CESCI
CENTRAL EUROPEAN SERVICE
FOR CROSS-BORDER INITIATIVES

CONTRIBUTION DOCUMENT OF CESCI TO THE PROPOSAL RELATED TO RESTRUCTURING OF PA10 OF EUROPEAN UNION STRATEGY FOR DANUBE REGION

2013

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1. INTRODUCTORY REMARKS ON THE CONCEPT OF 'BIOSPHERE BASED DEVELOPMENT'

The EUSDR PA10 coordinator has submitted a proposal (discussion document) aiming to restructure the PA10. The proposal was open to be discussed until the 10th December 2013 with a view to clarifying and making more accurate the argumentation of the short non-paper.

In this document we try to react to this request and to the content of the PA10 coordinator's proposal with a restriction that we do not thoroughly understand the content and some terms thereof.

The present contribution document can be divided into two parts: in the first chapters we investigate critically three components of the proposal: network economy, polycentric urban network and biosphere based development.

In the second part of the document (based on the results of the territorial analysis of the future transnational Danube programme) we give a short view on the situation of the topics analysed in the first chapter in the Danube region, respectively.

1.1. ON THE THEORY OF NETWORK ECONOMY

One of the results of the globalisation is the internalisation of companies concluding in the build-up of global networks. The usage of modern info-communication technologies and the creation of logistics services are important conditions for the forming a network economy (Gelei 2008).

The business networks are essential factors of the global economy. The fundamental unit of the economy is changing from the vertically integrated corporation separated from the others to an individual one which is co-operating with others. Network structures perform better in controlling costs than former hierarchical models.

In the most general sense, the network - and thus also the business network – is a structure which is based on many nodes linked with several threads. The nodes in the network are certain business units like manufacturing companies, customers, logistical centres or even financial service providers. The connecting threads can be interpreted as relationships between the nodes (Håkansson 1997). A business network is commonly interpreted as one single quasi-organization (Laage – Hellman 1996). In this kind of network the interaction between two nodes or two business networks has an effect on other business units (Håkansson – Ford 2002). It leads to the recognition that the location choices of even one single business unit heavily define (and limit) the choices of other companies.

Typical players in the supply chains are the so-called central companies. The central company, often a multinational company, plays a central role in final value production. Further players are the first, second, etc. suppliers, first-round or indirect customers, including the final consumer. The supply chain also contains the logistics service providers and the research centres participating in product development.

As a consequence of above changes the most part of interactions can be described not between national economies but regional clusters and networks. In the new economic model the relations between economic operators are much more emphasized. The networks formed between the actors intensify the mobility of goods and people at an unprecedented level. In this new model growing share of trade, knowledge and technology transfer, foreign direct

investment and other economic flows take place among parent companies, affiliates, suppliers and customers within networks.

In the old economy, products were made and services were carried out within distinct sectors and industrial centres. Today these sectors break down in new economies, therefore the location of production is not connected to only one favourable environmental or other factor such as the number of basic resources or the size of consumer markets. The model created by Porter takes into account the local sources of global competitive advantages by which the individual companies organized into networks can be successful (Porter 1998):

Level of development of input conditions: the local quantity, quality, cost and specialization (natural, human resources, capital and infrastructure) of the basic organizational resources.

Level of development of competition: the intensity of local rivalry, its motivating force for permanent innovation and the features of adaptable strategies. The corporate strategies are very varied from submarket to submarket; a member of a network could act as a competitor in one or as a cooperative unit in another territory causing new demand and supply conditions.

Level of development of demand conditions: the intensity, pressure, structure and dynamics consumers of the local market.

Level of development of related economic brunches and sectors: the availability and quality of the support and service (non-profit) sectors, the positive technological externalities.

The larger and more extensive the local competitive advantage is, the higher competitiveness is. This is the reason why the networks have been established in order to create the optimal use of the mentioned local competitive advantages.

According to Manuel Castells the most important selection criterion of businesses is the ability to connect to networks. The companies in network economy produce goods linking geographically dispersed local and wide-area networks (Tapscott 1999). The function of a location in such a network cannot be seen separately. From this point of view the notion of the place or location is different: the **local characteristics play smaller** and the **regional aspects bigger** importance. The company decisions have to take into account the broader regional business environment much more than the point-like characteristics of the local players. More emphasis is given to the spatial relations between the locations and

the potential role of these locations within the global business networks. If a company intends to create a new manufacturing unit or make contract, the spatial relations are to be examined in order to take advantage of the spatial relations such as the proximity or the lack of other competitors, the agglomeration of potential partners or the purchasing power of a particular area. Despite the formation of the global economy it is fragmented to regional submarkets what can be described by distinct costs and prices. For example the lack of skilled workforce hinders the creation of new high value added jobs and increases the level of wages within a particular area.

The business environment can be developed by numerous tools and funds but these also change the spatial and sectorial structure of regional economies. For instance focusing on innovation can cause negative impacts on employment by implementing technology-intensive activities replacing labour-intensive ones. It needs to be underlined in relation to the submarkets that e.g. **regulatory environment, tax conditions or the political situation has a huge effect on the network economy**. The role of government and firms are blurring what indicates their changing functions and their need to cooperate more tightly.

All in all, the logical background of the networking emphasizes the complexity and interconnection of locations where the **geographical factors** (the common and complementary features that can be exploited) **play an important but not exceptional role**.

1.2. ON THE THEORY OF THE POLYCENTRIC URBAN DEVELOPMENT

It has to be considered that the central place theory created by Walter Christaller in the 1930s is a geographical theory that tries to explain the number, size and location of settlements in an urban network. It argues that settlements are functioning as central places providing services to surrounding areas. The system of central places is normally based on centripetal structures in which the *examples of co-operation are rare at the same level* and the share of functions is limited.

In the 1960s the theory of central places was applied in the spatial planning practice. It was defined which functions (institutions) had to be created and which services had to be carried out on which levels. Its primary role has been to equal the disparities regarding the settlements on the same levels by assigning functions to them.

However, due to the change of the economic system and the intensifying competition between cities the strict settlement hierarchy has been undermined forming more complex and overlapping influential zones (Meijers–Romein 2003, Markusen–Schrock 2006, Seelig 2007). That means different sectors and central functions (industrial, tourist, educational, health care, cultural, transport, administrative and so on) form different complementary and less hierarchical hinterlands. Consequently, the size of hinterlands varies from economic activity to economic activity that hardens the urban planning and management based on cities situated on distinct hierarchical levels (Koschny–Mensing–von Rohr 1998). *Horizontal relations (networking) on the same levels of hierarchy have gained higher importance.*

In the frames of polycentric development, as sign of moving towards decentralisation and specialisation, the development approach is mostly based on the idea of *growth poles*. The growth pole theory, created by Perroux then transformed by Boudeville to physical space, suggests developing specific centres in the settlement system (Nemes Nagy 2009). Certain cities have been identified as the main engines of development. In order to support a spatially balanced territorial development, the formation of a polycentric settlement network should be promoted (Sýkora–Mulíček–Maier 2009). This polycentric theory and the related planning policy focus on the specific properties of cities, using them as resources in the competition of places (Czirfusz 2009). *The cities on different levels are cooperating with each other as a part of a polycentric network*, and they contribute to the development of broader regions, too.

Spatial processes have led to the formation of *functional urban areas* that have been connected to each other as members of a network. Functional urban areas consisting of numerous settlements ranging from the smallest villages to large cities cannot be managed separately from each other and the core cities cannot be managed exceptionally from the hinterlands around them.

Need for polycentrism regarding the settlement structure forces the implementation and elaboration of various elements connected not only to economic structures but broad regional and urban development issues, infrastructural, social, administrative and other topics strengthening the polycentric settlement network (Faragó 2009).

One of the first tasks is to designate the potential centres. The so-called 'concentrated de-concentration' can be realized, what means: the functions, competencies and funding should be spatially focused on not too many or too few cities (Somlyódyné Pfeil 2006). With the help of polycentrism the development potential should be increased in regions lagging behind by connecting their settlements and their hinterlands to the neighbouring networks. In order to do that, the **key is the share of functions regarding common and complementary functional features**. In this case, polycentrism also means the emphasis in not on a separate city and its separate function but **the whole network** with multiple various functions. As a result, a more efficient functioning of society and economy can be realised. To design this sort of system, besides info-communication and transport infrastructures described by good accessibility in both physical and virtual space the management structures should be modified.

Spatial processes such as agglomerating, commuting, environmental problems, urban–rural conflicts etc. led to territorial challenges and cross-border structures calling for joint and integrated development approaches. Therefore, newer and newer problems have to be solved within the frameworks of polycentric settlement development. New educational, scientific etc. networks, institutional frameworks of regional and urban development, innovative multi-level governance models, joint development platforms are needed to set up so that make the polycentric settlement network working properly.

All in all, it is advised that the assignment of tasks and authority scopes should follow the polycentric pattern (Kearns–Paddison 2000, Stoker 2000). The point is to encourage the cities

to share their functions with each other and their agglomerations by developing and interconnecting the influential zones of regional centres which no more end at the borders.

1.3. Differences of the driving forces of the network economy and the polycentric urban development

As it might have been demonstrated before, **the driving forces behind the development of a network economy and a settlement network are mostly so different** that separated management of the two phenomena is the appropriate approach. Ceratinly, there are some connections between the emergence of economies and the polycentric settlement networks however mixing and interpreting them as one single process would be a bit problematic, regarding the methodology.

The network economy, as its name indicates, is heavily based on the corporate business decisions of mainly private owned companies. Assuming a capitalist mode of production, the main driving force is **to find a site where the regional and local economic circumstances allow to maximize the income and to minimize the production costs**. In order to utilize the territorial differences, an enterprise examines the inequalities of a distinct area in respect of costs and potential profits. So the **spatial differences in financial** (e.g. tax system), **administrative** (business regulations such as starting-up a business) **educational** (presence or absence of skilled workforce etc.), **infrastructural** (e.g. transport, ICT) and other systems are taken into account by each company. The **existence and reproduction of inequalities** is essential in the frames of economic activities. If there were no major differences in wages, purchasing power, establishment of infrastructures etc. there would not be networking between enterprises. The so-called network effect is a new character of the economy. If the number of participants is higher in a network, the advantage of being in the network is getting more important. This is some sort of positive feedback which strengthens the concentration of production making the shape of network similar to stars instead of circles. Therefore, **while the network economy is interested in increasing inequalities, the main mission of the polycentric urban network is the decrease the differences**. From submarket to submarket the corporate strategy could be very different; in a network economy the innovation potential and the good physical and virtual accessibility have a huge impact on the territorial structure of an area. In some cases the enterprises are seeking for well-developed places for the

production of good with high added value but in other cases huge number of blue-collar workers characterised by low salaries fulfil the needs of a company. Because innovation and R&D play important role in the product lifecycle the structure of production varies which region is favourable for deploying technology or labour-intensive economic functions. Only the most developed territories can be the targeted areas of innovation based production with highly skilled professionals. Because only some centres are able to create innovation these centres remain the real economic bases especially when becoming the location of headquarters, ICT technologies and highly sophisticated business services.

The settlement network functions differently: an economically relatively weak centre can act even as a nationwide or trans-European centre regarding other central functions. In addition, in case of the formation of functional urban areas the integration of a regional pole centre within its hinterland could be much more intensive than the embeddedness of a sister company of a TNC within the local economy (see the term 'dual economy'). An urban centre is never unattached to the surrounding settlements so a city always supplies a distinct size of territory and number of population. All this underlines the different spatial structures created by the economy and the urban centres.

For instance, the members of a specific cluster *do not necessary function within the same functional urban area*. Or, the *supply of a product* (which is a typical form of the urban-rural relations) *can form completely different spatial structures than the production of it*.

In case of making of economic decisions the situation of a settlement within the urban network and hierarchy is just one aspect among many others. The spatial structures of the two distinct systems are different, otherwise it would be hard to explain why PSA Group picked Trnava and Suzuki preferred Esztergom instead of other functionally richer surrounding cities like Vienna, Bratislava or Budapest. The population size is only one factor in economic development and economic, industrial functions are only others of the dominant elements of the urban network so considering them exclusively may lead to false conclusions in defining the polycentric settlement system. While **the service sector is typically concentrated in the major cities, productive sectors may choose smaller centres as well**. Compared to the market-based ones, **the public services show a spatially more balanced picture therefore a lot of functions can be found outside the economic hubs**. Furthermore, **in case of**

settlements the designated service areas and the administrative borders have a huge impact on the territorial structure of the public services which is less relevant in the case of the organization of economy. The role of location is often more dominant than the number of population.

As the spontaneous market organizations have an increasing role in the development of towns, the presence of one medium or large city does not mean that the city is embedded in the network economy, plenty of even big cities can be left out of the market economy. Spatial organizations of the economy and the settlement system becomes more and more disharmonious, particularly in the former socialist countries, where the economic governance was conducted by the state and the site selection process was managed top-down.

The development of the urban network requires a more complex approach compared to that requested in the paper about restructuring the PA10. This document denies the legitimacy of simplification of urban development to pure economic functions. The settlements have numerous central functions with various sizes of gravitational zones, both carried out by private and public institutions ranging from education, health care through administrative to economic functions that distinguish them from the others. **The position within the settlement hierarchy is determined by the range, structure, existence or shortage of city functions and institutions.** That means **not only the structures of the economy** are important in the emergence of the settlements, however it is true that economy has an effect on every single city.

In the new economic model the continuous adjustment and immediate responses are in the focus instead of the pursuit of stability. **Economic structures** (the dynamically changing open networks) **are changing much faster than the more solidified networks of cities**. It originates from the nature of the economy: if the financial regulation, the political system or simply the wages are changing in a particular area, the replacement of production could happen rather immediately no matter in which settlement the location is situated. It means the regional and urban planning has the chance to change the spatial structures much easier in relation to public and governmental functions. In contrast, in the bottom-up systems of network economy the top-down approach and governmental-central control is not dominant anymore. In the frames of a capitalist system based on private ownership, the stimulation of economy

can be reached by promoting favourable business environment (for instance, with the help of business incubators and technology or industrial parks) and legal, management background for entrepreneurship.

Because of the different driving forces behind urban network, the key is not just a simple economic answer. Due to the extension of agglomeration and urban areas in general, the development cannot be managed and implemented within a mono-centric structure. Complex answers require the cross-border share of functions with the help of the joint development of influencing zones by forming working groups, sharing good practices and models, modifying legal frameworks etc.

All in all, the spatial structures of network economy and urban network do not overlap each other in any cases therefore they cannot be interchanged. It would be well advised not to explain the emergence of network economy and urban system from each other.

1.4. THE ROLE OF BIOSPHERE IN AN ARGUMENT BASED ON POLYCENTRIC URBAN DEVELOPMENT AND NETWORK ECONOMY

Discussion document is about the concept of "Biosphere Based Polycentric Growth Pole Development" in the Danube Region (BBP-GPD-DR). From the assembled definitions of the concept this section is primarily about development based on the biosphere, but also an explanation of whether and how the biosphere can be linked to the polycentric urban development, and the network economy processes.

This concept describes a region model, in which a region (Biosphere-Growth-Region) combines its own regional biogenous[1] resources with existing scientific, technological, economic and human capital aiming to produce new value-added chains of internationally competitive products. These are mentioned as a central factor of regional identity, international positioning and thus economic prosperity.

First of all, in our opinion, the expression of **"Biosphere Based Development" is problematic**. Biosphere is the global sum of all ecosystems. According to the Convention on Biological

[1] Probably, instead of biogenius they thought biogenus.

Diversity[2] ecosystem means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. Our living space, however is the biosphere developed by the social needs, so called noosphere.

Biosphere is therefore a natural system in which anthropogenic impacts are absent. Certainly, in the strict sense, there is no area on Earth, which is not formed directly or indirectly by humanity. Our task considering this issue is preserving/conserving the biosphere and the nature-some characteristics of ecosystem, and reversing the loss of biodiversity. Development ideas thus cannot be based exclusively on the biosphere, pure nature. That is the reason why – for terminological reasons – would be required to ignore the expression Biosphere Based Development.

Further question is why should the development of a region be based on its biogenic resources uniquely? Among the purposes of the European Union[3] concerning the use of "energy from renewable sources" means energy from renewable non-fossil sources, namely wind, solar, aero thermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases. As we can see, the significant parts of them are abiotic resources. For example, such an abiotic resource is geothermal energy, which has a particular importance in the Danube basin, since underground geothermal fields of Europe, including many of the largest, are located there[4]. Both types of resource utilization, in addition to the primary beneficial effects, deserve special attention, as the abiotic solutions, the biogenic origin may have a significant impact on the environment.

Apart from limited meaning of the expression biogenic, it can be assumed that the concept is rather trying **to point out to the resource efficiency**, which as a flagship initiative within the framework of the Europe 2020 strategy.

„Natural resources underpin our economy and our quality of life. Continuing our current patterns of resource use is not an option. Increasing resource efficiency is key to securing

[2] United Nations (1992): Convention on Biological Diversity, http://www.cbd.int/doc/legal/cbd-en.pdf

[3] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC Text with EEA relevance

[4] http://loczy.mfgi.hu/flexviewer/geo_DH/

growth and jobs for Europe. It will bring major economic opportunities, improve productivity, drive down costs and boost competitiveness."[5]

Natural resources in the Danube basin are used in a greater extent, as they are available[6]. **Roadmap to a Resource Efficient Europe has completed in 2011, so in order to ensure the common goals there is no need for create a new conceptual framework**; it is enough if the common objectives adopted by Member States will be implemented. This Roadmap[7] on the one hand contains all the elements of "Biosphere Concept-Based Development" described in the concept; on the other hand, it describes a much more complex framework to increase resource efficiency.

However it is possible, that we incorrectly identified the expression "Biosphere Based Development" as the European Union's main objectives relating to resource efficiency. If the creators of the concept thought anything else under this new expression, in order to avoid any confusion, it may be worthwhile to pay more attention to the precise use ad definition of this term.

Returning to the basic concept of "Biosphere Based Polycentric Growth Pole Development", one fact should be stated: biosphere does not need any anthropogenic development. During **the development process of a city network** to a well-balanced more cohesive polycentric urban frame, **the degree of urbanisation will be higher, which leads to a more dense agglomeration-system, and the proportion of artificial surfaces will be higher as well.** The degree of influence is in direct proportion to the area moving away from the original biosphere to the noosphere.

Development of urban network and economy could economize the available natural resources. However its relationship with biosphere and its protection is mainly ambivalent. Territorial coverage of terrestrial Natura 2000 network in the EU-27 was a total of 17.51% in

5 http://ec.europa.eu/resource-efficient-europe/

6 l. 2.3-as szakasz.

7 COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS Roadmap to a Resource Efficient Europe [COM(2011) 571 final] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0571:FIN:EN:PDF

2010, some places in the Danube River Basin the value is higher than 30%[8]. The strict control of investment in Natura 2000 areas, and usually in other protected sites has serious limiting impact on development activities.

Generally speaking, we can conclude that the approach found in the concept under the heading “Biosphere Based Development” is already an integral part of the EU's development policy in a more complex form. There is no need to introduce a terminologically not defined term. Biosphere as a warehouse of resources is treated within the Roadmap to a Resource Efficient Europe. Protection of biosphere as inviolable natural system is provided by the guidelines regarding to the protection of biodiversity conservation.

8 NATURA 2000 (GIS CALCULATED VALUES)
http://ec.europa.eu/environment/nature/natura2000/db_gis/pdf/area_calc.pdf

2. THE STATUS OF THE DANUBE BASIN

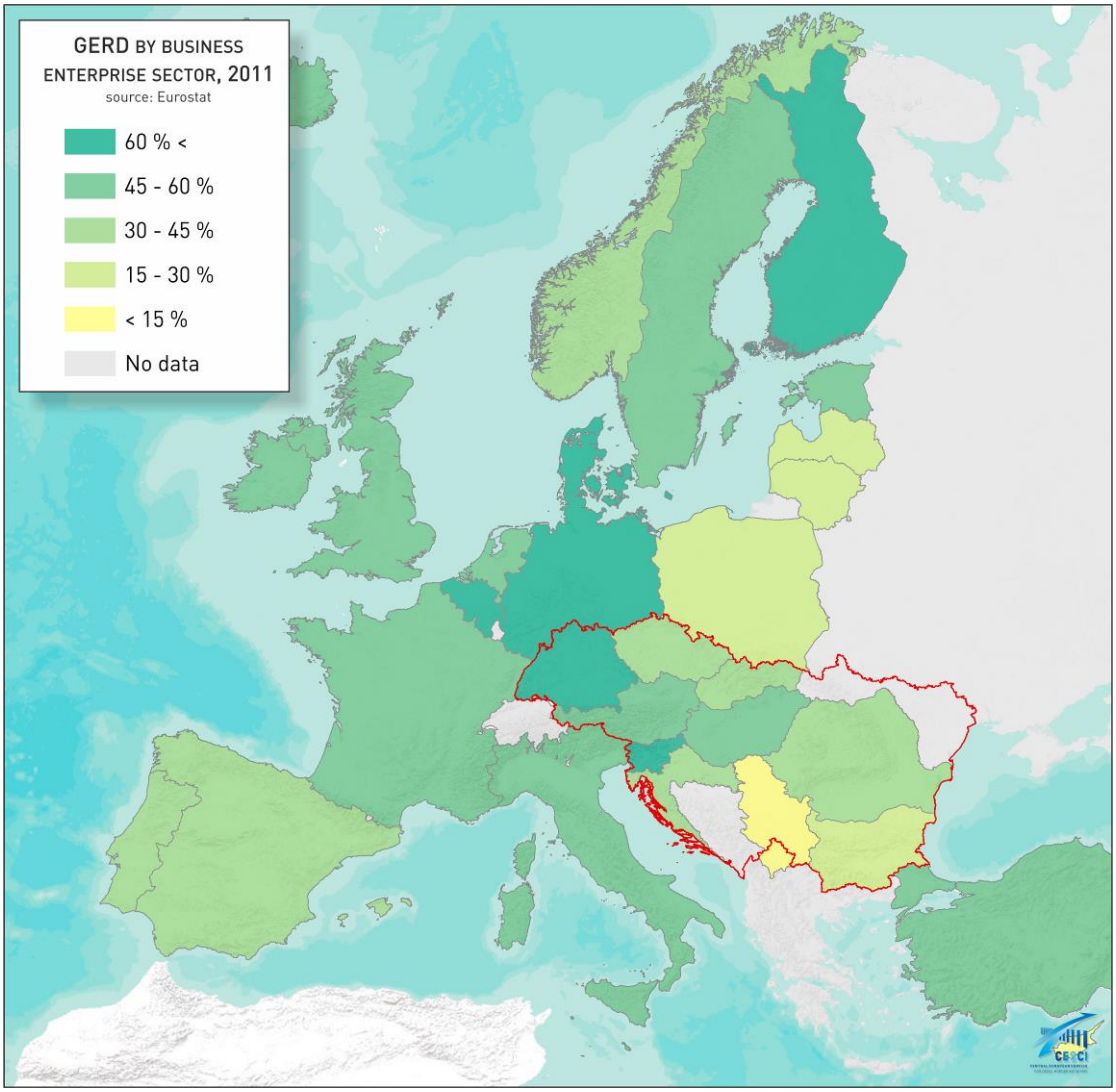
After clarifying the terminology and pointing at the main differences and inconsistencies between the network economy, polycentric development and ecosystem, the following three subchapters are dedicated to the introduction of the characteristics of the Danube River Basin regarding the three earlier mentioned topics. In order to serve the purpose of a coherent development strategy that creates win-win situations within the Danube area a short description is given below. With the help of the upcoming analyses, the real territorial challenges can be identified and proper joint actions can be elaborated.

2.1. THE CHARACTERISTICS OF NETWORK ECONOMY IN THE DANUBE BASIN

Regarding the essential individual actors of the market economy, the changes of the last decade prove that in the Eastern parts of the Danube Basin the enterprise sector is rather fragmented. The small-sized domestic SME-sector, coupled with low level of competitiveness have created, in a number of cases, rather „unhealthy" dual economic structures in which the enterprises are simply unable to connect to, and join, the all-European production mainstream.

Research and Development

Expenditures on research and development is an important element in maintaining competitiveness and creating business co-operation regarding network economy.



Map 1.: Government Expenditure on Research and Development (GERD) by business enterprise sector, 2011

It is a general trend in practically in case of all national economies in the Danube area that the share of financial and other resources allocated to research and development usually reaches both the national and in many cases even the regional or EU-average in the main industrial and economic-business regions and subregions (mostly in and around capital cities). However, as a consequence of the lack of capital in the South-Eastern part of the Danube basin enterprises outside of Germany and the dynamic capitals are unable to allocate significant financial resources to innovation activities which could safeguard competitiveness (acquisition of markets, increased productivity, etc.) and a growth potential in the modern economy.

Especially the scientific and technological performance of the areas outside the sub-region comprising the leader German and Austrian territories with Slovenia, Czech Republic and Hungary is considered very low. As a consequence of this, the conditions of innovation-

oriented intelligent growth are given especially in the Western parts of the region. It is important to recognise that the states in the East of the region presently are not qualified as carriers of innovations (innovators).

„Internal" Foreign Trade, Capital Flows

One of the most striking characteristics of the Danube Programme countries and enterprises have become in the last one and a half decades that they have been cooperating with each other at a growing extent especially in foreign trade, capital investments, coordination of regional and institutional economic relations and in the field of promoting small and medium-sized enterprises. Germany's favourable economic performance resulted in a growing import demand and its more and more intensive role as investor, exporter of technologies, financial supplier in these countries coupled with a growing number of using local or regional trade, product and service suppliers. The two highly developed South-German provinces, Baden-Württemberg and Bavaria were the front-runners, as carriers of German economic dominance, in this process.

The natural „centre of gravity" in the field of internal trade relations between the countries of the region has traditionally been Germany for decades. It represents at least 25 to 30%, in the case of some smaller Western Balkans countries even sometimes more than 40%, in their foreign trade (both exports and imports). The structure of German and (adjusted to its much smaller economic dimensions) Austrian exports to the region is very up-to-date by international standards too. On the average about four-fifths of it represents highly manufactured, technology-intensive products, equipment or services with an equally high level of innovative content.

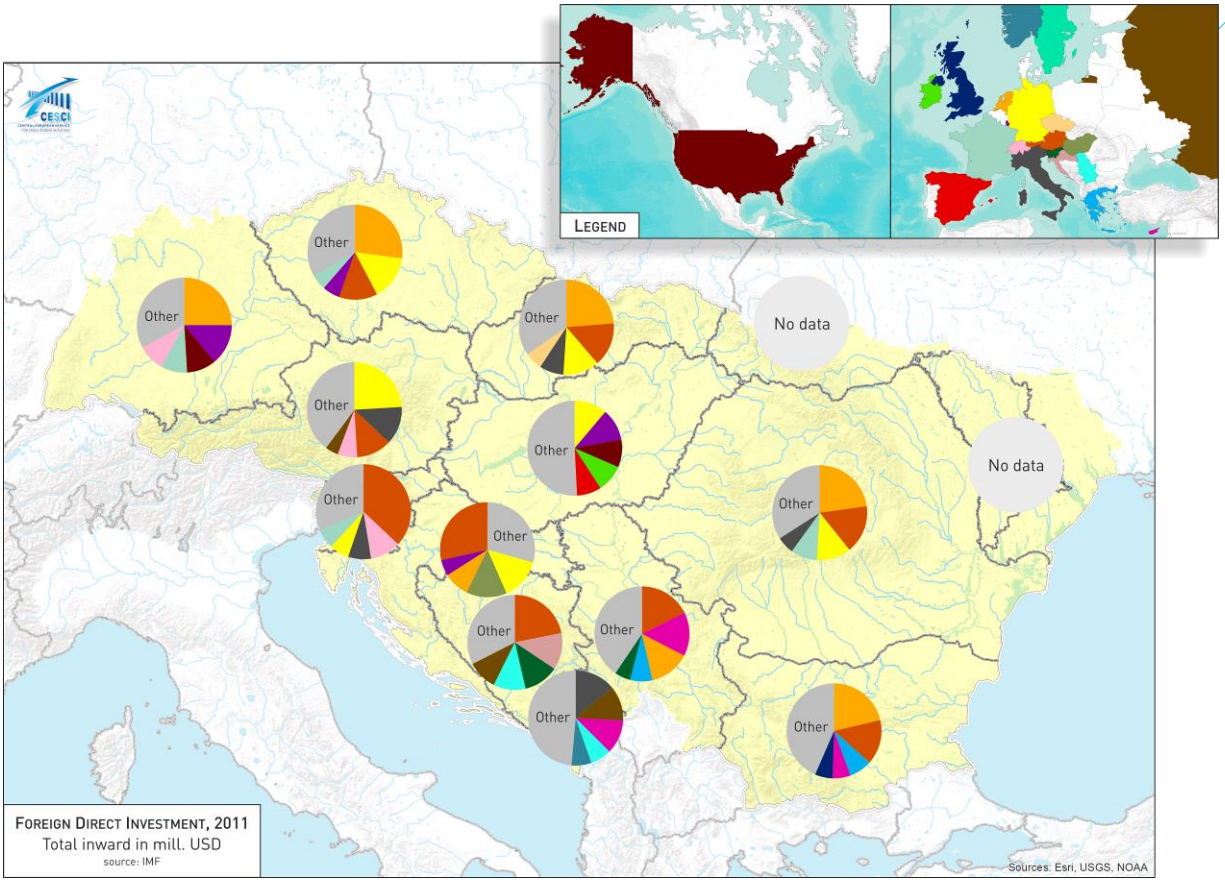
The main markets taking up most of the imports from the region are also the two South German provinces, representing more than 20% of all German imports from this area. The import share of Austria is around 10%. The structure of imports consists, in the case of the less developed new EU-members like Bulgaria and Romania and the countries in the Western Balkans, of raw materials, agricultural and food products, semi-finished industrial goods and spare-parts. Besides this, the exports to Germany of manufacturing goods, machinery, equipment of medium or in some cases even high-level technology content is gaining

importance, especially from the Czech Republic, Hungary, Slovenia and in recent years from Slovakia.

„Internal" trade has considerably increased without exception. The main trading and business partner for each of the countries of the Danubian area continues to be Germany. At the same time, their neighbouring countries, or those close to their borders rank nowadays have become among their top-10 foreign trade partners. The main reasons behind this change are partly the stronger economic links with the German (South German) economy and, partly, the increased level of cooperation between the sister companies of big German multinational enterprises (that is those between German-based Czech and Slovak, Czech and Hungarian, Slovakian and Hungarian, etc., companies). On that basis a more intensive, cross-border cooperation and mutual deliveries are coming about in the fields of production, technology and services. Another reason is the limited "action radius" of 600 to 1000 km of the Czech, Hungarian and Slovak SMEs trying to enter foreign markets. These SMEs find, owing to their limited productive and logistical capacities, mutual sales and cooperation possibilities at a higher extent at each other's markets. With a certain delay a similar trend is unfolding (namely, the increasing share of trade with neighbouring countries) in the case of Romanian, Bulgarian, Croatian SMEs and in the countries at the Western Balkans involved in the programme too.

Economic Openness in the Danube Region

It is a clear and definite sign of external openness that the two most highly developed countries, Germany and Austria have for decades been not only importers, but, more and more, exporters of working capital to the Danube Basin countries as well. Excluding Czech Republic, Slovenia, Slovakia and Hungary, in the other, less developed economies of the Danube area the share of the export sector and that of foreign capital imports is for the moment much smaller, almost non-existent.



Map 2.: Foreign Direct Investment, 2011

Hungary, the Czech Republic and Slovenia are at the top of the ranking concerning the size of investments abroad by the countries of the Danube Region, after Germany and Austria both falling into a „different category" in this respect, too. As far as the investments per capita made abroad are concerned the list begins with Slovenia, followed closely by Hungary and the Czech Republic.

In all the countries, including the Czech Republic, Slovenia and Hungary, about half of the capital invested abroad by these countries is directed to neighbouring countries. Another feature showing similarities to the Hungarian example is the rapidly growing number of smaller or bigger investors, SMEs, business representations, production or service sites, going into the hundreds or even thousands in nearby, mostly along the borders with neighbouring countries.

The dominating weight of the German economic presence must be specifically pointed out. Of course, its role is very important in each of the countries involved in the Danube Programme but, owing to the geographical proximity and to the similarities to the economic

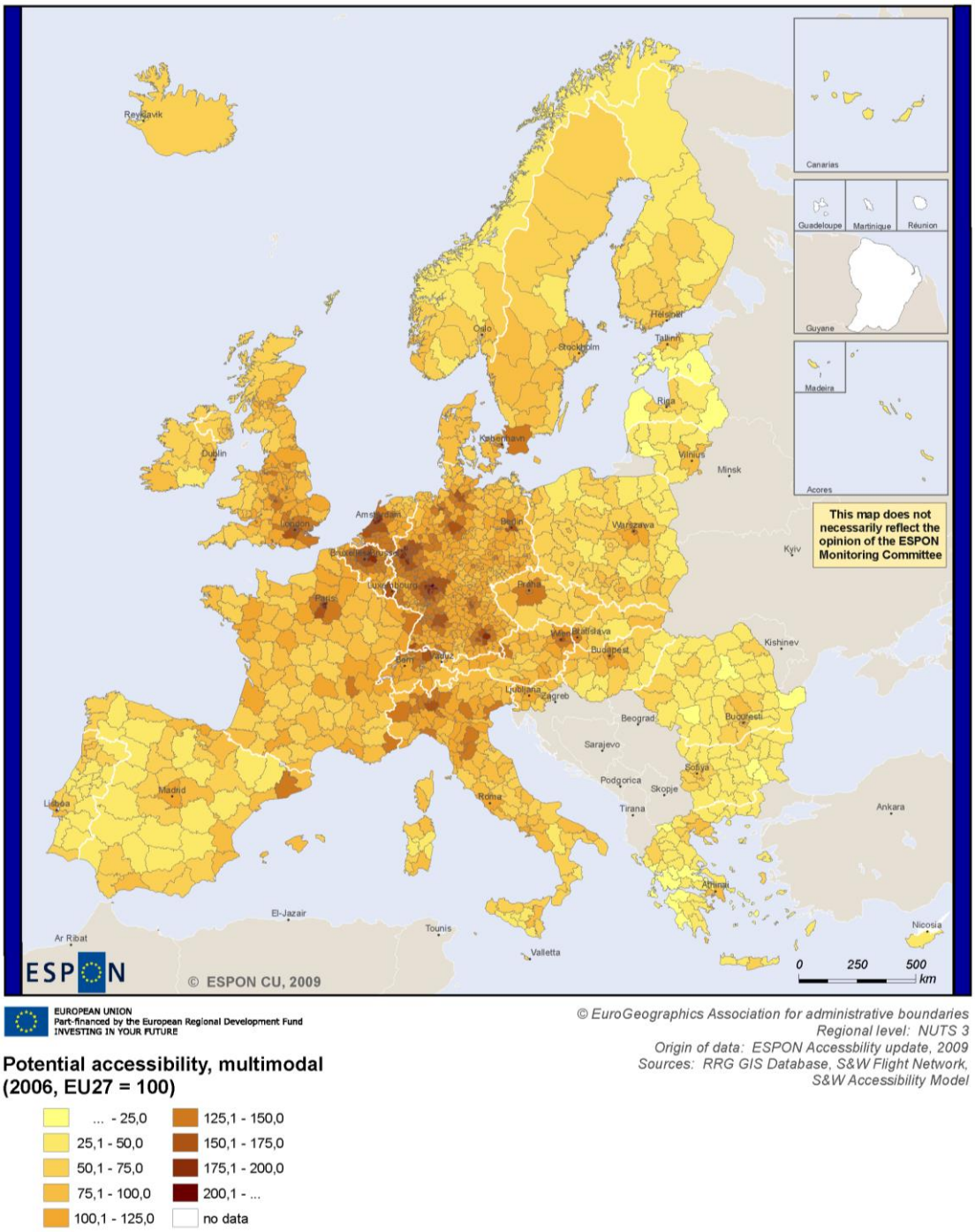
and production levels in Germany it is and will remain the most important in the Czech Republic, Slovenia and partly in Slovakia and Hungary.

Existing economic infrastructure

Transport

Development of network economy is fundamentally determined at all times by the level of development and utilisation of the existing infrastructure. The best way to examine the territorial inequalities in transport infrastructure that connects separated markets, enterprises and helps the free flows of capital, goods, services and labour force, is to take a look at the differences in accessibility.

Considering the potential multimodal accessibility, the strong East-West inequality can be identified. From the perspective of economic cohesion, the German regions are closely linked to their broader surroundings, the integration of the various transport modes helping the traffic flows between them. Austria, the Czech Republic, Slovenia, Slovakia and Hungary are in a transitional position. The accessibility of the capital city regions is favourable. Contrary to this, in the East and Southeast part of the Danube region accessibility is very poor; a quasi-homogeneous region is found here with far fewer links to the European economy than potentially possible. The lack of intelligent transport systems and the multimodality ensuring continuous and rapid transport represent additional problems there. The lack of multimodality hinders the deepening of East-West and North-South economic ties and cooperation, the development of a network economy.



Map 3.: Territorial differences of multimodal potential accessibility in the European Union[9]

Logistical potential, outlined by accessibility, is one of the most significant features of the network economy. The well-accessible, strongly linked internal regions and border zones with an interoperable border section are found primarily in the Western and central territories of

9 http://www.espon.eu/export/sites/default/Documents/Publications/TerritorialObservations/TrendsInAccessibility/map7_accessibility_multimodal_2006.pdf

the region. In the South and Southeast, the increased travel times, the less density of high capacity road network weakens territorial cohesion. Among the regions of the Danube Region having favourable accessibility, intermodal integration and multimodal freight transport (road-rail reload terminal and/or ports) the Rhine area, Nuremberg and Munich, Brno, Vienna, Bratislava and Budapest, Bucharest–Conştanţa, Sofia, and the Slovenian and Croatian parts of Istria emerge, Ljubljana and Zagreb completing the picture. As European integration deepens, the agglomeration of Belgrade in non-EU member Serbia will find itself in a very favourable transport position.

Education

The educational infrastructure also fundamentally determines the possibilities for creating network economy. The development of tertiary educational institutions of the Danube River Basin is of a higher level in the German territory of the basin, while the network is far thinner in the Southeast.

Map 4.: Tertiary educational institutions, airports, border crossings and railway lines of the Danube River Basin

The research and development infrastructure, the spatial allocation of academic and tertiary education institutions (universities and research institutes), the location of scientific and technological parks greatly determine the competitiveness of the different parts of Danube region. From this aspect, the German and Austrian regions may be considered as innovative hubs where the fundamental scientific and technological centres have been built at an appropriate level. The Czech Republic, Slovenia, Hungary and Croatia are in transitional positions. As a result of their scientific and technological specialisation this group of countries may extend their growth incentive effect to the broader region by designating a specific hub.

The Western areas stand out by far, regarding the educational institution network; this is the result of better connection of the private and the academic sector and the good establishment of the knowledge triangle with greater roles of spin-offs and the transfer of knowledge and technology. Aside from the German and Austrian territories the rest of the macro-region has a lower potential. Consequently, the conditions for innovation oriented intelligent growth are primarily available in the West.

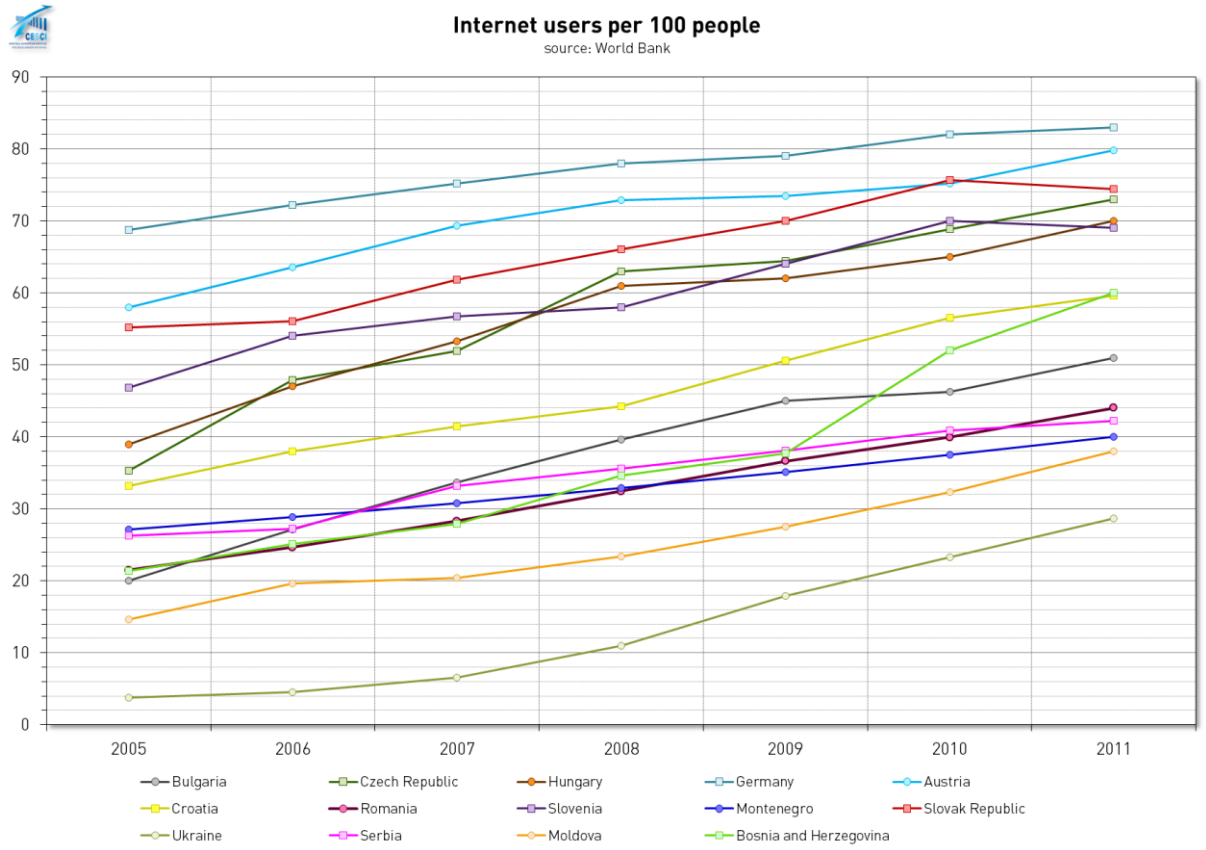
It is important to state that the Eastern states are presently no carriers of innovation; the adaptation and distribution of the infrastructural prerequisites must be first established. In the short run, focus should be put on more intensive cooperation with the Western countries and the training of the professionals with whom the innovation coming from the German areas can be adapted and put to application.

In order to make the educational, research and innovation investments more efficient, utilisation of the already existing capacities is advisable. The need to reduce the great regional inequalities in knowledge capital requires the spatial development of the training and educational systems based on more balanced and network based cooperation.

ICT

In order to establish the digital society (usage of information and communication technologies), the development of telecommunication networks requires special attention. The North-Western states are leading in establishing information society. Germany, Austria, Slovakia, the Czech Republic, Slovenia and Hungary are leaders in the number of internet users. The states of the Balkan Peninsula follow, lagging behind and even far more behind them are Moldova and Ukraine. In these latter countries, the low number of

Internet users is a serious factor impairing cohesion but development is also taking place at a rapid pace. All this means that beside the physical accessibility of these countries, virtual accessibility is also limited as yet, albeit showing a tendency of improvement. The Eastern region is not yet able to fully exploit the opportunities offered by electronic commerce and the World Wide Web. Because of this, the construction of appropriate communication networks reflects realistic development needs that could be capable to integrate the Eastern states into the economic blood flow.

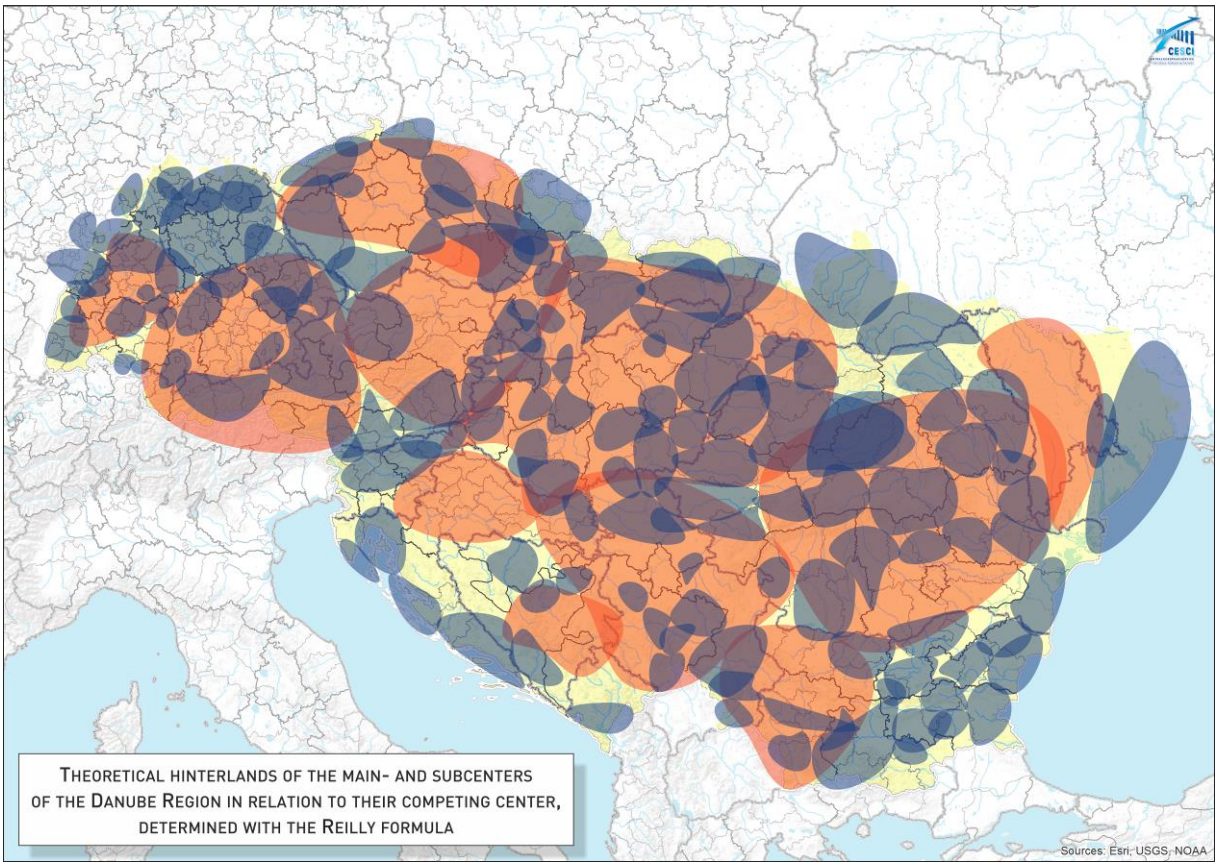


1. Figure: Change of the number of Internet users in the Danube Region between 2005 and 2011

2.2. POLYCENTRIC URBAN NETWORK OF THE DANUBE BASIN

Characteristics of Urban network

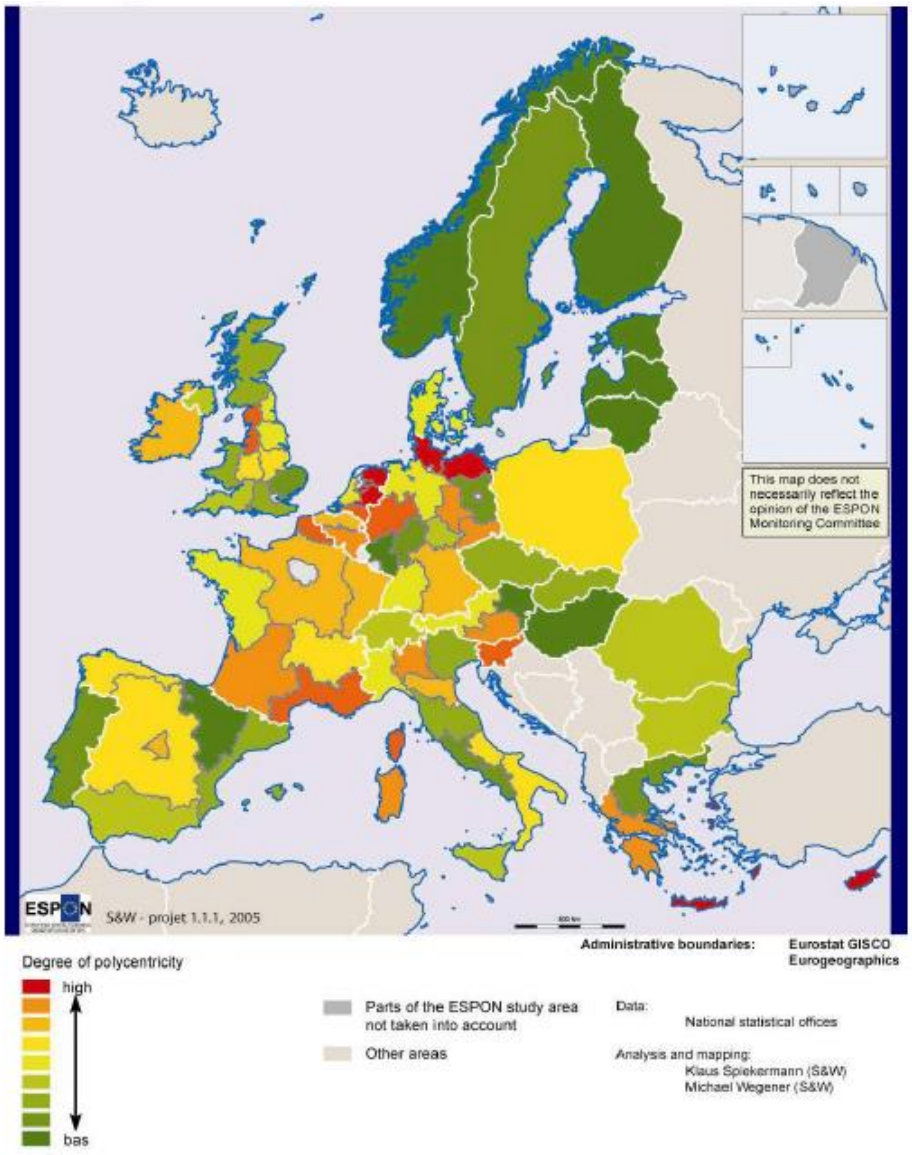
In order to examine the spatial connections within a polycentric urban system it is worth applying the gravity models. By applying those, the size of the theoretical hinterlands of the particular centres can be determined. All of the hypothetical hinterlands of the NUTS 3 centres, which belong to the macro-region and have at least 50,000 inhabitants can be followed on the map below. The relationship between the gravity space of the centres determining the territory and the adjacent centres, respectively, the region or state borders, can be seen. These cross-border effects become even stronger with the increasing elimination of state borders contributing to a more polycentric network.



Map 5.: Theoretical hinterlands of the main centres and subcentres of the Danube region

As presented in the figure above, polycentric urban network forms an increasingly stressed component of the spatial configuration of Europe and that of the Danube River Basin. According to the POLYCE research implemented within the framework of ESPON programme it can be stated that if not the whole macro-region is examined, the urban network of only

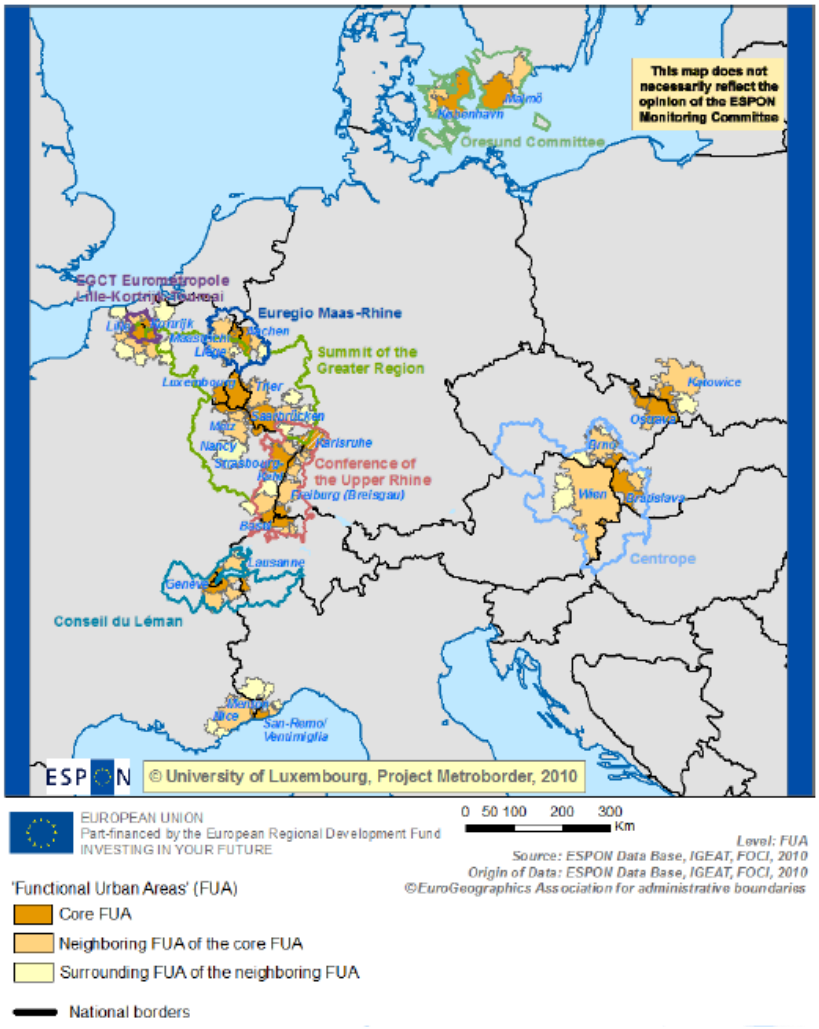
few countries is able to fulfil the fundamental principles of polycentricity within the national borders. In contrast to Germany, Slovenia and Western-Austrian territories, polycentricity is not typical in the Member States joined recently. The successor states of the former Yugoslavia – except for Bosnia and Herzegovina – are polycentric only at a low level. For the over-centralized countries (especially Hungary, the Czech Republic and Slovakia) the cooperation with the surrounding cities allows the development of a more balanced urban network.



Map 6.: Polycentricity index[10]

10 http://www.espon.eu/export/sites/default/Documents/Projects/ESPON2006Projects/ThematicProjects/Polycentricity/fr-1.1.1_revised-full.pdf 77. oldal

Countries with no high hierarchy-level cities (like Moldova, Montenegro and Bosnia and Herzegovina in particular) can compensate for the missing metropolitan functions of their national community-hierarchy through cross-border networks the extension of the influencing area of which should be supported by the building up of cross-border agglomeration development platforms. Strengthening the cross-border cooperation enables the so-called cross-border polycentric metropolitan regions to emerge. In these regions, the distribution of functions contributing to the territorial cohesion of the wider region can also result in specialisation of the elements of the urban network based on common characteristics and complementarities.



Map 7.: Cross-border polycentric metropolitan regions and the position of the constituent functional urban areas[11]

[11]http://www.espon.eu/export/sites/default/Documents/Projects/TargetedAnalyses/METROBORDER/METROBORDER_-_Final_Report_-_29_DEC_2010.pdf 8. oldal

The METROBORDER project analysed certain urban network cooperation in a new dimension, from the aspect of cross-border polycentric metropolitan regions. Cross-border polycentric metropolitan regions also include those areas of the Danube River Basin where the widest range of co-operation can be expected through sharing the market-based and community functions based on the complementarities of those fields. These are the areas where the national urban network elements can be integrated with each other the best. Among the 11 cross-border polycentric urban regions referred in the ESPON research the Greater Region and Upper Rhine region, the CENTROPE (with the centres and agglomerations of Vienna–Bratislava–Brno–Győr) and the Katowice–Ostrava region are related to the Danubian area.

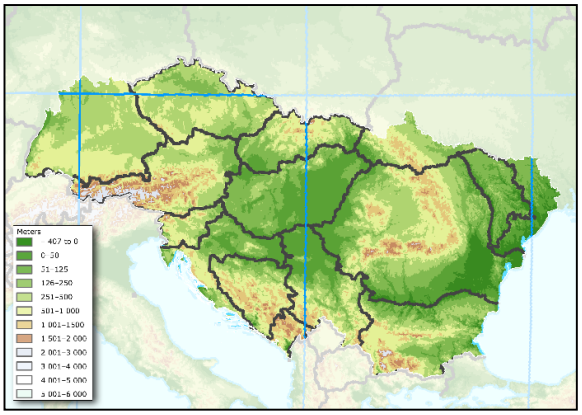
Relation systems are increasingly (re)appreciated for the central cities of the South-East European macro-regional and national-regional level. There is a real demand for a polycentric metropolitan co-operation network similar to the Western European or the Austrian–Czech–Hungarian–Slovak examples. Bucharest, Sofia and Belgrade can be the main organisers of the urban network on the Balkans. The smaller centres (e.g.: Podgorica, Ruse, Craiova) can be integrated into this core network. On a smaller scale, the close integration of the Ljubljana–Zagreb urban network towards Belgrade can improve the territorial cohesion in the region with new content, after Serbia's accession.

The majority of the macro-region's national urban networks are characterized by monocentricity. The cities having cross-border influencing area are of great importance in reducing monocentricity (see the figure about theoretical influencing areas). These cities can prominently contribute to the development of trans-boundary functional co-operation. The Danube River Basin has an appropriate size of macro-regional framework for the creation of a polycentric urban network, serving territorial cohesion. The polycentric territorial development policies need to strengthen territorial cohesion also in the areas outside the Greater Region and Upper Rhine cross-border polycentric metropolitan areas attached closely to the so-called Pentagon area. The interconnected metropolitan zone of Vienna, Bratislava and Budapest offers the most obvious area of intervention (for example, to create districts for public service provision) that the Bucharest, Belgrade and Sofia-centred South-East European urban network connection can be integrated into.

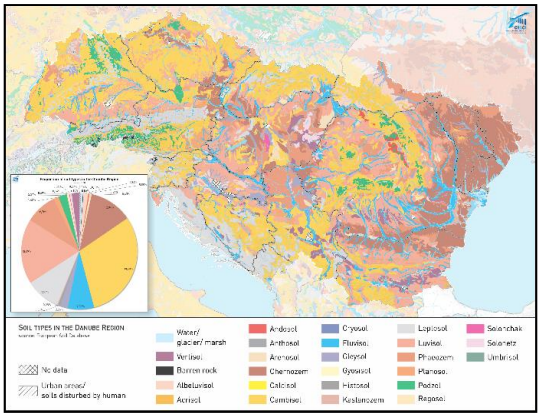
2.3. Ecosystem of the Danube Basin

Pure nature / biosphere (Ecosystem of the Danube Region)

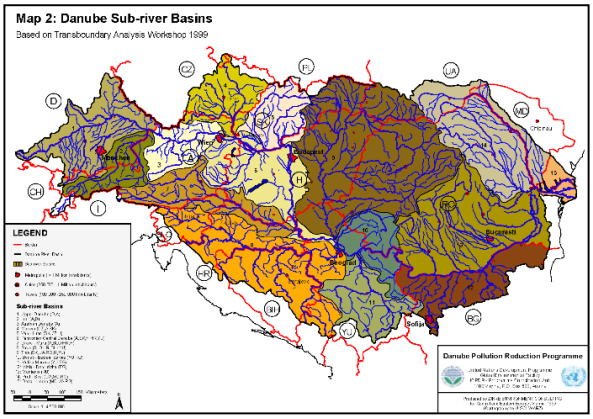
When we talk about biosphere, we are dealing with a hypothetical state of the environment, which is free from the shaping activity of human society. "Human free" nature is usually demonstrated by its geographical abilities (geomorphology, hydrogeography, biogeography, climatology, etc.) and can be divided into different regions based on these. Following figures give an overview on the natural abilities of the Danube Basin.



Map 8.: Major mountain ranges[12]



Map 9.: Soil types in the Danube River Basin[13]



Map 10.: Danube Sub-river Basins[14]

Map 11.: Main climates of the Danube Region[15]

According to the different physical geographical conditions the Danube River Basin belongs to six biogeographical regions[16] having different properties.

12 http://www.eea.europa.eu/data-and-maps/figures/major-mountain-ranges-of-europe-1

13 European Soil Database

14 Danube Pollution Reduction Programme (1999): THEMATIC MAPS OF THE DANUBE RIVER BASIN / page 11.

15 http://www.eea.europa.eu/data-and-maps/figures/climate

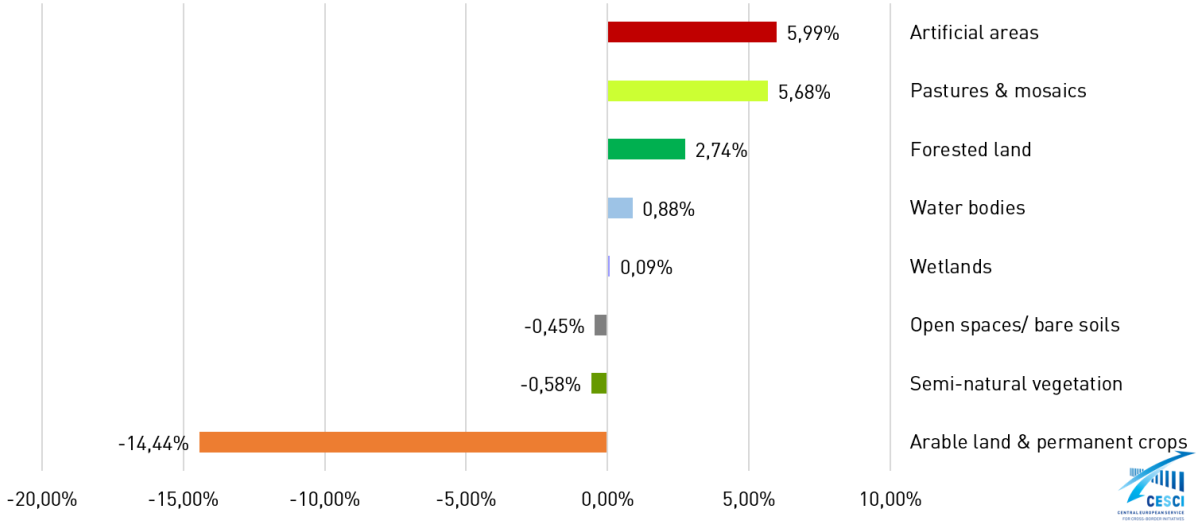
16 http://www.eea.europa.eu/data-and-maps/figures/biogeographical-regions-in-europe-1

Biosphere under pressure

Natural ecosystems are under an increasing pressure. Within this chapter we provide several examples of this pressure.

Europe's landscape has faced more habitat loss and fragmentation than any other continent. This is a major problem for biodiversity. The development of the transport network, changes in land use, logging and fires belong to the primary reasons for the fragmentation of ecosystems.

On one hand, the significant decrease of the cropland area observed in the region is favourable from the aspects of ecosystems (grassland and forest), on the other hand, it should be avoided in the future (artificial areas).



2. Figure: Land-cover changes 1990–2006 in DR[17]

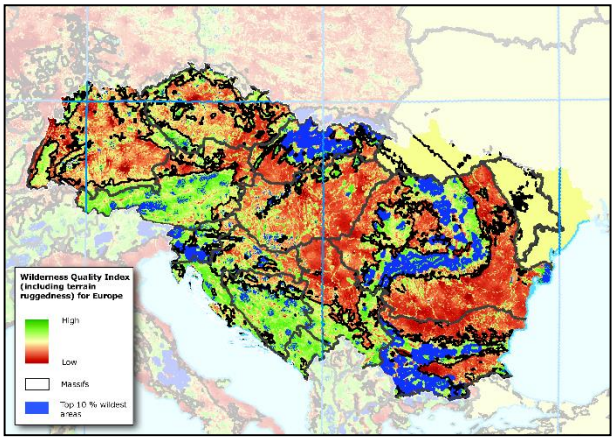
The ratio of the artificial areas being almost unusable from the aspects of ecosystems is above 5% in almost all countries belonging to the Danube River Basin having measuring values. The typical value is about 6% but there are some extremities: Germany provides a ratio above 8% while in Slovenia, a markedly favourable value (less than 3%) was measured.

Beside the changes in land use, natural ecosystems are difficult to preserve due to the fragmentation of areas and decrease of ecological relations. In the Danube River Basin,

[17] CLC1990, CLC2000, CLC2006

fragmentation increases significantly from the East to the West, consequently, the size of coherent areas decreases gradually.

The interruption of continuity of the river habitats on the catchment area of the Danube is mainly caused by the flood protection (45%), hydro-electric power production (45%) and water supply (10%). 44% of the water bodies (296 pcs) are impassable for fish. Compared to the status of the 19th century, less than 19% of the former flood plains have remained in the Danube River Basin (7,845 km^2 from 41,605 km^2). Due to the river regulations, a large number of wetlands have been removed from the rivers, therefore it is a common aim to promote that these areas return to the ecosystems.



Map 12.: Wilderness Quality Index (including terrain ruggedness) for Europe, showing massifs and top 10 % wildest areas (detail)[18]

The figure below shows the Wilderness Quality of the Danube Basin. It is well-read from the map that large parts of the concerned area, mainly flat areas, have been greatly influenced by human activities. The areas marked with red colour cannot be treated as an untouched ecosystem! At the same time, we emphasize that the wildest areas (blue) in Europe are represented in the Danube region.

Some areas not accidentally possess a higher Wilderness Quality Index, their approach, their exploitation are characteristically much more complicated, more expensive; these areas are not expected to get under more intense exploitation in the future.

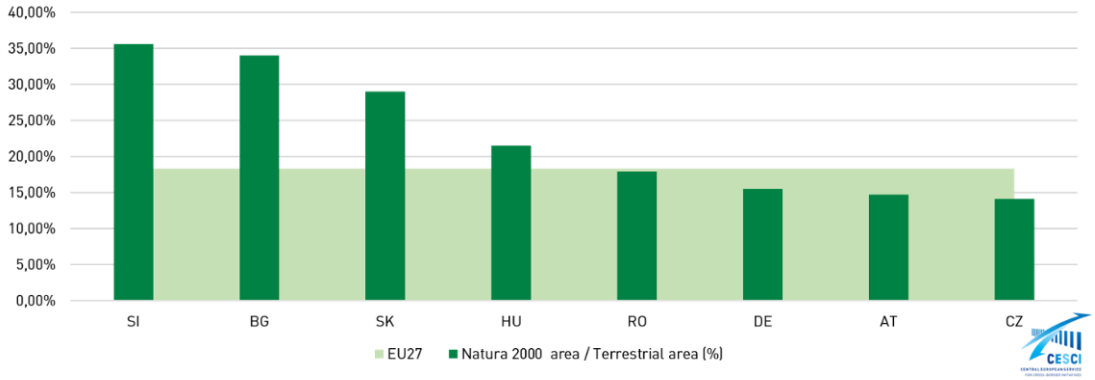
Conserving and protecting nature-some features of ecosystems

In order to protect natural values, altogether 70 national parks were assigned in the countries belonging to the catchment area of the Danube besides many other areas, which can be classified into lower protection categories. Among the 1079 Natura 2000 areas (156,361 km^2)

[18] http://www.eea.europa.eu/data-and-maps/figures/wilderness-quality-index/wilderness-quality-index-including-terrain-1

of the EU member states situated in the Danube River Basin 716 (73,023 km^2) were assigned according to the Habitats Directive, and further 294 (73,872 km^2) according to the Birds Directive. 44 protected areas (5,810 km^2) were established for the purpose of bird protection and the protection of habitats.

The investments in the Natura 2000 areas are subject to strict legislation, therefore it is important in case of the member states' development potentials how many percent of their area were intended to serve nature protection purposes. Among the countries of the Danube River Basin, Slovenia, Bulgaria, Slovakia and Hungary assigned Natura 2000 areas in a ratio above the EU27 average compared to their own areas (Figure 3).



3. Figure: Ratio of Natura 2000 areas compared to the entire area of the country[19]

Resource efficiency

Development of urban network and economy could economize the available natural resources. The protection of the ecosystems is not enough, for satisfying the social needs we are also responsible for our development policy to be more resource-efficient.

Ecological footprint, biological capacity and ecological balance are global indicators which inform about the utilization of resources in the relevant country and give a comparable view. The average values being typical of the Danube River Basin are more favourable than the European ones but worse than those of the world. The ecological balance is in every relevant country negative, which means that countries utilize their environmental resources in a higher

[19] NATURA 2000 (GIS CALCULATED VALUES)
http://ec.europa.eu/environment/nature/natura2000/db_gis/pdf/area_calc.pdf
Last visited on: 18. 11. 2013.

ratio than they would be available for them. However, the ecological balance of the region is slightly better than the European average.

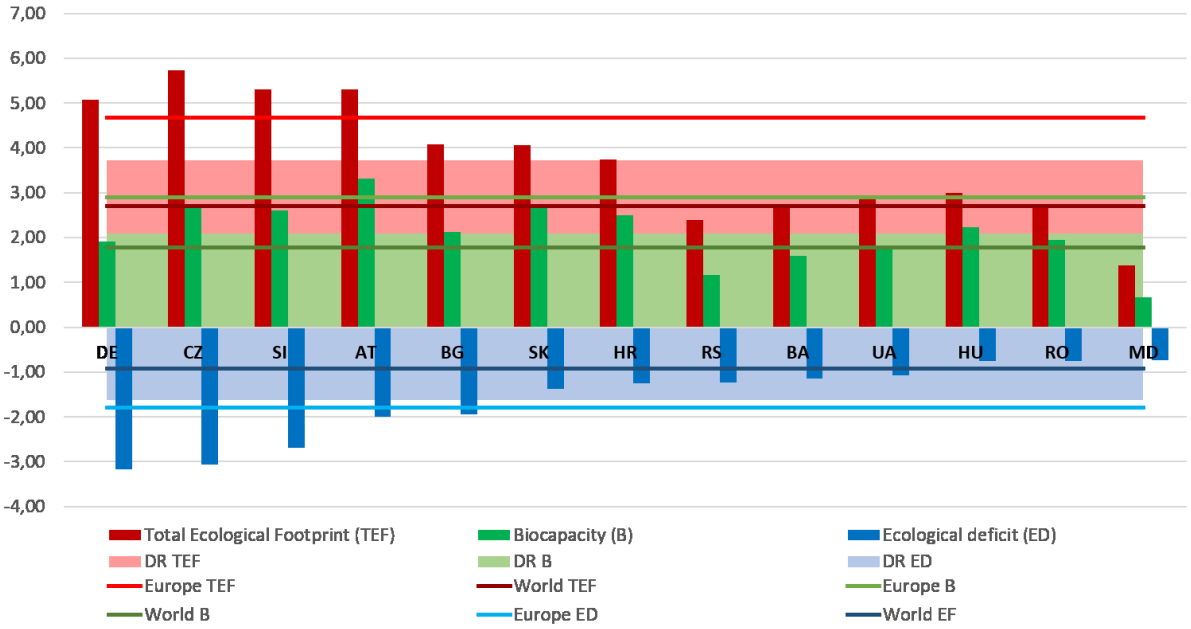


Figure 4.: Ecological footprint, biocapacity and ecological balance[20]

Experience from recent period shows that the ecological footprint and the extent of wealth is closely linked: in the case of nations where the living standard is high, the ecological footprint is generally high, too. Considering the efficiency of resources, it is worth observing the relationship between the particular countries: it indicates a deficiency if a higher ecological footprint belongs to the same HDI value in case of a country, e.g. the efficiency of resources for Bulgaria or Slovakia is far below than that for Romania or Hungary. The case can be also considered as unfavourable when a lower HDI value belongs to the same ecological footprint.

[20] Ecological Footprint Atlas 2010
http://www.footprintnetwork.org/images/uploads/Ecological_Footprint_Atlas_2010.pdf
Last visited on: 18. 11. 2013.

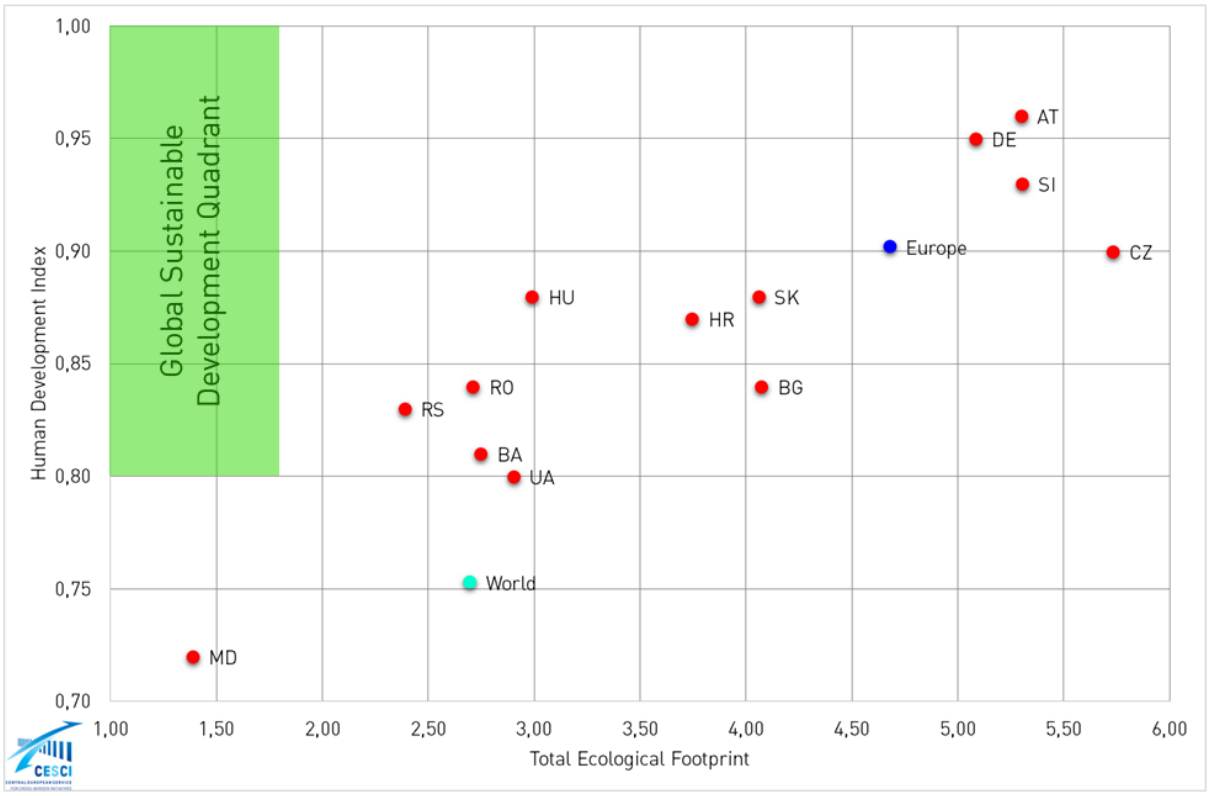


*Figure 5.: Relation between the ecological footprint and HDI (2007)**Hiba! A könyvjelző nem létezik.***

The above figure also shows that none of the countries of the Danube-basin belongs to the Global Sustainable Development Quadrant. Anyhow we call our development policy – 'Biosphere Based Development' or 'resource-efficient development' – the goal is to get closer to these values considered as ideal. This can be achieved if we utilize the resources - located in the biosphere - in the required quantity and with the best possible efficiency.

3. CONCLUSIONS

As a conclusion we suggest to rethink once again the concept of the proposal. On the one hand, there are some terms to be clarified more precisely. The core element of the reasoning, Biosphere Based Development should be considered as the typical example of this shortage. On the other hand there is a need for further elaboration of the concept as a whole, as well.

As we have tried to demonstrate, in our opinion, the simple reduction the features of network economy to the network of cities within the framework of a given polycentric urban area. Not only the different way of structuring of the two phenomena support this critics but several arguments were mentioned which could point out the weak points of the reasoning. The remarkable differences between the logic of economy and the administrative systems underline the need of an approach more careful and more cautious.

What is the most ambiguous element of the proposal is the connection between the particular chapters that should be based more profoundly.

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