economic space of the survey area, an ongoing shift is observable in development levels and European catching-up processes, although the large economic and territorial inequalities can not be eliminated *(Figure 5).*

Figure 5

Development level by per capita GDP (PPP, % of EU27 average)



Note: The numerical value in the upper box shows the ranking of the individual region within the sample. The value in the lower box shows the change in the region's ranking between 2000 and 2008.

Source: Author's construction based on EUROSTAT.

The sharp dividing line between German and Austrian, as well as post-socialist space persists, while a rearrangement of development rankings is taking place within the study area itself. Even accounting for differences in the level of data aggregation (i.e. the statistical separation of capital cities from surrounding regions in the Czech Republic, Slovakia and Romania), the unambiguous winners of the process are capital regions, exploiting their role as metropolitan growth areas (in ESPON terminology, MEGAs). All of these regions have improved their relative positions, some substantially (Praha, Bratislavský kraj, Bucuresti–Ilfov and Bulgaria's Yugozapaden [Sofia]) while a decline in relative development level has taken place in a number of non-central regions with a strong industrial character. Convergence processes have been favourable for the whole Danube region, but they have been most beneficial for capital cities.

No region outside capital regions has experienced a significant improvement in development ranking (*Hajdú–Rácz* 2011). This process highlights the heavily

metropolitan character of high-technology manufacturing and knowledge-intensive high-technology services, as well as the functions of economic, financial and political control, where the higher tiers of the globally organised urban network predominate, and the competitive positions of functional urban areas (FUAs) lacking a critical mass are much less advantageous (*Mezei* 2006; *Baranyai–Baráth* 2009; *Póla* 2009; *Faragó*, 2010). The concentration of advanced business services corresponds to the urban network: it exceeds 50% in the capital regions of Slovenia, Slovakia, Bulgaria, Hungary and Croatia, is at 43% in the Czech Republic (with Brno as a notable counterpole), and below 40% in Romania, where a more polycentric urban network is present. Outside capital cities, high technology sectors have the highest employment share in western Hungarian and Czech regions, and the lowest in Romania and Bulgaria.

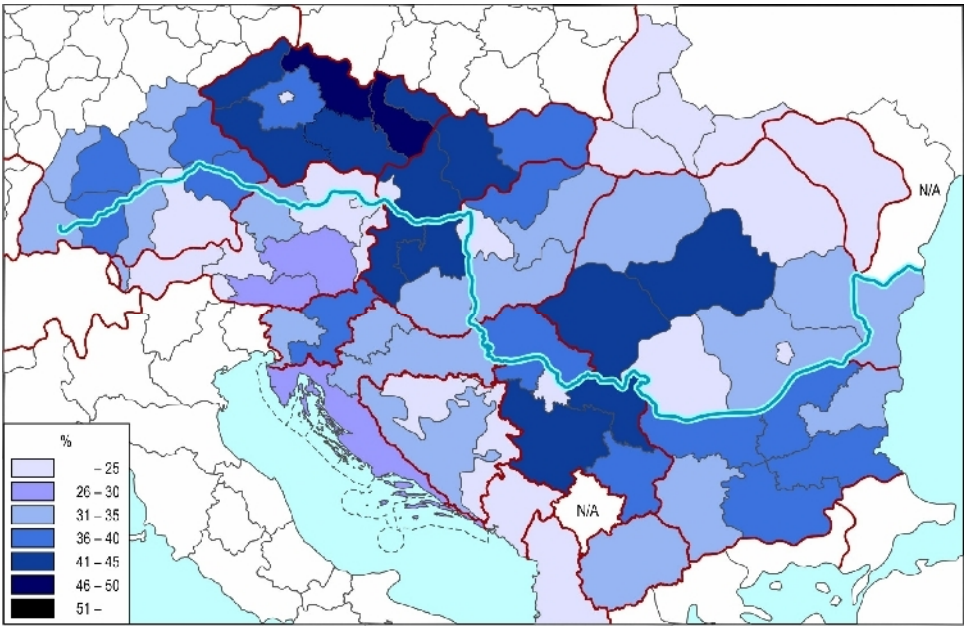
Another process in economic differentiation also contributes to the emergence of spatial macro-structures. The location of industry shows the strengthening position of a manufacturing integration zone stretching from the Vienna–Budapest corridor to south-western Poland, with strengthening linkages to Western European industrial networks, predominantly automotive industry (*Czirfusz* 2007; *Lux* 2010) *(Figure 6)*. This integration is heavily linked to Foreign Direct Investment, which, outside capital cities, shows its highest levels in these industrial regions; however, strong historical continuities based on deeply embedded institutional structures and productive traditions also play a part – through their favourable influence on location advantages influencing investment decisions (*Lux* 2008). The most advantageous exploitation of these fundamentals – where high industrialisation corresponds to high growth – takes place in the Czech Republic and Western and Central Slovakia, while Hungarian regions, in spite of their favourable economic structure, have experienced very modest catching-up, mainly due to worsening macroeconomic conditions and a failure to encourage the deeper embeddedness of industry into regional production structures.

A lesser concentration of industry in Romania and Serbia shows a more ambiguous mixture of FDI-driven reindustrialisation and the survival of domestic industrial capacities still before structural change. These areas, as well as much of the Western Balkans, Bulgaria and Romania, have experienced significant deindustrialisation over the last decades (*Turnock* 2001; *Lux* 2009). The loss of production has also contributed to a decline of factor supply via deskilling, as well as internal and international migration (most strikingly on the superperipheries of the Western Balkans, Ukraine and Moldova). This situation itself creates a formidable barrier before reindustrialisation initiatives, or indeed either investment-driven or endogenous growth. Slow convergence towards the average EU development level is insufficient to achieve a reversal of peripheralisation.

The development of supply networks and clusterisation processes follow the spatial structures of individual economic branches. The clusters of high-technology

Figure 6

Employment in industry and construction (%)



Note: Due to differences in the methodology of measuring sectoral statistics, values for Serbian regions are lower than they appear here.

Source: Author's construction based on EUROSTAT and national statistical yearbooks.

manufacturing and knowledge-intensive high-technology services follow the hierarchy of the urban network, with strong metropolitan concentration and the relevance of technology- and natural sciences-oriented universities. The degree of cluster development is highest in the deeply integrated automotive sector, where multiple segments of the value chain have been located in the study area, particularly by German companies treating Central Europe as a "complete space" encompassing all production functions (*Frigant–Layan* 2009; *Pavlínek–Domański–Guzik* 2009). The favoured spaces of clusterisation lie in western border regions, with gradual expansion along main transport corridors. Clustering in traditional branches, or innovative industries rooted in endogenous resources, is a much slower process, and most clusters are at an early stage of development.

With the GFEC, fundamental economic processes have not changed, but regional disparities are showing an increase between centres and peripheries. Capital regions have continued to grow, while regions integrated into global production networks have experienced a severe short-term impact on their primarily FDI-, manufacturing- and export-driven economies. The more stagnant group of

eastern and south-eastern regions with lower FDI penetration and network-building were less affected. However, periodic upturns on the basis of German demand have rejuvenated export-driven manufacturing, whereas the impacts of the crisis persist in branches serving depressed domestic demand – and the territories where these branches are located.

As regards to trade, the Danube region can be divided into three parts: the old EU members and the new member states of Central and South Eastern Europe and the non EU states of the Western Balkans. Trade integration with the CEECs and SEECs started in the early 1990s with bilateral agreements which liberalised 85% of trade between the two blocs. Between 1993 and 2005, the opening of these economies led to a considerable increase in trade on both sides. During this period, the old Member States increased their trade with the new Member States (EU10 countries) by 6 percentage points, whilst their imports from the new Member States rose by 13 percentage points. These trade flows are characterised by more labour-intensive products from the EU10 countries, in exchange for goods with greater technology content from the EU15.

The old Member States continue to run a trade surplus with the EU10 countries, which benefit from lower production costs. The trade deficit of the EU10 countries has declined drastically in recent years and is not considered to be alarming in relation to the economic catching-up needed in these countries. However, the European Commission considers that this imbalance must be the subject of close political surveillance, especially in the countries which are also recording high inflation. In Central and Eastern Europe the export generates nearly 60% of its GDP and the direction of exports is westward, 85 % of it goes to the EU.

In 2000, the EU granted autonomous trade preferences to all the Western Balkans. These preferences, which were renewed in 2005 and subsequently in 2011 until 2015, allow nearly all exports to enter the EU without customs duties or limits on quantities. Only wine, baby beef and certain fisheries products enter the EU under preferential tariff quotas. This preferential regime has contributed to an increase in the Western Balkans' exports to the EU. In 2010, the EU was the region's largest trading partner for both imports (61,3%) and exports (64,5%).

Foreign direct investment and export in knowledge intensive business services have grown rapidly, particularly after 2000 in the East Central European countries, especially in the Czech Republic, Poland and Hungary, though "latecomers" such as Romania and Bulgaria are also in the process of catching up with them (*Gál–Sass* 2009). Relocation (offshoring) of these services has given a new spur in metropolitan development as the EU has expanded eastwards. The metropolitan transformation accompanied by both the rapid deindustrialisation and expansion of services offshoring has resulted in the concentration of the high-level business and financial services into the capital cities.

3.4 Energy

The region's energy security, its supply and utilisation in the upcoming period will depend on the European Union's development processes. According to our current knowledge, vital changes will take place in the energy structure; we should be prepared for the end of the dominant role of oil and gas. The partial replacement of hydrocarbons will possibly trigger more differentiated consumption patterns, where the widely disputed nuclear energy, coal and renewable energy will all play a role.

The European Union is determined to increase energy security and diversification of purchases to avoid one-sided dependency (*Faringdon* 1989).

Among the decisions made and the agreements reached between Italy's Eni and Russia's Gazprom in June 2007, followed by other states and companies, the South Stream pipeline will increase the security of energy supply as it bypasses Ukraine so that the region will achieve independence from the threat of Russian-Ukrainian gas disputes *(Figure 7)*. A branch line was aimed at South Italy, while its northern branch is linked to the Danube region. The planning of the pipeline system will be completed in 2012 (the exact details will be finalised by that time), and in 2013 its construction works must be launched. It can partially be put into operation in 2014, and from 2015 it may operate at full capacity. Following its completion, it will be able to carry 64 billion m^3 of natural gas per year.

The Nabucco gas pipeline system diversifies the sources of supply (Azerbaijan, Iraq, Turkmenistan and possibly Egypt), thereby it reduces the dependence of the EU on Russian gas *(Figure 7)*. The planning must be completed by 2013 and the construction work should be launched and from 2017 the system must deliver gas to Europe. The longest part (2,581 km) of the 3,900 km long gas pipeline is will run through Turkey then it will reach Austria through Bulgaria, Romania and Hungary. The pipeline's annual delivery capacity is 31 billion m^3 per year. However, the number of participants of the project and the direction of the pipeline became uncertain by May 2012.

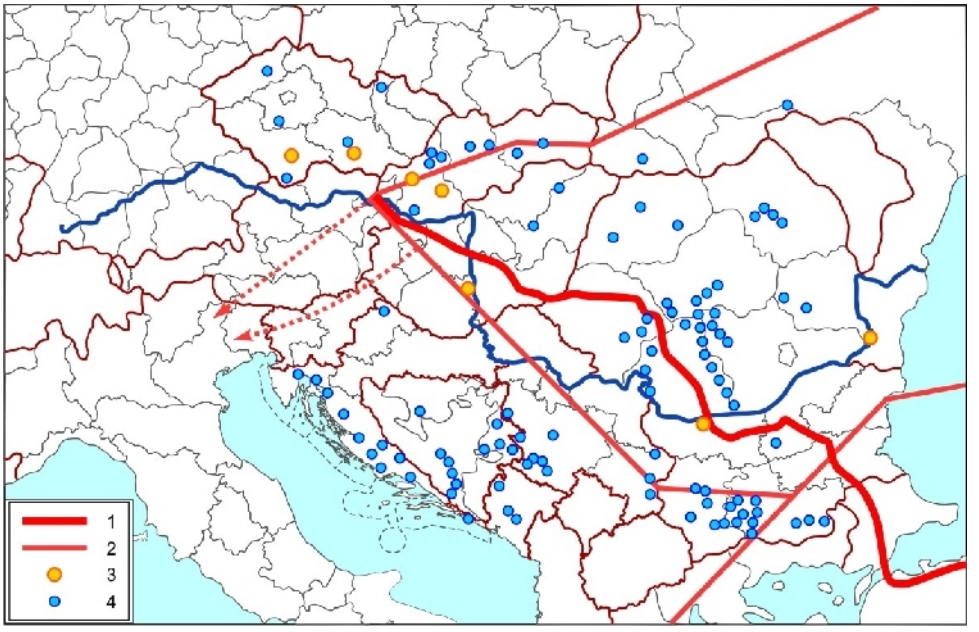
The development of the concept of the "Blue Stream" gas pipeline between Russia and Turkey started in 1997. The 1,213 km long pipeline has a delivery capacity of 16 billion m^3 per year. In addition to bilateral relations, several EU countries can receive gas through the pipeline system.

The construction of new natural gas pipelines will affect the region as a transit and destination area. In addition, they have strategic significance as well: they strengthen Turkey's connections with the EU. The absence of construction may result in the emergence of security risks.

The countries of the region did not go against the use of nuclear energy, and even the creation of new capacities are planned (in Paks, Hungary). The upgrading, security enhancement and service life extension of power plants having

Figure 7

The instrastructure of the main energy sources: the main gas pipelines, nuclear power plants and water plants



Legend: 1 – Nabucco gas pipeline; 2 – South stream (planned) pipe line and the existing Friendship pipe line (through Ukraine); 3 – Nuclear power plants; 4 water plants.
Source: Author's construction.

been built previously are continuing. It is possible that from 2020, the region's nuclear power plants will deliver electricity to Germany as well, which has decided to close down its nuclear facilities.

The region is planning new high-capacity coal-fired power plants. The existing coal power plants will be continuously upgraded to reduce emissions of harmful substances.

Renewable energy policy and the development of renewable energy potential in the region are heavily defined by the 2009/28/EC Directive. (The use of renewable energy sources at the EU level should reach 20% by 2020). In the predominant part of the region, the use of renewable energy should be at least 13% of total energy consumption by 2020.

Due to the region's geographical features, the use of renewable energy sources should be regionally differentiated. Solar, hydro, wind, biomass, geothermal energy resources must be linked primarily to local conditions (*Hajdú–Hardi* 2012).

3.5 Agriculture

3.5.1 Some characteristics of agriculture in the countries of the Danube Region

By the EU's territorial nomeclature (NUTS III), the countries of the Danube Region are predominantly rural or intermediary regions. The consequence of this rural character is that agriculture is present in every region, but it plays different roles in the economy and society of each country. The structure of agriculture in the Danube Region countries varies considerably. The differences reflect not only natural factors like soil, geology, topography, climate and natural resources, but different traditions and patterns of agriculture, market and ownership conditions, institutional and infrastructural background and different agricultural policies as well.

In the EU12 (Czech Republic, Slovakia, Hungary, Romania, Bulgaria) countries, agriculture went through fundamental transformation and restructuring during the past 20 years. Due to different privatisation, restitution or compensation processes, the former socialist state and collective ownership was transformed into private ownership in each country. The corporate structure of farming has been changed significantly. In some countries (Slovakia, Czech Republic and partly Hungary), large-scale agriculture continued and privatised large-scale holdings had been established, while a significant share of family holdings had also emerged. Small-scale family or subsistence farming has become an overall pattern in the CEE and Balkan countries, Moldova and Ukraine as well. In 2007, the average farm size was only 3.8 ha in terms of Utilised agricultural area (UAA) for Bulgaria and Romania, and it is even smaller in the Balkan and Moldova.

In CEE countries, a bipolar agriculture has been developed, a kind combination of small-scale and large-scale agriculture, without the formal integration as was found in Hungary during the socialist period.

While the general trend of agriculture in terms of the contribution to GDP is diminishing, agriculture could play an important role in the employment and living standards of rural population in the different countries. The agricultural GDP in the CEE countries is around 5% or less, while in the Balkan countries and Moldova this value is still much higher, it can be between 20 to 30%.

The level of social and economic development very much differs in these countries. The agricultural development in Germany, Austria can be characterised by a concentration process, namely the decreasing number of farms parallel with an increasing average territory. Other characteristics are the decreasing role in employment but significant role in healthy food provision, organic farming and quality food production.

Other general trends are worth to mention. One is the diminishing number of people working in agriculture. The largest number of employees in the primary sector is found in Romania and Poland (2.6 and 2.1 million respectively). These two countries account for 38% of the total employment in the primary sector in the EU27 and for 75% in the EU12. Romania and Bulgaria present the highest shares of employment in the primary sector in the EU (28%, 20%). The highest absolute decrease in the number of employees in the primary sector took place in Romania (–1 million employees). The general decrease in agricultural labour on the other hand contributed to the labour productivity growth during the past period.

The second trend is the ageing of the farming population. Only 6% of EU farm managers are younger than 35 years, while more than half are 55 years old or older. Moreover, the number of farmers in the youngest age group has declined more strongly than in any other age group. Bulgaria and Romania had less than 5% of young farmers and more than 40% of elderly farmers (above 65 years of age).

In the Balkan countries, agricultural production has considerable traditions, and the sector has a very important role in the economy and employment. Among the Balkan countries, Slovenia, Croatia and Serbia – in the latter especially the Vojvodina region – have for the most part modern agriculture, whilst agriculture in Bosnia and Herzegovina, FYROM, Montenegro, Central Serbia, Kosovo and Albania has remained more traditional. Within individual countries, there are further large disparities among the respective regions.

The contribution of agriculture to GDP and employment exceeds EU levels. Subsistence and near-subsistence farms play an important role in the food supply, and also in the economic stability and social security of the rural areas. On the other hand, several services are missing in these very agricultural territories. In the Balkan countries, agriculture plays a buffer role: when industry and services fail to absorb labour made redundant in agriculture, then the labour force does not leave agriculture – or moves to agriculture from these sectors. In other words, agriculture has in itself a degree of hidden unemployment.

The transition to the market economy is underway in the Balkan countries. Agriculture, due to the dominance of subsistence farms, is only in the initial phase of this process. The shift to the market economy is hindered by several factors: the fragmented holding structure (most small-holdings consist of several plots of land), the lack of (or the deficiencies in) the institutional system of the market economy; and the lack of adequate professional skills, entrepreneurial attitude, capital, bank finance for agriculture and the low level of competitiveness in the sector (*Gál* 2011).

The agricultural production of the Balkan countries – with the exception of tobacco and sheep and goats – is no more than a few percent of the output of the

EU, and the countries are net agricultural importers – except for Serbia. However, the increase in production in some sectors is dynamic, and lower production costs may also be a competitive advantage in some cases. In summary, Balkan countries may access the EU's agricultural market as potential receiving markets or competitors.

Ukraine is considered as "the pantry of Europe". It is the top grain producer in Europe and 4th in the world. 60% of its utilised agricultural area is good quality chernozjom soil. The former kolkhoz and sovhoz type large-scale units have been transformed, but similar large-scale holdings emerged, with inherited obsolete technologies, outdated machinery, and poor infrastructure. Besides large-scale holdings, there are 11 million agricultural households and approximately 42 thousand private family farmers with an average of 86 ha land.

Ukraine has about 60 million ha land, of which 42 million is considered as agricultural land. The main crops are winter wheat, spring barley and corn; further technical crops are fodder, potatoes and vegetables, gardens, orchards, vineyards and permanent meadows and pastures.

Sunflowers and sugar beets are the main industrial crops. The cultivated area dropped about 5% between 1991 and 2000 from 32.0 million hectares to 30.4 million.

The average yields compared to Western European figures are usually very low. The average grain crop per ha is between 2–3 t/ha, the sown area for grain is around 13 million ha and the country harvests 35 to 50 million ton, depending on the weather conditions. Doubling the average yields/ha would double the whole quantity of grain and other crops in Ukraine. Similarly, the losses after harvest are quite high because of inappropriate technologies and machinery.

A recent EBRD/FAO report stated that in Ukraine both an expansion of arable land-use and considerable intensification could take place without serious environmental consequences. As net exporters of grains and oilseeds these three countries could have a crucial impact on the world food situation, while realising significant gains in terms of export revenue, economic growth and rural development (EBRD 2008).

3.6 Land-use

Land-use is expected to move towards stronger urbanisation in selected urban areas (capital cities and cities with good growth prospects), especially in the Western Balkans, where urban sprawl has already been observable, and metropolitanisation is proceeding at a brisk pace. Suburban growth is comparatively limited at the moment, but is certain to gather pace under the observation period, following western trends with a time lag and local specifics. The continuing rele-

vance of home ownership in these states (partially in the absence of a strong rental market) will be an important factor in the process. Urban planning is currently unprepared to manage these processes, and fundamental changes are unlikely, or expected to be slow.

Rural areas undergo the loss of population and sometimes a reduction in land-use intensity, especially in distant (mountainous) areas, with potentially accelerating instances of the complete abandonment of settlements due to depopulation, but gain relevance as second homes in attractive locales and suburban growth areas in the proximity of developing agglomerations. Unlike Western Europe, selected rural areas undergo a form of ghettoisation due to the increasing concentration of disadvantaged groups.

Roadway networks will be one of the influential forces in land-use development. While transport networks are essentially "finished" in Western Europe, and well-developed in specific countries on the southern periphery, even the main transport axes can be missing in CEE. Balkans countries, especially, are affected by a low motorway density, and will encourage the development of these networks even if they fall out of favour in Western European policy.

Concerning agricultural land-use in the EU27 in 2007, 60% of the agricultural land was used for arable crops, 33% for permanent pasture and 6% for permanent crops. At member state level, the variety of agricultural land-use is extremely diverse: arable land is by far the main agricultural land-use in Bulgaria and Hungary. In Ukraine, it accounts for more than 80% of the territory. Permanent pasture is the prevalent form of land-use in Austria, Slovenia and part of Romania and Bulgaria. Meanwhile most of the countries pursue mixed farming practice. Some member states have significant territory of specialised mountain pastures and other specialty crops. There are serious concerns about the land degradation due to large scale land-use and the lack of organic fertiliser use.

Another factor shaping rural land-use patterns is EU policies encouraging specific forms of usage (energy, forestation, recreational and reserve areas). National policies also play a part, e.g. in Hungary, where forest management and reserve areas have traditionally enjoyed strong attention. Forestation and reforestation are both trends which can be expected to continue, coupled with the reclamation of agricultural land. Market conditions and public policies will both shape the emerging configuration of land-use.

A specific issue of the Danube region concerns river management and flood control, as along the length of the Danube, Drava (the Hungarian–Croatian border river), and especially the Tisza in Hungary, flooding is commonplace and the area of land where flood prevention is required is larger than the equivalent in the Netherlands. An added issue is the cross-border nature of flood control, as some relevant rivers are border rivers, or cross several countries – the Danube first and foremost. This area has been, and is expected to remain a key area of cooperation,

including non-EU countries, i.e. Ukraine–Romania–Hungary. It is possible that with changing land-use patterns and the increasing importance of conservation, initiatives towards the partial re-flooding of selected areas and the expansion of wetland reserves will take shape in the following decades, in Hungary, Western Transylvanian regions in Romania, Vojvodina in Serbia, as well as around the Danube Delta.

3.7 Habitat (urban development)

For several centuries, Western Europe has served as a model for Central Europe, which has often sought inspiration and adopted ideas and institutions from there. Central Europe however, constitutes an autonomous cultural and historical entity, a unique region, and, regardless of whether it has approached or distanced itself from Western Europe, it has never been identical with it (*Enyedi* 1997).

The urban network of Central Europe was directly related to the West European urban system before World War II and resembled it in many respects, although key trends appeared relatively late. Post-World War II, as a consequence of being within the Soviet sphere of influence, urban development processes showed several unique features, although they were not totally alien to international trends. With the changes post–1990, the common features became even more marked, i.e. the establishment of a local government system, the development of a residential market, the transformation of the urban economy and local urban society, growing social inequalities, the transformation of the built environment, the strengthening of cross-border relations etc.

Three factors have characterised the post-socialist transformation process during the past two decades:

- the creation of a system of local government with the reform of the institutional system,
- post-industrial transformation,
- the unilateral Europeanisation and globalisation of the economy.

The region is gradually being integrated into the European Economic Area. The eastern enlargement of the European Union and the fact that, since the reunification of Germany, the European urban core area has been shifted eastwards, both benefit for the Danube Region. At the same time, due to the quickening pace of (belated) modernisation, the circle of areas and settlements which are starting to fall behind is growing, with certain rural areas facing a loss of functions, the outward migration of their population and general impoverishment.

The urban system of Central Europe will, most likely, be characterised by a number of specific features during the coming decades:

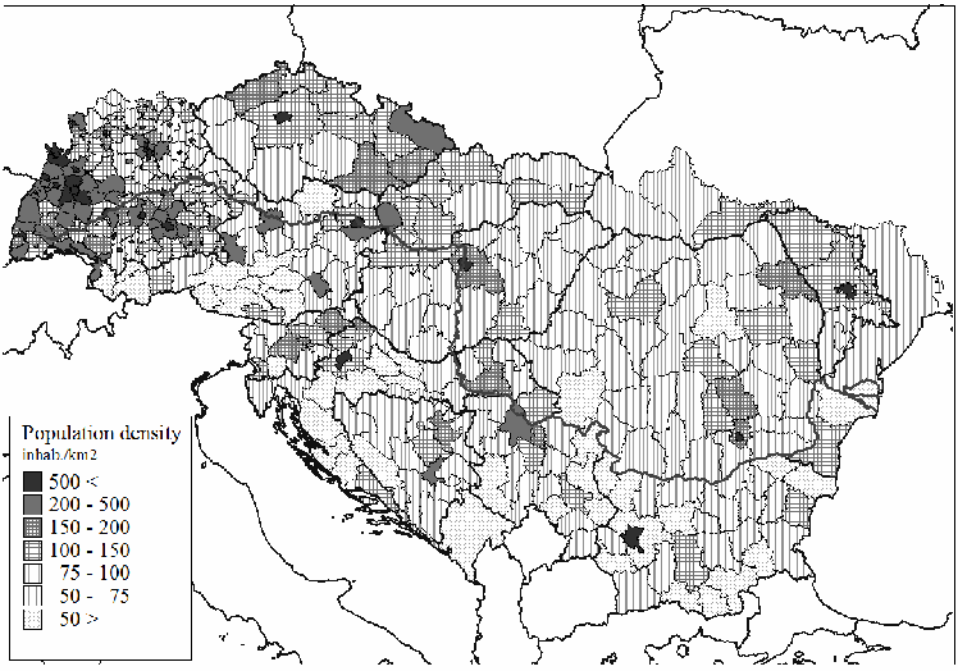
- a polycentric macroregional urban system constituted by monocentric national urban systems and a fragmented rural network,
- a high level of industrial employment in cities compared with European core regions,
- a high concentration of companies of international and national importance in capital cities,
- the weakness of the urban middle class and civil society outside Germany and Austria,
- an increase in poverty and in disadvantaged social strata,
- the poor condition of the built heritage and the slow disappearance of infrastructural weaknesses.

The individual countries in the area have mainly followed a similar path in their post-socialist transformation, with the objective of 'returning' to Western Europe – implying a strengthening of Western influence and increasing dependency. The common past, together with the challenges of the present, outline a form of Central European development path in which West European urbanisation trends emerge in specific ways. Even in Western Europe as it serves as a role model, the context has become one of increasing uncertainties. The economic driving forces of urbanisation have also been transformed and so the reference point is constantly changing.

The influence of the Danube on the urban network and on spatial development was not only felt in the past but has continued until the present era. Commercial-financial and industrial activities which have evolved over historical eras related to the river have contributed to a strong concentration of population on the upper and middle sections of the Danube, and several connection points have been created on the river at the intersection of zones of influence, giving birth to a dominant Central European urban zone (*Gál* 1997, 1998; *Hardi* 2002). From the standpoint of the urban network, the middle section of the Danube has become a true axis of urbanisation (Linz–Vienna–Bratislava–Budapest), which has now extended to the South-East – towards Novi Sad and Belgrade (*Hardi–Hajdú–Mezei* 2009). The lower section of the river is more sparsely populated and rural in nature *(Figure 8)*. Here the Danube long constituted the border to an empire, and, consequently, its territory has remained a periphery. Socialist urban development was also unable to foster any significant changes here, due to the weakness of cross-national connections on one hand, and the fact that the population and the economy were traditionally concentrated in ports on the Lower Danube. This is graphically shown by a development slope to be observed along the

Figure 8

Population density in the Danube Region, 2007



Source: Hardi, 2012.

length of the river. The varying levels of development of the individual sectors will also generate different demands in development terms in the future, and the greatest, the most significant effective of these may occur precisely in the more backward territory of the Lower Danube.

In terms of the rate of urbanisation, a northwest to southeast slope can also be discerned, even if socialist development and the fever to gain 'city' status significantly reduced the existing disparities. In reality, the urbanisation of towns or small cities was far from effective, and in several cases the settlements acquiring 'city' status lacked serious urban functions.

A unified treatment of the region and its development based on coherent strategy is further rendered difficult by the fact that the area has never functioned in the form of a single state, and so its urban network has never constituted a unified system, even when numerous similarities have been visible. The entire area is unquestionably gravitating towards the northwest. None of the major cities of the Danube Region constitutes a dominant core region around which the entire Danube Region could potentially be organised, and which would transcend political

and national boundaries. There is no internal centre of gravity which could integrate the region from most aspects. The peak of the settlement network of the area is constituted by cities and city regions with 1-2 million inhabitants (Bucharest, Budapest, Vienna, Belgrade, Stuttgart, Sofia, München, Prague, Odessa) *(Figure 9)*. This produces a polycentric urban network in the entire region which will predetermine the future division of functions. A significant outcome of this programme would be if the possible functions could be divided among the centres, so enabling the strengthening of network cooperation. The wars in the former Yugoslavia in the 90s drove a wedge splitting northwest-southeast relations in the region. Due to the enlargement of the EU, an increasing part of the region forms a unified political and integrating economic entity, and so political obstacles to cooperation are being removed.

Figure 9

Development potentials of urban areas (Trend Scenario 2020)

Legend: 1 – Mega 1, 2 – Mega 2, 3 – Mega 3, 3a – Mega 3 candidate, 4 – Mega 4, 4a – Mega 4 candidate, 5 – Mega not categorised, 6 – transnational/national FUA, 6a – transnational/national FUA candidate.

Source: PlaNet CenSE 2006.

With the deepening of European integration, the permeability of borders and the intensification of cross-border relations, the outlines of a unified city region and growth district are emerging in the Central Danube Basin. The dynamically developing core region is organised around the Vienna, Bratislava and Budapest axis. The question of whether the area is an enlargement of the European Pentagon or the centre of a totally new Central European growth region is as yet unclear.

One of the most significant characteristics of the urban network of the Danube Region is that the capital cities (excluding Bosnia-Herzegovina with its special status, and the two large countries of Germany and Ukraine) concentrate the heart of the economy and of the population not only within national borders, but also compared to the second level of the urban network (the regional centres).

We can discern the strengthening of the integrated state territory and autonomous urban networks in those states which have won sovereignty during the past two decades. The development of the new capital cities is most remarkable in the newly established states from every perspective. Macro regional centres are relatively weak, or cannot even be counted as real counterpoles, due to the small size of the countries and the scarcity of resources which have permitted only one metropolis to emerge in each. Former catchment areas have been transformed with the internationalisation of the borders, and so the number of cities providing regional functions has increased (with the new centre-integrating areas losing their former centres). The newly implemented public administrative systems have extended the functions of several settlements. Due to ethnically-based institutional development (e.g. the establishment of universities for minorities) certain cities have gained a senior position in the network independent of any system of public administration.

The phenomenon of suburbanisation can be seen in the region only since the 1990s, but the growth of metropolitan agglomerations has been constant despite the radical decline in birth rates. In parallel, the negative impacts of the process can also be observed (segregation, overburdening of the environment etc.). The losers in the process of migration were rural areas and industrial cities which lost their ability to retain their population. One distinctive movement of population arose due to the wars in the former Yugoslavia, which brought a change in the population numbers and ethnic composition of the settlements involved.

The Balkans region constitutes the most complex periphery of Europe from several perspectives. The cyclical change of integration and disintegration is the major factor shaping territorial and settlement processes. Currently we are witnessing a most advanced stage of disintegration, with the settlement network having reached its most highly fragmented level. Structural transformation has continued until today. Unresolved questions (border problems, unsettled conflicts etc.) make the fulfilment of the new integration cycle very difficult. With the ex-

ception of Slovenia, every state is running certain risks – for example in terms of ethnic or quality of life issues. The urban network of the area is currently a system of monocentric (capital-city centred) clusters separated on a national (ethnic) basis.

Certain processes (e.g. national sovereignty, mass emigration, the loss of population from rural areas) would have emerged without the intervention of war, albeit at a much slower pace and to a more moderate degree. With the collapse of Yugoslavia the internal relations of the area were radically transformed. The war and the building of nation states resulted in the termination or the deliberate neglect of former relations. Cross-border cooperation has intensified in certain, mainly ethnic respects, but outside the borders of the region, Great Power relations have gained significance, showing varying orientations from nation to nation.

With the end of conflicts and the drawing of new, long-term paths a new era of integration seems to be about to commence. Individual countries do not merely participate as partners, but the competition for attracting foreign capital will become more intensive at both national and settlement level. Integration into the global and European blood-stream can be achieved successfully only by certain countries and a very few cities. For the rest, this remains only a remote possibility. A transition similar to that of the Visegrád Countries is likely to occur: modernisation (integration) will be fulfilled in a top-down direction ar points within the settlement hierarchy, and along European corridors in a northwest-southeast direction. Hence, capital cities with their established connections will become the primary beneficiaries, further increasing their relative weight. Among the winners in the process will be gateway cities and large cities in general. Among the losers will be settlements and areas 'squeezed' along ethnic borders and facing a peripheral situation due to the change of orientation. The new (urban) network relations will not necessarily rely on former structures, since Europe's interests and scales differ totally from what they were during the Yugoslav era.

3.8 Environmental management and climate change

3.8.1 Environmental management

In the Danube region – despite the fact that its surface/landscape is varied – the most characteristic geographical unit is the Carpathian area, which needs a unified treatment in environmental management and climate change because of its geographical situation (*Gál–Rácz* 2008). The burdening of rivers with organic matter along the industrialised regions in the Carpathian area reached its peak in the first half of the 1980s. The river Oder and its tributaries are heavily polluted,

in addition to those flowing from the catchment area of river Danube, Vah, Nitra, Hron, Sajó, Hornad, Somes, Mureş, Olt, Jiu. Significant improvement has taken place in recent years in Poland, the Czech Republic, Slovakia and Hungary (*Fodor* 2008).

To achieve good water quality in the water bodies of the Danube region by 2015 (and beyond) and to ensure a sufficient supply of clean water for future generations, the contracting parties to the Danube River Protection Convention (DRPC) nominated the International Commission for the Protection of the Danube River (ICPDR) as the co-ordination body for the development of a comprehensive management plan for the entire Danube River Basin using the principles of the EU Water Framework Directive. This process involves experts from industry and agriculture, and representatives from environmental and consumer organisations as well as the local and national authorities. The Danube River Basin Management Plan is to be updated every six years according to EU legislation.

In the context of development regarding the Danube Region and their countries, the EU ISPA/Cohesion Fund (CF) has had indirect but strong impact on environmental management. ISPA/CF started in 2000 and served/is serving the development/improvement of investments in direct connection with environmental protection and landmanagement. In the environmental sector for the EU27, the CF provides resources for investments in air quality management, clean water/waste-water management and waste management.

Regarding biodiversity and conservation in the Danube Region, it can be said that the EU tries to manage the environmental issues via its directives. Such management tools include the 'Birds and Habitats Directives' which include the NATURA 2000 network. This common management – except Croatia – is not extended to non-EU countries; therefore, it is essential to encourage the broadening of this type of management tools to non-EU countries in the Danube region.

"WWF has embraced the concept of 'Ecoregion-Based Conservation' (ERBC) to ensure the conservation and sustainable development of large land units that are biologically coherent in terms of species, communities and environmental conditions. Such strategic biodiversity conservation projects may offer a coordinated response to immediate threats in the context of the socio-economic conditions and safeguard the future through a clear vision of the conservation goals and the participation required by stakeholders, working in partnership at all levels from international agencies to local communities. WWF has selected the Carpathians as an appropriate area for implementation which is now moving from reconnaissance into a more intensive phase" (*Turnock* 2002, 48; WWF 2000, *Illés* 2008).

3.8.2 Climate change

Climate change is already impacting the more than 80 million people living along the Danube, and these impacts will continue to grow in future. The climate of the Region is complex, with significant differences between the Black Sea coastal areas, Transylvania protected by the arch of the Carpathian Mountains and the Pannonian Basin. Regional vulnerabilities, impacts and difficulties in adaptation have been acknowledged: in terms of ecological vulnerability to future climate change (changes in ecosystem structure and natural vegetation) the Danube River Basin has been identified as highly vulnerable, while adapting to climate change will also be a challenge for thegreat majority of organisms and ecosystems in mountainous areas (UNEP 2007).

The impacts of climate change not only influence natural systems, habitats and species, but also human economy and society. Therefore, governments must act in time to adapt to these changes in order to reduce damage in both natural and social systems, and in this way avoid unnecessary costs associated with late action.

According to the climate change scenarios, several projects were initiated by the EU (PRUDENCE, STARDEX, ENSEMBLES, CECILIA, CLAVIER) (*Bartholy–Pongrácz–Gelybó* 2008). Regarding the calculation of PRUDENCE project the conclusion drawn by climate specialists converge on several points.

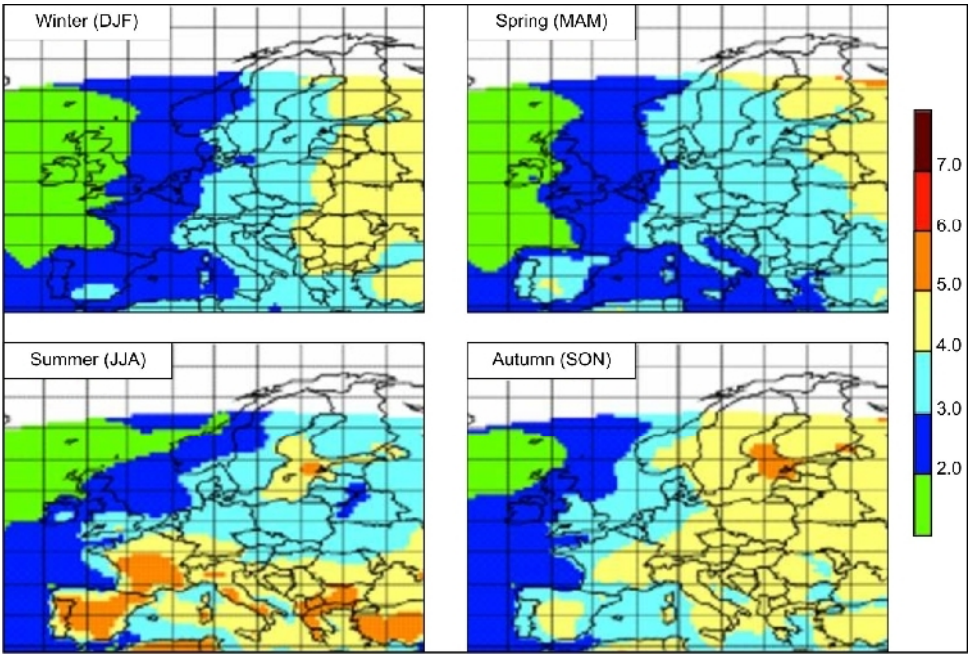
Temperature increase – combining the different scenarios in PRUDENCE – in the Danube region is likely to be above 2.4°C and below 5°C by the period between 2071–2100 (*Bartholy–Pongrácz–Gelybó* 2008). According to the forecasts, in the southern and south-eastern part of Germany, the average increase of temperature can be 4°C by the end of the century (*Jacob* 2009). Within the Carpathian Basin, the increase of the Summer average can be 4–5°C while the smallest increase can be forecasting as 3.0–3.5°C in Spring (*Bartholy–Pongrácz–Gelybó* 2007; *Erdősi* 2010) *(Figure 10)*.

Regarding precipitation in the area, it can be said that rainfall will increase in Winter and decrease in Summer. On the average, a minor decrease of rainfall is expected through the Danube region (*Bartholy* 2008).

Regarding extremity in the region, by the period of 2071–2100 the decrease of Winter days is expected by 65–82%, while the increase of heat-wave days will amount to 190–270% (*Pongrácz–Bartholy–Szabó* 2008). The number of droughty days will increase from 20–25 to 30–35 days a year by the end of the 21st century (*Kohán* et al. 2011).

Figure10

Average seasonal temperature change (°C) based on the assumption of ICTP RegCM model (2071–2100)



Source: Bartholy et al. 2006.

3.8.3 The potential effects of climate change

It is assumed that the effects of the floods that impacted the countries in the Danube Basin in the last years were worsened due to deforestation, the destruction of natural floodplains and human-induced global warming.

Those dependent on the Danube will need to prepare for direct climate change impacts including more frequent flooding and longer periods of drought. Indirect effects can include worsening water quality, loss in diversity of flora and fauna, including fish species as well as other environmental benefits and services that we have come to take for granted.

At present the entire region still belongs to the humid climate, but a 0.5–1°C increase in temperature would push the line of aridity index significantly towards the inner parts of the hilly area. This would lead to marked changes in the climatic optimum of both potential vegetation and vegetation culture (field crops and certain tree species). The vulnerability of the forest ecosystems is further in-

creased by the vagueness of the long term climate forecast. In the case of indigenous leafy hardwood trees, there are 80–120-year-long periods of forest management planning. Harmful effects do not spare pine forests in the high mountains of the Carpathians (*Fodor* 2008).

The key vulnerability of the European systems and sectors to climate change during the 21st century in low lying areas of central Europe will include increased frequency and magnitude of floods, increased variability of crop yields, increased health effects and heat waves as well as severe fires in drained peatland (IPCC, 2007).

The problem is that the challenges brought by climate changes come on top of other developments that have already greatly weakened the Danube's natural ability to absorb impacts *(Table 5)*. Dykes and dams have lacerated the living river, and some 80% of the Danube's former floodplains have been lost over the past 150 years. These land-use changes limit the Danube's ability to react to climate change, including increased rainfall, drought and flooding. "In responding to the growing challenge of climate change in the Danube river basin, it is imperative that we work with nature rather than against it – strengthening the resilience of the natural river system rather than further impairing it", said Christine Bratrich, head of Danube/Freshwater for the WWF Danube-Carpathian Programme.

Table 5

Selected expected impact of climate change and adaptation measures related to freshwater habitats and species in the Danube-Carpathian region

Expected impacts include	Possible adaptation measures
– Deteriorating water quality (higher risk of algal bloom, salinisation, intensifying eutrophication of lakes and wetlands) – Increase in the distribution of invasive species – Harm to natural biodiversity, including loss and extinction of plant and animal species	– International cooperation in river basin management – Protect remaining natural and wetland areas and ensure an ecological network that can safeguard migration of species and habitats – Restoration of floodplains and wetland areas

Source: Author's construction.

Agriculture and forestry are of relatively the greatest economic importance in Serbia and Ukraine, but it is also a key sector in the traditionally agricultural producer Hungary. Therefore, possible negative impacts of climate change in agriculture can have serious consequences on economic production as well as on the security of food supply in the region. The heat wave of 2003 has already shown the economic impact of extreme weather conditions when crop yields in southern

Europe dropped by 25% (*Stern Review* 2006). Agriculture, being heavily reliant on climate conditions, especially the availability of water, could be threatened by climate change since scenarios predict less precipitation and more frequent droughts. Therefore, the impacts of climate change could have substantial effects on the economies of the countries located in the Danube River Basin. These impacts may vary even in the areas of individual countries. For example, in Hungary in recent years, agricultural production has been facing difficulties related to droughts and floods occurring at the same time in different parts of the country. Aside from the risks of flooding events, the potential impact from climate change on agricultural production in the region includes insufficient access to irrigation water from the parts of Danube that are more vulnerable to summer droughts. In connection with this, desertification is expected to threaten the central part of Hungary (especially the Homokhátság region) and the eastern and southern part of the Vojvodina region of Serbia. Agricultural production in south-east Bulgaria is also expected to be severely impacted by climate change.

Changing climatic conditions can have a significant impact on the tourism sector of countries in the Danube-Carpathian region in the medium- and long-term. Both low-lying and mountainous areas will be affected.

Taking into account the impacts of already occurring and future climate change in tourism strategies and when planning new investments in the tourism sector can help reduce potential financial losses (these could occur for example when new facilities are built without considering potential future warming of the climate).

In energy consumption, we have to count on an increasing demand due to increasing cooling capacity in summertime.

3.9 Transport

Vehicular transport in comparison with Western Europe emerged with decades of delay in the region, often following outdated ideas, forcing to build additional network elements several times due to changing national boundaries. In comparison with Western Europe, the railway era took several decades longer and served centralised power, having large impact on its network configuration both in terms of military/strategic goals and economic cohesion. As a physical embodiment of political centralism, the capital city-based (benefiting for the central regions, but neglecting the peripheries) mono-centric national (sometimes regional) networks have been established which joined together at the countries borders only at a few places. With the exception of some transit lines of sub-continental or pan-European importance, main railway lines, due to the unfriendly

relations between the states served essentially domestic long-distance traffic and only to a small extent bilateral international traffic.

Monocentrism also became natural in structuring the long-distance highway/ motorway network in the 20th century – degrading decentralisation and regional development efforts drafted in the documents of the various political systems following each other.

In the Carpathian Basin, by creating a natural sharp division line together with the mono-centric structure and the framing high mountains, a part of the inward centripetal force of orientation in the international transport of Transylvania and Slovakia could be maintained even after the Trianon borders had been established. (From Transylvania as many train and long-distance bus services are available to Hungary as to the areas beyond the Carpathian Mountains.) (*Gál–Rácz* 2008; *Erdősi* 2009).

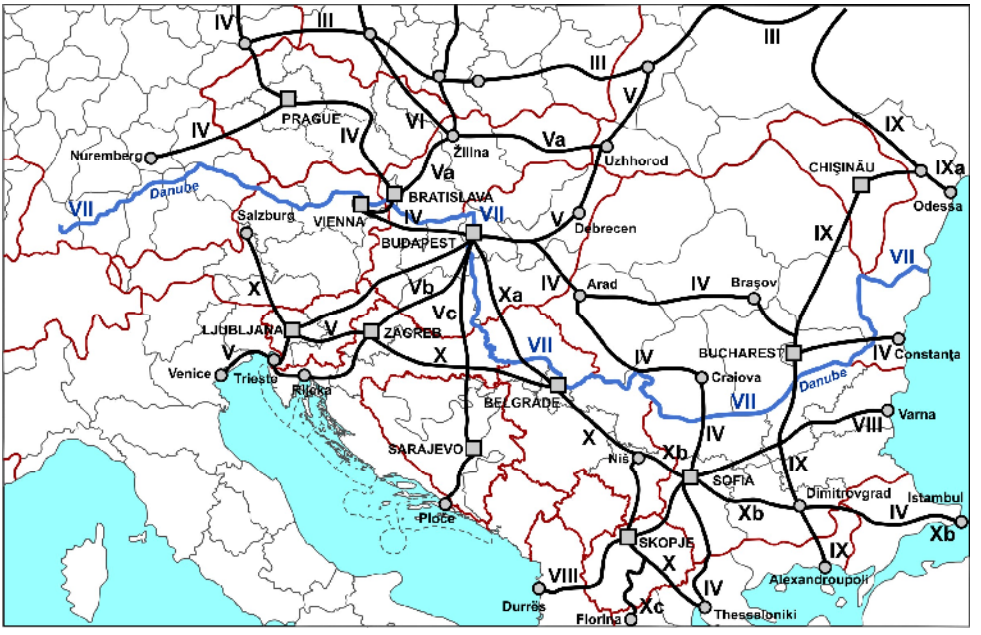
Hungary (namely Budapest) is an intersection of several traditional sub-continental transport lines, but also several trans-European corridors intersect here *(Figure 11)*. The trans-European corridors connect the Carpathian Basin and the Balkans strictly with the core area of the EU, while connections established with the post-Soviet region and Poland have secondary importance. The corridor chain connecting the Alpine region, Germany, partly through Slavonia, partly through the Danube and Tisza rivers reaching Belgrade and Sofia and continuing through Istanbul and Nis (towards the Middle East) has outstanding importance in geopolitical and economic aspects (*Erdősi* 2011)*(Figure 11)*.

One of the several characteristics and problems of the transport of the area is the reprehensible sub-sectoral structure of transport (modal split) and there is very little chance of making the required substantive changes. In contrast to the EU's environmentally sensitive transport policy, the development of the eco-friendly rail and inland waterways system is neglected while (in concordance with the interests of the car industry lobby) the share of highway investment projects is high. The main reason for the construction of highways in the area was their assumed very positive development impact. However, a great number of highways does not meet this requirement. In fact, only transit highways running through highly urbanised areas connecting densely located cities built on the weight line of trans-subcontinental goods flows (crossing the Czech Republic, Hungary and Croatia in one direction) carry traffic sufficient for economical operation.

The second set of neuralgic issues results from the push-pull effect between corridor side territories and peripheral areas which may broaden the gap between the areas' development levels and accelerate the resettlement of skilled labour and capital into dynamic areas from remote areas very difficult to reach by neglected side roads. Serving traffic in hardly accessible mountainous areas has become especially catastrophic. The termination of railway side lines playing a key role in the transport of rural areas continued in Yugoslavia and Hungary, whose "liberal"

Figure 11

The European transport corridors (Trans European Networks) in the Danube region



Source: Erdősi, 1998.

economic and transport policy had taken continued even in the 1960s and 1970s, while in the once "orthodox" Romania and Slovakia, it has only recently begun. The long-distance regular services in Romania collapsed, replaced by small business services operating in large numbers due to a lack of coordination, chaotic conditions and low traffic in remote areas which have been left without services. There is little chance of resolving the paradox between increasing poverty and the declining performance of public transport in the medium term.

The third shortcoming is reflected in international traffic by the fact that (although the EU advocates building Trans-European multimodal corridors) corridor railways in practice meet the required standards in only one or two sections (for example, between Budapest and Vienna). Therefore, the faster and more flexible passenger road transport is preferred. International scheduled air transport is available only in capitals and (seasonally) in some provincial towns in Romania and Croatia. A massive international transport of goods on the Danube and its viable tributary waterways navigable by smaller vessels is available, but their utilisation (as a loser of the competition with more attractive road transport) is

very weak. However the main reasons for the drastic decline in water transportation capacity lies in the changing economic structure, in favour of the less (massive goods) transport-intensive sectors. It is therefore devoid of any reality to take unacceptable amounts of money into the construction plans of waterways (Danube–Tisza–Danube, Sava, etc). The new but barely used container terminals (such as Baja, Budapest) and ports (Szeged) as well as the rundown, barely functioning once flourishing big ports on the Lower Danube in Croatia, Serbia and Romania warn of the failure of policies over-estimating the role of river-shipping (*Erdősi* 2009, 2011).

4 EU policies in the context of the Danube Region

EU policies have a very important influence on the development of new member states and within these countries on the Danubian Region.

The EU membership of these countries has a relatively short past. The Czech Republic, Slovakia, Slovenia and Hungary became EU members in 2004, Romania and Bulgaria in 2007. Nevertheless, EU policies had a strong influence on the regional policy of these states already before accession. Most of these countries applied for EU membership already in 1994, ten years before accession. In the meantime – after application and before accession (10 years) – the countries had to apply the "acquis communitaire", the legal and institutional system of the EU. In order to alleviate this task, the EU granted "pre-accession" funds to these countries: PHARE, as a pre-accession fund for the Structural Funds; ISPA, as a pre-accession fund for the Cohesion Fund; and SAPARD Fund for the agricultural funds. Though the volume of pre-accession funds was rather limited, they played a very important role in the formation of the regional policy of the candidate states. They had to establish NUTS regions and prepare programmes, according to the rules of the EU for the utilisation of the pre-accession funds (*Illés* 2002).

After accession, these countries became the main beneficiaries of the EU structural funds. By applying the so called "Berlin formula", according to which GDP and unemployment are the main indicators for the allocation of the funds, the new member states received about 50% of the EFDR, while they represented only 20 percent of the EU population and 6 percent of the contributions to the EU budget. 85 percent of the Structural Funds programmes and projects are financed from the Structural Funds and only 15 percent from national resources. It means that the main investor into infrastructure, environment, regional, rural and urban development were the Structural Funds of the EU.

In the last few years, however, there has been an increasing pressure on the budget of the European Commission to change this allocation. National contributions to the EU budget have decreased from 1.7 percent to 1 percent of the GDP.

The contribution of the EU budget to the budgets of the poorest member states was 5 percent in 2005, 3.5 percent in 2010, and will be 2.5 percent after 2013. After many decades when unemployment and GDP were the only indicators determining the allocation of funds among countries and regions, from 2013 new additional factors of "territorial cohesion" (high mountains, islands, sever climate) will influence the allocation of shrinking funds.

A new debate started about the funds in recent years. This debate is about who will be in command of funds and in what proportions. So far the overwhelming part of the funds was at the command of the member states. Now, the Commission thinks that there are "all-European priorities" which can be more efficiently promoted if an increasing part of the funds will be at the command of the Commission. The governments of the new member states argue against this proposal. They are afraid that this proposal will mean that poor countries will have less funds at their proposal (which is partly true). On the other hand it is also true that national governments have their domestic priorities and care less about common European problems. The debate has not closed yet.

Out of the 14 countries of the Danubian Region, 9 are – at present – not members of the European Union. Three of them (Croatia, FYROM, Montenegro) are accepted candidates for EU membership, but principally all Balkan countries are regarded as potential EU members. But the accession process is very long and slow. It is a strange characteristic of the procedure that the later a country applies for membership, the more and more difficult conditions they are expected to fulfil. Enlargement became a function dependent on the overall European economic and political situation.

5 Visions and territorial scenarios

5.1 Visions for the Danube Region

The Danube region in the current period is considered as half joined the European integration and half being outside it. This duality has several dimensions:

1) First, in the dimension of the countries' relations: Of the region's countries five are members of the European Union (Czech Republic, Slovakia, Hungary, Romania and Bulgaria), and 7 are not members of the integration (Croatia, Serbia, Bosnia-Herzegovina, Montenegro, FYROM, Kosovo and Moldova). The number of the outsider states is still greater but the population number of member states yet is twice that of the non-members (25,044 vs. 55,039 thousand), so the half inside – half outside analogy is valid throughout the whole region. In addition, the relation of the region's

countries to the EU is very different; there is a country which is the member of the Eurozone (Slovakia), there are member states where the Euro has not been adopted yet, but they are committed to it even if the time of introduction is quite delayed (the Czech Republic and Hungary). There are countries that are not members of the Schengen zone (Romania and Bulgaria). There are countries the negotiations of which have reached up to the entry gate (Croatia). There are countries the entry negotiations of which – for various reasons – are at a relatively early stage (Serbia, Bosnia-Herzegovina, FYROM and Montenegro), and there are those which have not even begun such negotiations (Kosovo, Moldova).

2) This ambiguous situation is valid not only for the countries but also and perhaps even more for regions within countries. From the perspective of economic development, employment and joining the European integration the differences among regions are larger than among countries. There are regions that for twenty years had been gradually lagging behind the other parts of countries, their old relations and foreign trade (with the former Soviet Union and former Yugoslavia) ceased and they cannot replace them with another now. The economic differences among the countries and the former EU member states have slightly declined compared to the last twenty years; however, they are constantly increasing among regions. It is a general phenomenon in the region's countries that the vast majority of economic activities are concentrated in the capital cities; they are services, finance, banking, trade, research, higher education, culture, publishing, communication in large part. The capital cities are by far the most important centres of rail, road and air transport; the other cities are much more difficult and can be accessed more slowly by means of transport. There are crucial differences between the capital city and the second largest city.
3) Third, there are oddities in the relation system of the region's countries as well. While they are all aware that their good relations with each other, good neighbourhood relations and cooperation are also important preconditions of their EU integration and also perhaps the most important area of their commercial relations; but still, this relationship is overshadowed by some tensions, some factors blocking the connections that may hinder, delay, make difficult or even prevent some countries' EU integration. Obviously, without eliminating these problems and obstacles the integration of the region as a whole will not be possible, but the survival of these problems will hinder the full integration of the EU member states.

These three problems are the ones that determine the future potential, the integration opportunities of the Danube Region. Of course, the global changes, the future of European integration as a whole largely affect the region as well, but their comprehensive analysis will take place within the framework of overall scenarios. In this chapter we made an attempt to delineate the scope of scenarios development trends and alternative options by proceeding from the special features of the Danube Region.

5.2 The scenario of successful integration

This scenario is based on the assumption that the EU will overcome the current difficulties and the expansion will successfully continue, the future member states will comply with the criteria set for them, although with the progress of the EU integration the new member countries will have to solve more and more difficult tasks, increasingly extensive "acquis communautaire" they will have to adapt and include in their legislation. With the foundation of the EU's predecessor, its 'founding fathers' declared the principle that all European countries can join the integration system, including the Balkan countries. This means that within approximately 15 years, Serbia, Bosnia-Herzegovina, FYROM, Montenegro, Kosovo and Albania may also become the members of the European Union. This also means that the negative vote of those member states would cease that currently prevent the entry of certain countries (Spain and Greece in case of FYROM, Greece, Slovakia, Romania and Cyprus in case of Kosovo). In case of Ukraine and Moldova partnership is likely to persist within the given time frame (15 years).

In the area defined in the project as the Danube Region, only one state, Slovakia is currently a member of the Eurozone. There are also two countries, Montenegro and Kosovo, which do not fall inside the Eurozone, yet they are using the Euro as their own currency. The other new member states (Czech Republic, Hungary, Romania and Bulgaria) are committed to the adoption of the Euro, but without an exact deadline. If the Euro gets over the current difficulties, these four countries are likely to join the Eurozone within 15 years.

The sub-regions of the region – both in the EU member states and non-member states – are with the exception of Austria and Germany among the poorest regions of Europe, and therefore, receive considerable support from the EU Structural Funds. Of the 36 so-called NUTS2 regions of the EU member states of the Danube area, only three are ineligible for the largest support for the so-called convergence regions, where the main goal is to close up with the per capita GDP of the EU average (the three regions excluded from this category are Prague, Bratislava with its Suburban Zone and Budapest with Central Hungary).

The situation is the same or even worse in the regions of non-EU member states. Expansion means the admission of further poor regions eligible for support.

The new rules of EU structural policy somewhat lower that eligibility for support. After 2013, the member countries are only eligible for up to 2.5 per cent of their GDP to receive as a structural support instead of the current 3.5%. The other measures are also of restrictive nature. There is no doubt however that the EU structural and agricultural subventions are still a significant contribution to the development of the new and prospective EU member states.

The underdevelopment of infrastructure is one of the most important problems of the countries of the Danube Region. Between east and west, road and rail lines may even be found satisfactory, but north-south connections are far more insufficient because the great powers influencing the development of the region were less interested in their development. Urban development should focus more on the development of the so-called 'secondary' cities (which does not necessarily mean one city per country).

The main river flowing through the region is the Danube. While the upper section of the river (which is excluded from the delimited territory of the Danube Region) is used reasonably and great care is spent for its sustainable use, this unfortunately cannot be stated about its lower section. The on-going debates between some countries do not contribute to the care and use of the river. The number of bridges across the river is low; and since the war in Yugoslavia, shipping across the former Yugoslavia has been reduced to a fraction of its earlier volume. The present Danube Committee should be transformed and the European Commission should enter the Danube Committee in concordance with its authority.

One of the major challenges in the Danube region is to improve the living conditions of Roma population. Europe's Roma population is estimated at 11 million and 260 thousand. Of this, 5 million and 600 thousand, half of the total Roma population is living in the Danube region and their share continues to grow. However, most of them live under conditions of extreme poverty and deprivation. Their unemployment rate is much higher than of other groups of the population. Their educational attainment is low, and many of them have no qualifications. This situation will extend to generations as children do not go to school and acquire no professional skills.

Of the three alternatives this is the best scenario, but even in this case, the region's population has to face serious challenges.

5.3 The scenario of Central European cooperation

In this scenario, it is assumed that EU enlargement will progress slower and with more difficulties than previously assumed. Developed countries also struggle with several difficulties, and less and less of them are inclined to the generous support of the poorer member states. This of course does not mean the disintegration of the European Union. Rather more that cooperation projects with various degrees of intensity are formed, such as those existing even today (e.g. the Eurozone, which covers only a part of member countries). The scenario assumes that these different stages persist. The Danube countries in this region respond to this by developing a variety of co-operation projects with each other, without leaving the European Union. Such groups exist even today among the old member states (Scandinavian countries) and the new ones (Visegrád countries). It is also possible that these cooperative groups include member and non-member states as well (e.g. Norway among the Scandinavian countries).

Naturally, all this has a kind of replacement character, which partly compensates for the slowing of EU enlargement. These small cooperative groups are less stringent than the requirements for 'acquais communautaire' but naturally they neither can provide such support as the EU. In any case, they provide more than the current situation of Balkan countries, isolated even from each other.

This cooperation also requires a certain degree of the settlement of disputes between the participating countries. In fact, the settlement of these issues may be of higher importance than in the first scenario, because they represent greater weight in closer cooperation projects. There is a greater interest in addressing the problems of the Roma population as 7–8 per cent of this region's population is Roma, while this figure in the European Union as a whole is only 2 per cent.

In this regional collaboration scheme, the importance of the Danube and its tributaries as well as of the Black Sea and the Adriatic Sea will increase, as of the region's 12 countries, 9 are 'land-locked' without any sea gateways which can reach the European waterways only via other countries. Energy security, the provision of oil and gas from multiple sources should also be achieved through cooperation within the region.

Within this framework, for example the former Yugoslav economic relations, cooperation projects which during and immediately after the Balkan wars almost ceased to exist, may gain a new force. In addition to the countries of the narrow region, Germany, Austria and Italy, having deep-rooted historical ties with the region with several of them still existing in the present, should be included in a number of co-operation projects. Even the plans associated with the Danube and the Danube water catchment area cannot be imagined without them (*Illés* 2008).

5.4 The third, 'worst case' scenario, when the disputes and conflicts between the countries of the Danube region make cooperation and integration impossible

Common and co-operation projects are not included in this scenario because the debates between the countries themselves make any kind of joint action impossible. Of course, this scenario is extreme in the current form, but draws attention to the now more or less hidden dangers threatening the Danube region.

These threats may arise in several forms: one is the question of national minorities. Hungary, for example, with the exception of Austria, Croatia and Slovenia, has such problems with multiple neighbours (Slovakia, Ukraine, Romania and Serbia). Croatia has conflicts due to this reason with Bosnia and Herzegovina, and Serbia. FYROM essentially has more or less debates practically with all of its neighbours (Serbia, Kosovo, Albania, Greece) (the debate with Greece has broken out due to the name of country).

Another type of conflicts have arisen from the realised or even not accomplished projects: those on the Danube between Slovakia and Hungary (Gabčikovo) water-plant, the debate over the construction of the new Danube – Black Sea Canal, the debate between Romania and Bulgaria over the new Danube bridge(s), etc.

The third type of debate has developed over the delimitation of border between Croatia and Slovenia, Croatia and Serbia, Montenegro and Croatia also has disputes over it with Montenegro and Bosnia.

The fourth form of conflicts is the disguised protectionism when countries apply different tricky ways to protect their own producers from competition. This certainly occurs even among EU member states.

All these are not armed conflicts but the above-listed conflicts overall make the cooperation with countries, their governments and organisations much more difficult and in some cases impossible.

5.5 Key trends driving the 2010–2050 evolution

5.5.1 Demography: ageing and migrating population

The Danubian macro-region has 59 million inhabitants. The Danube Region is the only macro-region in the EU where the population is not increasing but decreasing. Between 2001 and 2011 the population of the macro-region decreased by 2 million people from 61 million to 59 million. The decrease has both natural and migratory reasons. Natural reasons because the number of children born is low and the death rate of adult men is high (alcoholism and smoking are also

high). Intensive international migration is a relatively new phenomenon in the Danube Region. In the socialist priod, the countries of the region were – with the exception of the former Yugoslavia – strictly isolated from each other and from western countries. Migration to other EU countries started immediately after EU accession when the official obstacles were removed. The target countries of migration were determined by linguistic and historic affinities: Romanians went to Italy, Spain and France. Slavic migrants went to England, to Germany and to Northern Europe, Hungarians went to Austria and – in absence of language knowledge – remained at home. Emigration is very selective. Doctors, medical personnel and engineers with important skills are overrepresented among the migrants. If emigration continued at the current rate, then – by 2030 – doctors would disappear from the Czech Republic, Slovakia and Hungary.

Ageing is naturally also a problem in the region. The natural decrease of population can be experienced in most countries of the region. Pressures on governments to finance an increasing number of retirees while labour reserves shrink might dominate policymaking to the detriment of European catching-up. Apart from the most densely populated urban areas, the region's average population density is 100 per square kilometre.

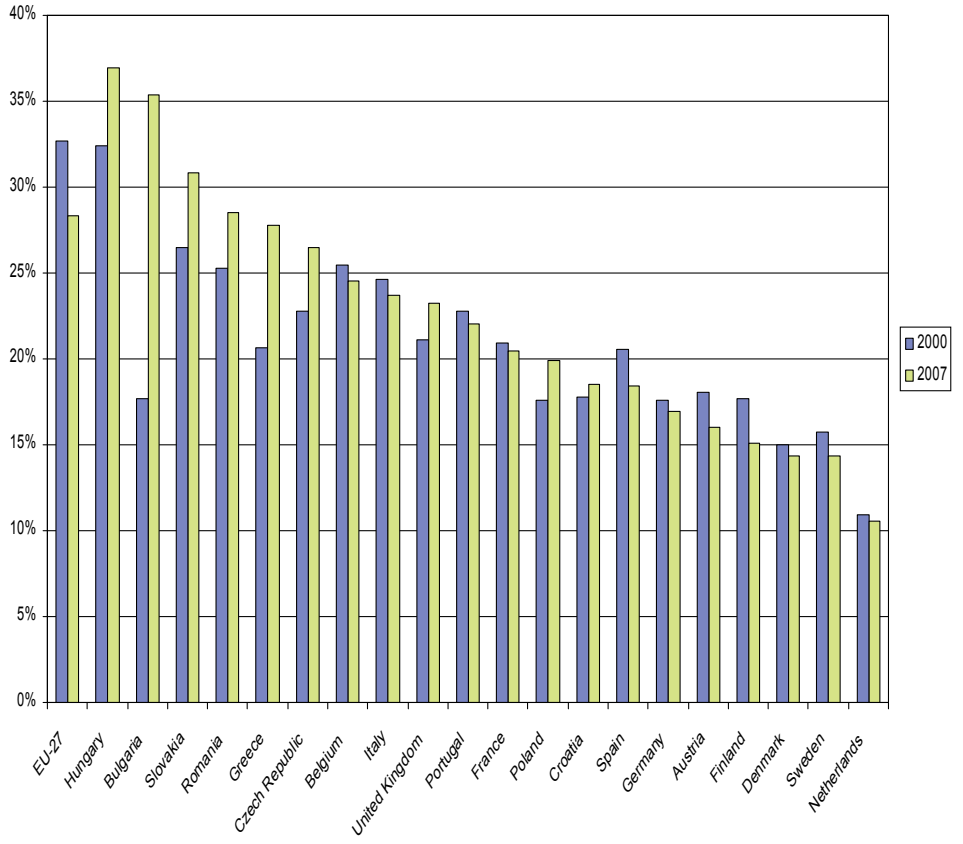
5.5.2 Economy and polarised development

The main industrial sector of the Danubian countries consists of affiliated firms of German large firms. Consequently, economic growth and employment strongly depends on the development and health of the German economy. For some Danubian countries, Italy is the county which strongly influences growth and balance of the economy. Inadequate capital accumulation among domestic economic actors curtails upgrading towards more innovative and higher value added activities, while increasing delocalisation risks. The progress of the integration in the EU will have different effects in the countries of the Danube region. These countries offer large-scale subsidies and tax allowances to foreign investors. In a closer integration will be not possible anymore. Therefore, their relation to closer integration is rather ambivalent.

Polarised development is one of the most serious problems of the Danube Region. Divergence was a phenomenon in this area already before the system change and before EU membership. After EU membership the divergence of GDP per capita continued both between counties and within countries as well. It is shown on the enclosed diagram that the largest divergence can be experienced in the new member states and within them in the Danube Region *(Figure 12).*

Figure 12

Development gap between the most developed and the least developed regions (GDP per capita in the percentage) in 2000 and 2007



Source: EUROSTAT.

The largest divergence of GDP per capita within countries can be experienced by 5 member states: Hungary, Bulgaria, Romania, Czech Republic and Greece (older member). It is also clear that divergence has increased significantly between 2007 and 2011.

All countries of the Danubian Macro-region are less developed than the EU average, but a catching-up process can be observed in all countries *(Table 6)*.

The catching-up of Slovakia is especially remarkable. The macro-region is also notable for its internal disparities. The poorest region of the EU where the

GDP per capita is less than 30 percent of the EU average are here (Sevarozapaden and Severen tsentralen in Bulgaria, Nord-Est in Romania). On the other hand, all capital city regions (Praha, Közép-Magyarország, Zahodna Slovenija, Bratislavsky kraj, Bucuresti-Ilfov) have higher per capita GDP than the EU average, in the case of Prague and Bratislava, double the average (due in part to not counting their extended agglomerations). Rising unemployment is a serious problem especially for young people: in some countries the youth unemployment rate may go as high as 40%. It is low-educated or professionally unskilled people who are the most badly hit by unemployment. On the demand side the following factors were increasing the ratio of unemployment: tensions in industrial structure, the shrinking size of internal markets, the transformation of firms, the new proprietary structure and privatisation of firms. The contribution of agriculture to GDP and employment exceeds EU levels. A specific challenge for the Danube region is the fate of the Roma population. 5 million Roma live in the Danubian Region, more than half of the World's Roma population. They were always poorer than the other groups of the population but their problems became acute after the change of the economic and political system in the Danubian Region in 1990. Before this change Roma people have found employment in the agricultural co-operatives, in the nationalised industry and in the building sector. After the change, there were no agricultural co-operatives, while industry and even construction employed less people than earlier. Roma people are in very critical situation. The EU and the member states prepared a Roma Strategy in 2009, but the time was not enough to achieve decisive results.

Table 6

Per capita GDP as a percentage of the EU average

	1995	2000	2005	2011
EU	100	100	100	100
Bulgaria	32	27	37	45
Czech Republic	77	71	79	80
Croatia	46	50	57	61
Hungary	51	54	53	66
Romania	33	26	35	49
Slovakia	47	50	60	73

Source: EUROSTAT.

5.5.3 Territorial patterns

Convergence processes have been favourable for the whole Danube Region, but they have been most beneficial for capital cities. It means that the overwhelming part of GDP is produced in the capital-city-regions (in Bulgaria 48%, in Hungary 48%, in Slovakia 60%, in Croatia 47%). The sharp dividing line between German and Austrian, as well as post-socialist space persists, while a rearrangement of development rankings is taking place within the study area itself. All of these regions have improved their relative positions, while a decline in relative development level has taken place in a number of non-central regions with a strong industrial character. No region outside capital regions has experienced a significant improvement in development ranking. This process highlights the heavily metropolitan character of high-technology manufacturing and knowledge-intensive high-technology services, as well as the functions of economic, financial and political control, where the higher tiers of the globally organised urban network predominate, and the competitive positions of functional urban areas (FUAs) lacking a critical mass are much less advantageous. The location of industry shows the strengthening position of a manufacturing integration zone stretching from the Vienna–Budapest corridor to south-western Poland, with strengthening linkages to Western European industrial networks, predominantly automotive industry. The development of supply networks and clusterisation processes follow the spatial structures of individual economic branches. The clusters of high-technology manufacturing and knowledge-intensive high-technology services follow the hierarchy of the urban network, with strong metropolitan concentration and the relevance of technology- and natural sciences-oriented universities (*Gál–Ptaček* 2011). The favoured spaces of clusterisation lie in western border regions, with gradual expansion along main transport corridors. The Danube has become the axis of urbanisation; commercial-industrial activities related to the river have contributed to a strong concentration of population on the upper and middle sections of the Danube. From the standpoint of the urban network, the middle section of the Danube has become a true axis of urbanisation (Linz–Vienna–Bratislava–Budapest), which has now extended to the South-East – towards Novi Sad and Belgrade (*Hajdú–Rácz* 2011). The lower section of the river is more sparsely populated and rural in nature. Urban system of Central Europe will be characterised by a number of specific features during the coming decades: a polycentric macroregional urban system constituted by monocentric national urban systems and a fragmented rural network, a high level of industrial employment in cities compared with European core regions, a high concentration of companies of international and national importance in capital cities, the weakness of the urban bourgeoisie and civil society outside Germany and Austria, an increase in poverty

and disadvantaged social strata, the poor condition of the built heritage and the slow disappearance of infrastructural weaknesses.

5.5.4 Reluctant innovation

The problems of the Danube Region are identical with those of Europe as a whole, although perhaps even more serious. While between 1950 and 1973, Europe was catching up with the United States in innovation, between 1973 and 2012 it has fallen behind. The number of employed people has increased in the US and decreased in Europe; moreover, the number of working hours per worker has increased in the USA, while it has decreased remarkably in Europe.

Taxes and budgetary centralisation of GDP is significantly lower in the USA than in Europe. Spending on R+D is much higher in the US and Japan then in Europe. Both capital market and labour market is functioning much more flexible in the US. In the Danube region, the centralised nature of R&D and innovation may persist, maintaining or increasing the large core-periphery gap. Inadequate innovative capacities can induce lagging innovation transfer and impact the opportunities of firms in global and domestic competition (*Gál–Rácz* 2008; *Gál–Ptacek* 2011).

5.5.5 Energy scarcity

On this field, the situation of Europe is not favourable but the situation in the Danube Region is still more disadvantageous. With the exception of Romania, none of the countries of the region has significant energy resources. Even the resources of Romania are diminishing. Most of the countries are land-locked (Czech Republic, Slovakia, Hungary, Serbia, Bosnia-Herzegovina, FYROM, Kosovo, Moldova) with no access to the sea. Consequently, the transport of gas and oil are rather expensive for them. An additional difficulty is that the over-whelming part of their energy import stems from Russia and comes through Ukraine. If either of the two counties has some problems, the energy transfer stops or diminishes significantly, creating long-term risk. A European-wide ban on the use of nuclear energy motivated by ecological concerns might exacerbate the situation in electrical energy production.

The European Union is determined to increase energy security, diversification of the purchase, to avoid one-sided dependency. Important energy transport infra-structures are planned to cross the macro region: South Stream, large capacity gas pipeline that bypasses Ukraine so the region is freed of the threat of Russian-Ukrainian gas disputes; the Nabucco gas pipeline system, which diversifies the sources of supply (Azerbaijan, Iraq, Turkmenistan and possibly Egypt), and

thereby it reduces the dependence of the Danube countries on Russian gas. However, the number of participants of the project and the direction of the pipeline became uncertain by May 2012. From 2020, the region's nuclear power plants will deliver electricity supply to Germany as well, which have closed down its similar facilities.

5.5.6 Transport

Monocentrism, networks centred in capital cities became natural in structuring the long-distance highway–motorway network and rail network in the 20th century – degrading decentralisation and regional development efforts drafted in the documents of the various political systems following each other. Nevertheless, in the last 15 years, a considerable network of motorways had been constructed in the region, especially in Croatia, Hungary, and Slovakia and in the Czech Republic. Unfortunately, transport on the Danube is significantly less than 20 years ago. During the war in the former Yugoslavia, important bridges on the Danube were destroyed and traffic was stopped. After the war, the bridges were rebuilt but traffic has remained very small.

5.5.7 Land-use

Land-use is expected to move towards stronger urbanisation in selected urban areas (capital cities and cities with good growth prospects), especially in the Western Balkans, where urban sprawl has already been observable, and metropolitanisation is proceeding at a brisk pace. Suburban growth is comparatively limited at the moment. The continuing relevance of home ownership in these states (partially in the absence of a strong rental market) will be an important factor in the process. Urban planning is currently unprepared to manage these processes, and fundamental changes are unlikely, or expected to be slow.

Rural areas undergo the loss of population and sometimes a reduction in land-use intensity, especially in distant (mountainous) areas, with potentially accelerating instances of the complete abandonment of settlements due to depopulation, but gain relevance as second homes in attractive locales and suburban growth areas in the proximity of developing agglomerations. Unlike Western Europe, selected rural areas undergo a form of ghettoisation due to the increasing concentration of disadvantaged groups.

Roadway networks will be one of the influential forces in land-use development. While transport networks are essentially "finished" in Western Europe, and well-developed in specific countries on the southern periphery, even the main transport axes can be missing in CEE. Forestation and reforestation are both

trends which can be expected to continue, coupled with the reclamation of agricultural land. Market conditions and public policies will both shape the emerging configuration of land-use.

A specific issue of the Danube region concerns river management and flood control, as along the length of the Danube, Drava (the Hungarian–Croatian border river), and especially the Tisza in Hungary, flooding is commonplace and the area of land where flood prevention is required is larger than the equivalent in the Netherlands. An added issue is the cross-border nature of flood control, as some relevant rivers are border rivers, or cross several countries – the Danube first and foremost. This area has been, and is expected to remain a key area of cooperation, including non-EU countries, i.e. Ukraine–Romania–Hungary. It is possible that with changing land-use patterns and the increasing importance of conservation, initiatives towards the partial re-flooding of selected areas and the expansion of wetland reserves will take shape in the following decades, in Hungary, Western Transylvanian regions in Romania, Vojvodina in Serbia, as well as around the Danube Delta.

5.5.8 Environment

Those dependent on the Danube will need to prepare for direct climate change impacts including more frequent flooding and longer periods of drought. Indirect effects can include worsening water quality, loss in diversity of flora and fauna, including fish species as well as other environmental benefits and services that we have come to take for granted.

5.5.9 Governance

In the whole Danube Region the EU has become the dominant factor, the operator and financing agent of external and partially of the internal integration. The Euro-regional initiatives and the different EU funding programmes directly convey the expectations and reactions for the outsiders. There is no region in the area which is not linked somehow to the EU programmes, not receiving some kind of institutional, technical and financial support.

5.6 Danube Region SWOT table

Strengths	**Weaknesses (Structural unbalances)**
• Skilled workforce, valuable economic traditions • Lower production costs • Improving infrastructural connectedness • FDI inflows into manufacturing • Favourable environmental conditions, low pollution in comparison with the EU15 • Abundant natural resources in Balkans countries, especially Bosnia-Herzegovina and Albania • Danube as a connecting source of identity and communication & innovation axis	• Low economic activity rate, high relevance of informal economies • Underdeveloped urban centres (FUAs) without a critical mass, the dominance of capital cities • Undercapitalised economies, over-reliance on FDI • Dual economies: competitive exogenious MNCs and underdeveloped indigenious enterprises • Predominant foreign ownership in strategic sectors • Low internal demand and fragmented internal markets • Large but inefficient public sector • Weak civil society
Opportunities	**Threats**
• Integration into European and global value chains, continuous industrial upgrading • Growing service economies • Favourable capital attraction conditions • Knowledge-based development on the basis of university poles • State reform initiatives, • Market expansion towards the EU core and third countries, as well as the exploitation of internal markets with rising living standards • Unexploited, diverse tourist and natural reserves potential	• Capital-centred development without broader catching-up, increasing core–periphery dichotomy • Ageing population • Continuing marginalisation of specific social groups, especially Roma • Dependent power relations and increasing profit repatriation • Losses in human capital due to immigration • Energy security challenges coupled with growing demand • “Frozen conflicts” in the Balkans, postponed EU-integration • Delocalisation of production towards the Far East • Political marginalisation in a “core vs. periphery” EU development scenario; preserved “second-tier” membership • Inadequate preparedness for climate change scenarios

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