

Development of the Hradec-Pardubice Agglomeration from 1986 to the Present

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Abstract: The Hradec-pardubice agglomeration formed an important industrial and agricultural area in the central location of the East Bohemian Region. Currently, the large-scale development of the tertiary sector and the importance of both regional cities set the pace for the development of logistics centres, accompanied by the development of a transport infrastructure and even the development of superior civic amenities. The whole organism of the agglomeration complements the recreational functions in zones of territories which are valuable from a biological and landscaping standpoint. According to the spacial development policy of the Czech Republic, this bicentric agglomeration is included in the OB4 development area. Development areas are defined in territories where international or national activities are concentrated which have increased demands for changes in the territory.

Key words: Bicentric agglomeration, urbanized areas, spacial development policy, territorial system of ecological stability, urbanized landscape

INTRODUCTION

The Hradec-pardubice agglomeration has approximately 367 thousand residents, boasts excellent transport links, a productive economy and is among the heavily urbanized areas in the Czech Republic. In the Czech Republic, the Hradec-pardubice agglomeration is the only agglomeration with two equivalent centres, where there is a high concentration of services, industry, business activities and civic amenities. The territory of the Hradec-pardubice metropolitan area was defined for the basic characteristic of relations and links defined in terms of commuting to work and school according to the results of the Census of people, houses and apartments in 2011. In the Czech Republic, seven metropolitan areas which have the greatest potential for growth were identified. One of these areas is the Hradec-Pardubice metropolitan area, the strategic objective of which is to become a sustainable (in terms of the environment, traffic throughput and transport availability), smart and cultural metropolitan area (Svatek, 2015). There are various ways to define the Hradec-pardubice agglomeration:

- Core territory-Hradec Kralove and Pardubice + the municipalities between these cities (along the road I/37) with strong regional ties to the cores
- Definition according to the Spatial Development Policy of the Czech Republic and spatial development principles of the Hradec Kralove and Pardubice regions

- Definition according to the spacial relations and the linkage processes in the region
- Definition according to the spatial plan of the higher territorial unit-hradec-pardubice regional, residential agglomeration
- Definition according to the administrative divisions according to ORP (municipality with extended authorities) or POU (authorized municipal office)

The objective of the issue solution is to create realistic ideas about the roles and capabilities of both cities of the Hradec-Pardubice agglomeration and to define and present the basic pillars of development which include sustainable transport and mobility, life in the cities (culture, housing, leisure time) and last but not least, social services and the labour market. Introducing

Table 1: Number of inhabitants in development zones in the Czech Republic on 1. 11. 2014 (mmr.cz)

Variables	Name development area	Population
OB1	Praha	1478363
OB2	Ostrava	709963
OB3	Brno	467366
OB4	Hradec Kralove/Pardubice	366692
OB5	Plzen	204467
OB6	Usti nad Labem	45547
OB7	Liberec	160547
OB8	Olomous	134522
OB9	Zlin	110352
OB10	Ceske Budejovice	11508
OB11	Jihlava	5013
OB12	Karlovy Vary	90926

Integrated Territorial Investment (ITI) tools and evaluating its applicability then becomes another partial objective (Table 1).

URBANIZED AREA OF THE BICENTRIC AGGLOMERATION

The issue of the urbanized area of the Hradec-Pardubice urban agglomeration goes back to 1976. Due to the resolution of the government of the Czech Socialist Republic on the draft of the urbanization and long-term settlement development in the Czech Socialist Republic, the council of East Bohemia KNV (Regional National Committee) had to provide a spatial plan for the large territorial unit of the Hradec-pardubice residential, regional agglomeration (hereinafter spatial plan of the higher territorial unit). The agglomeration was defined in accordance with government resolution No. 56/1983 of the Czech Socialist Republic and extended, on areas with close relations which create the so-called outer regional zone of the agglomeration (Terplan, 1989). In terms of administrative division, the territory consists of the following biocentric agglomerations:

- Hradec Kralove District
- Pardubice District
- Part of the Chrudim District (in the definition of the catchment area of the settlement centre of district significance Chrudim)
- Part of the Nachod District (in the definition of the catchment area of the settlement centre of district significance Jaromio)
- Part of the Jiein District (in the definition of the catchment area of the settlement centre of district significance Hooice)
- Part of the Rychnov nad Kni_nou District (in the definition of the catchment area of settlement centres of local significance Tynisti nad Orlici and Borohradek)

In the core area of the bicentric agglomeration, the interests and functions of both core cities (Hradec Kralove and Pardubice) clash, mingle and complement each other. The centre of this urban structure and its main mass accent are the core cities and associated settlement centres situated in spatial relation to the main urbanization axis which consists of the Elbe River. In the centroidal core area of the agglomeration, the landscape landmark of the Kunitice Mountain and the massif spur of the Novohradec forests near Vysoka have a significant spatial and compositional role. The core area consists of heavily urbanized areas concentrating the main residential and

production and service functions of both core cities and Opatovice spaces. These functions in the core areas are surrounded by a suburban area with the main function of agriculture, mining and water recourse management or a recreational and biological function. The objective of the urban conception was a solution for the development of industry, energetics and agriculture, including the negative effects caused and an objective solution for requirements for the development of settlements in accordance with the need for effective reallocation of labour, industry, mining, transport, water resource management, civic amenities and technical equipment. The convenient spatial, territorial and technical characteristics of the intermediate (Opatovice) space with its functional integration into the structures of both core cities fosters mutual interaction and allows positioning of major economic entities. The main issues with urban development were created by an excessive concentration of industrial and energy facilities with negative effects on the environment and agricultural or forestry production. With the increasing shortage of quality drinking water and poor transport and technical infrastructures, requirements for localization of a nuclear power plant and a major motorway (D11 motorway) arose. Water transport is carried out on the river Elbe which is included in the E category trans-European network of waterways (North Sea E20 Trail-Usti nad Labem-Milnik-Pardubice). From a long-term perspective, it has been proposed to build a Pardubice logistics hub with a port on the Elbe under the conditions of building a Poeloue navigation step (Garep, 2015).

Supplying drinking water assuming the development of the core area in the medium term between 2005-2010, despite the challenging infrastructure construction, established a requirement for the construction the East Bohemia water systems (VSVE). Water management within the spatial plan of the higher territorial unit (Terplan, 1989) is very diverse in terms of water supply. In some locations, there is an excessive amount of both groundwater and surface water. Other areas are downright deficient or water resources are degraded by pollution (faecal pollution, agricultural activity and event. the geological structure of the area). In the 80's the 'Supply Hradec and Pardubice with drinking water from the Piein water tank' campaign was being intensively prepared. The structure with a capacity of 1.5 m³/sec was supposed to provide enough drinking water for the territory of the Hradec-Pardubice agglomeration by creating a water supply system connecting the group water conduits Hradec Kralove-Nachod and Chrudim-Pardubice. The VD Piein structure was primarily supposed to insure the expected water needs development, exclude poor sources

and build a water system enabling interchangeability of individual water sources within the water conduits Hradec Kralove-Pardubice-Chrudim. It was also supposed to expand the group water conduit to areas with drinking water in local sources which is traditionally considered substandard. The demographic development at the beginning of the 90s, the slowing down of housing construction and the significant influence of water and sewerage prices suppressed and questioned the construction of VD Piein along with other central water resources in the so-called Vysoke Myto syncline (Urbaplan, 2015) Deficit regions were located in the western part of the core area. Active sources include treated surface water, i.e. the Hradec Kralove water treatment plant (on Orlice) and the Praeov water treatment plant (on Chrudimka) for Chrudim and Pardubice. Water is supplied from underground sources from other districts for "Lita" in Hradec Kralove from the Rychnov nad Kni_nou District while replenishing the groundwater from the Police cretaceous basin (PKP) of the Nachod District. For PK groundwater is supplied from "Podla_ice" in the Chrudim District. The average need of the agglomeration in 1995 amounted to 850 l/s and maximum 1,000 L/sec. (MMR)

That is why the 'East Bohemia water system' is being created with the cooperation of the joint stock companies VAK Nachod, Hradec Kralove, Pardubice and Chrudim. These companies are the major investors and operators of this water supply unit. A concept proposal of a drinking water supply was drawn up in 2000 by VIS Hradec Kralove s. r.o. The forward-looking urban concept (until 2000) of the core area of two prospective residential structures pointed to a substantial overload of the core cities Hradec Kralove and Pardubice. The unfavourable demographic development and design period including the increase of environmental erosion in the core of the agglomeration, led to the presentation of the concept of gradual decline in the development dynamics of the core cities including the creation of conditions for stabilizing the inner and outer zones of this regional bicentric agglomeration. One of the pivotal points of the urban concept was the stabilization of the rural population in agriculturally productive areas (Terplan, 1989). The presumption (until 2000) of individual housing construction in the Hradec Kralove District amounted to almost 12,000 apartments and almost 11,000 in the Pardubice District, out of that almost 7,500 apartments in Hradec Kralove and 7,000 apartments in Pardubice. For the development of individual housing construction in the core area, locations were proposed in Hradec Kralove-Plachta, Timisoara and Polabiny III and Cihelna in Pardubice. The proportion of individual housing

construction was designed for almost 25% of the total construction and the share of renovations for the residential fund was designed for 13% (MMR). Currently, there is a significant outflow of the population on the peripheral part of both main centres with high spatial demands for individual construction. Outflow of the population from the major centres to settlements with sub-standard amenities and a prevailing residential function. This suburbanization phenomenon has caused an increase in traffic intensity due to commuting to work and the aging of the housing fund in the core cities Hradec Kralove and Pardubice.

URBANIZED LANDSCAPE IN THE CORE AREA

The environmental standard consists not only of the transport and technical infrastructure and the renewed housing fund with a high level of tertiary but also the system of urban and landscape greenery with mutual spacial-functional relationships. An urbanized landscape is an important component of the entire urban concept in both centres. Both cities have worked out a greenery system linking the centre with the suburban landscape. For short-term recreation, large parks are located in the city centres and suburban forests are located uptown. Important landscape elements of both centres are the bodies of water and important waterways (Elbe orlice, Chrudimka), especially the recreational function of water transport on the Elbe (cruise ships in the Pardubice-Kuniticka hora section) or the future navigability of the Hradec Kralove-Kurse section (Garep, 2015). The bicentric agglomeration is located in the Polabi lowlands, with a low terrain ruggedness at an average altitude of 230 m above sea level was. The territory has a geological structure of the Bohemian Massif. Geomorphologically it is within the Bohemian basin and phytogeographically it is part of the temperate deciduous forest zone in the Palearctic ecozone. Water determines the occurrence of individual greenery elements while limiting construction in the form of flood plain areas and diverse territories.

Greenery areas, not only in the core area, contain elements of a territorial system of ecological stability. Representative system elements in the core area are supra-regional biocentres and wildlife corridors which are located on the JV of Hradec Kralove and the SZ from Pardubice (Korner, 2014; Surpmo, 2011). The interconnected complex of natural and altered ecosystems close to nature, of inter-regional and regional levels is complemented by a network of local elements. This system maintains the natural balance, for example, in securing animal migration. Another important part of the greenery system are the suburban forests (special

purpose forests). Suburban forests are usually situated on the edges of higher centres of settlement. Currently, they already interfere with the built-up areas as green wedges (e.g., SZ Pardubice-Semtin, Doubravice and Rosice or at JV of Hradec Kralove-Novy Hradec Kralove and Malsovice). These forested stands allow the recreational movement of inhabitants due to special maintenance which makes them more permeable (Kucera, 2002) Their occurrence and interconnection to bodies of water or urban areas increase the potential of the entire core area.

CONCLUSION

The Spatial Development Policy of the Czech Republic (MMR) is the main instrument for spatial planning throughout the Czech Republic which determines the requirements for the specification of the tasks of spacial planning in national, cross-border and international contexts with regard to the sustainable development of the territory. By defining development axes and areas in the territories where international and national activities are concentrated, there was a localization of increased demands for changes in the area. Thus defined development areas include the municipalities affected by the development dynamics of the main centre, in this case, both centres (regional cities). The location of the bicentric regional agglomeration in the development area OB4 meant a significant development, particularly in the transport infrastructure. Currently, the development of the transport infrastructure (the completion of the D11 motorway will allow the linkage of Prague-Hradec Kralove-Jaromer, the R35 expressway will improve the road links of the Liberec Region with Moravia and R11 will enable cross-border connections with Poland) in relation to the international road and highway network is the main direction of development as such. The modernization of the railway line Jaromer- Hradec Kralove-Pardubice will also contribute to more comfortable and faster train travel which will improve the connection of the core area to the international railway corridor. Capacitating transport links to other major centres including the main metropolis of Prague, accelerated the migration of inhabitants and commodities and allowed the building of greater civic amenities. Both core cities (now regional), have their own advanced tertiary sector often without mutual coordination. The Territorial Development Policy of the Czech Republic (MMR) thus becomes the unifying instrument which sets the national priorities and requires their mutual coordination throughout the Czech Republic. For this reason, it is necessary to have mutual coordination for

more detailed solutions to the issue of urban areas of the bicentric regional agglomeration, not only of the regional plans of the Hradec Kralove and Pardubice cities or of the principles of spatial development of the Hradec Kralove and Pardubice Region (Korner, 2014; Surpmo, 2011) but also of the regional plans of the individual municipalities and core area of this agglomeration. The fragmentation of different views on urban development and environmental quality, including the creation of parks, creates contradictory development options and the loss of the uniqueness of the given area. The ITI Strategy for the Hradec-Pardubice metropolitan area for 2014-2020 can be considered important material for coordinating the development of the bicentric agglomeration over nearly 15 years (Garep, 2015) This strategy is primarily based on the commuting relations of a wide range of municipalities (over 40% of the population) and core cities. The boundary of the spatial plan of the higher territorial unit of the Hradec-Pardubice agglomeration (Terplan, 1989) is different from the specified area in the ITI Strategy (Garep, 2015). It is questionable whether this approach is sustainable for territorial development. The issues of the development of not only the core area but also external links should be addressed in greater detail. The interrelations of lower population centres play an important role in the development of urban areas which is why it is important to deal with these centres in greater detail and solve their links to the core area. This study outlined the issues of the bicentric agglomeration and mentioned some concepts which have been developed so far for urban development, mainly up until 2020. Such an important area must be properly regulated, not only up until 2020 but also for several decades ahead. We hope that this study will be a springboard for the creation of long-term conceptual material dealing with the issues of the isolated agglomeration. In conclusion, the aim of this study was deeply analyzesustainable transport and environment in the city but of course this is not the end of the tackle. This issue also touches on issues of city life, social services and the labor market which must also be considered and addressed. In this article were these other analyzes slightly suppressed at the expense of deep analysis of sustainable transportation and the environment.

ACKNOWLEDGMENT

The research was supported by the funding of the Student Grant Competition of the Technical University of Ostrava. The project registration number is SP2016/46.

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