

## ARCHITECTURE

### Development peculiarities of the transport corridor "Prykarpattia"

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**Abstract.** The research reveals natural landscape and anthropogenic factors and their impact on the formation of spatial and territorial structure of the international transport corridor. As the object of the research is Western part of Ukraine, the analysis of natural and anthropogenic factors was conducted in Chernivtsi, Zakarpattia, Ivano-Frankivsk and Lviv regions.

**Keywords:** *natural landscape, transport infrastructure, international transport corridor, functional space axis, spatial and territorial structure.*

**Introduction.** According to scientific and technical literature Western part of Ukraine is defined to be the Carpathian region of Ukraine that is the territory in administrative bounds of Zakarpattia, Ivano-Frankivsk, Lviv and Chernivtsi regions. The specificity of spatial and territorial structure of Carpathian region is its terrain division into three macro level areas: foothills Zakarpattia, Prykarpattia and mountainous part – mountainous area of Ukrainian Carpathians. The main local mountain range is Vododilnyy ridge that extends from south east to north west. This feature of natural component (relief) caused the character of spatial and territorial structure of the region such as parallelism of spatial structure planning system of resettlement to the main Vododilnyy ridge of Carpathians. Zakarpattia and Prykarpattia are densely populated areas, whose resettlement system had been forming for ages on the basis of natural carcass and the pattern of connections among objects of ethnic communities that had populated this area [2].

Thus, three parallel spatial axes had been formed: the main spatial formative axis, the area of valuable natural mountainous landscape, mountain range of Ukrainian Carpathians; and two functional spatial axes of urbanized anthropogenic landscape: Zakarpattia and Prykarpattia.

Analysis of the region resettlement system showed that it is based on historic team site localities, namely, centers of the resettlement system: Lviv, Ivano-Frankivsk, Chernivtsi (Prykarpattia); urban agglomerations: Uzhhorod, Mukachevo, Khust, Tyachiv, Rakhiv; and centers of economical growth: Yasinya, Vorokhta, Kosiv, Vyzhnytsya, Storozhynets' (Zakarpattia) [2].

Prykarpattia is characterized by zones of influence that involve cities – functional urban areas and Zakarpattia forms functional clusters (border territories) due to the specificities of natural landscape conditions and cultural and ethnical peculiarities (Lemkivshchyna, Boikivshchyna, Hutsul'shchyna) [1].

The object of the article is examination of the natural landscape conditions and transport infrastructure effect on formation and further transformation of functional planning of organization of inhabited areas of Western region.

In terms of intensification of integration processes across Western Europe, Ukraine has chosen the path of close cooperation with Europe, the problem of the Carpa-

thian region (Zakarpattia) border areas activation and international transport corridors (##3,5, "Baltic Sea-Black Sea") throughout the Carpathian region, in particular on the territory of Prykarpattia, becomes increasingly important. The processes of concentration of international cultural objects and economic relations have prompted a formation of international transport corridors.

One of such corridors can be international transport corridor Warsaw–Lublin–Lviv–Ivano-Frankivsk–Chernivtsi–Suceava–Bucharest, in a short form "Prykarpattia" (authors' suggestion). This transport connection can be viewed as addition to the existing direction "VIA Carpatia" (available).

International transport corridors (ITC) are considered to be multi-layered integrated spatial planning structures that include highways with appropriate infrastructure and adjacent territories. Infrastructure comprises supporting facilities, access roads, border crossing points, service points, cargo and passenger terminal facilities, etc. Authors recommend using the base of available transport links to point out the area which will join natural and anthropogenic landscape in the single substance "nature–human–infrastructure", the area with all necessary conditions for the formation of space for technological process (traffic) and linear functional spatial structure. In other words, ITC is spatial and territorial structure that accumulates traffic, elements of resettlement system, infrastructure objects and other facilities ensuring vital activities of the population. Adjacent territories of transport corridor are proposed to be divided into two zones: the radius of 4 km (60min walking distance) and the radius of 50 km (60min transport accessibility).

To investigate the development of international transport corridor "Prykarpattia" Western region of Ukraine is examined. Functional space axis of international transport corridor, within indicated administrative areas, is determined by the configuration and the shape of mountain range. Besides the mountain range of Ukrainian Carpathians, the territory under consideration includes another component of the relief: The Podolian Upland (Podilska vysochyna) extends from south east to north west and supports the main axis of ITC. Geographical limits of the Carpathians and The Podolian Upland func-

tion as natural boundaries of spatial planning formation of international transport corridor. The linear isomorphic territorial structure with core of socio-economic concen-

tration and urban development is the basis of planning organization.

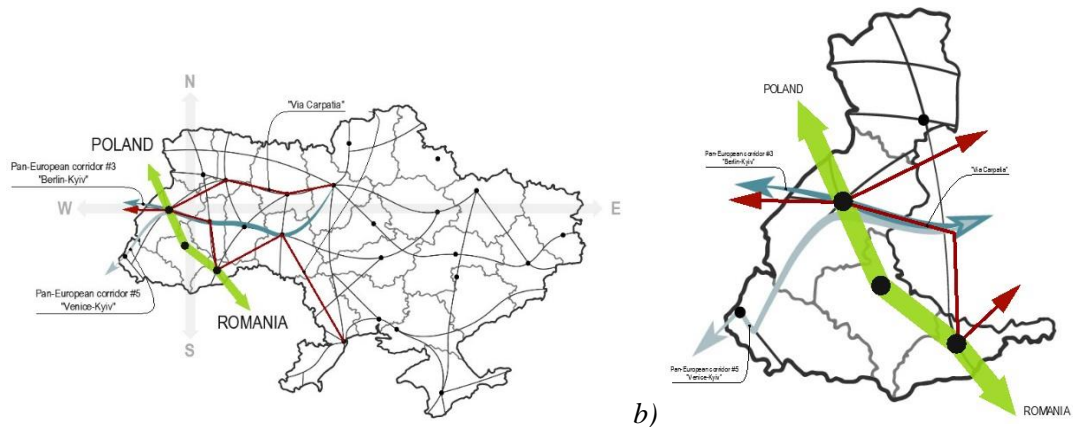


Fig.1. Roads and transportation network scheme: a) across Ukraine; b) across border areas of Western regions of Ukraine.

Integral part of international transport corridor "Prykarpattia" structure is natural landscape and natural reserve fund objects such as: Yavorivskyi National Park, The Roztochia Biosphere Reserve, Vynnykivsky forest-park, Halytsky National Park, Hutsulshchyna National Park, Prut River Valley, Cheremosh River Valley. Natural landscape, as well as relief, form natural boundaries of the international transport corridor.

Prykarpattia region is marked by the density of the river network due to orthography. The biggest rivers of the region are Western Bug, Dniester, Prut. Prut River is a tributary of the Dunabe. The direction of Prut's and Dniester's currents goes from northwest to southeast. So, the courses of the main rivers of the region influence spatial planning organization of anthropogenic landscape.

During the investigation of river valleys (Dniester, Prut), it was discovered that the rivers considerably affect the development not only of resettlement aspect (for example in cities like Ivano-Frankivsk, Chernivtsi, Halych, Kolomyia, Sniatyn) but also of location and nomenclature of road traffic infrastructure, formation and intensity of transport connections with regional resettlements. It can be assumed that the territory can potentially be used to create international transport corridor "Prykarpattia". Transport corridor along river valleys ties elements of team site carcass of the area with elements of neighboring countries (Lviv, Ivano-Frankivsk, Chernivtsi cities with Suceava, Bucharest in Romania and Zamość, Lublin in Poland). The river valleys influenced the development of composite spatial planning axes of the territory. The main axis is, certainly, along the river valley from southeast to northwest of the city. Branches of the main axis form major entrance roads to localities. In cities like Ivano-Frankivsk and Chernivtsi they cross city centers (Halyts'ka Str., Konoval'tsya Str., Hetmana Mazepy Str., Korsun'ska Str., Halyts'kyi Shlyakh Str., Khotyn'ska Str.).

**An analysis of researches of this problem.** Analysis of factors influencing the ITC building showed that main directions of transport and communications development in Western Region are north to south, southwest to northeast and east to west (pic.1). Highway of international significance M19 Domanove (to Brest) – Kovel' – Chernivtsi – checkpoint Terebleche (to Bucharest) lies in the direction north to south. The direction southwest to north-

east M06 Kyiv – Chop coincides with ITC "Venice – Kyiv" (transport corridor #5). International transport corridor "Berlin – Kyiv" (transport corridor #3) runs in the direction east to west.

**A purpose of the article.** Available transport connections demonstrate the adaptation intensity of the Western part of Ukraine. Socio-economic potential of the northwest to southeast direction is underused. Densely populated localities, well-developed manufacturing industry (mechanical engineering, appliance manufacturing, construction industry, food processing and light industries, ethno-cultural industries, etc.) wane in crisis. Lack of infrastructure service objects and transport linkages, like National Highways, reduce investment appeal of adjacent areas, and that in turn affects employment of the region. Lately there has been a trend of increasing labor migration to neighboring countries in search of employment (table 1).

Introduction of the ITC "Prykarpattia" program can stimulate the growth of revitalization processes of territorial potential, including economic activity. Thus, accessibility to business premises will inevitably lead to progress of every component like community and economy.

Localities of the Ukrainian territory, appearing in ITC influence zone under consideration, are resettlements of Ivano-Frankivsk region: Rohatyn, Burshtyn, Halych, Kolomyia, Sniatyn; Lviv region: Bibrka, Novyi Rozdil, Zhydachiv, Peremyshliany, Khodoriv; Chernivtsi region: Hertsa, Kitsman, Lužani, Vashkivtsi). The ITC will functionally affect the processes of spatial planning organization transformation of unified territorial communities (UTC). These include: Zabolotiv, Kolomyia, Kornytsia Mateivetsi, Nyzhnii Virbizh, Zahvizdia, Ivano-Frankivsk, Uhryniv, Verkhnia and Kalush UTCs in Ivano-Frankivsk region; Novi Strilyshcha, Khodoriv, Bibrka, Davydiv, Maheriv UTCs in Lviv region; Novoselytsia, Vanchikivtsi, Mahala, Kitsman, Mamaivtsi, Nepolokivtsi UTCs in Chernivtsi region.

Population density in regional centers is: 1742 people per km<sup>2</sup> in Chernivtsi; 2826 people per km<sup>2</sup> in Ivano-Frankivsk; 3982 people per km<sup>2</sup> in Lviv. The indicator varies from 250 people per km<sup>2</sup> to 1700 people per km<sup>2</sup> in towns of regional and district importance, appearing in ITC influence zone under consideration [3,4,5].

Suceava (Romania) and Zamość (Poland) are the closest cities to the border that will be affected by the ITC "Prykarpattia". The ITC can potentially have further de-

velopment in the directions Lublin – Warsaw (Poland) and Bucharest (Romania).

**Table 1.** Statistical data concerning the number and migratory population movements

<b>Ivano-Frankivsk region [3]</b>				
Population		Migration		
Year	Number of people (thous. people)	Number of arrivals (people)	Number of departed (people)	Migration balance (people)
2008	1381,1	5786	5925	-139
2014	1382,6	15054	13813	1241
2019	1373,3	16578	16310	268
<b>Lviv region [4]</b>				
Population		Migration		
Year	Number of people (thous. people)	Number of arrivals (people)	Number of departed (people)	Migration balance (people)
2008	2559,8	31106	31837	-731
2014	2538,4	28130	26587	1543
2019	2522,0	35083	33984	1099
<b>Chernivtsi region [5]</b>				
Population		Migration		
Year	Number of people (thous. people)	Number of arrivals (people)	Number of departed (people)	Migration balance (people)
2008	904,5		-	660
2014	904,5	10949	9552	1397
2019	904,4	9627	9580	47

**Conclusions and recommendations for further research.** The implementation of paving "bridge" between ITC "VIA Carpatiya" and PEC Baltic Sea - Black Sea by transport corridor "Prykarpattia" is not only an impetus for the improvement of regional transport network. The ITC also encourages the development and transformation of local resettlement system and team site localities, and optimizes urban processes of the region.

It should also be noted that optimization of the urban processes in the area will endanger both natural region and anthropogenic landscape: additional anthropogenic burden on adjacent areas and natural landscape. Besides, due to the establishment of joint international program of

socio-economic territory development ITC performs the role of stimulant of renewal process and sociogeosystem intensification. Growing border cooperation will prompt industry cluster formation for management and interaction of border areas.

In conclusion, the potential of Prykarpattia natural and anthropogenic resources including relief features, green areas, river network, road transportation infrastructure, current resettlement system and spatial landscape characteristics, create particularly favorable conditions for the development of international transport corridor "Prykarpattia".

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