

10 Transport in the Carpathian Area

10.1 Situation and problems

The Carpathian region's transport has been affected by the changes of the political and economic system in the following ways and intensity:

- Of the main railway lines and roads the overwhelming part of resources has been allocated to the development of international corridors (Helsinki/PEN/TEN and partly TINA) (*Figure 15*).
- The Bratislava–Zilina–Košice section of the *5/a corridor* is under preparation. A motorway has been built from Bratislava until Zilina in the Valley of River Vah and the section between Low-Tatra and High-Tatra (with a tunnel in Branisko) will also be completed soon. A significant progress has been made on the railway line of the same direction (some of its parts are suitable for maintaining a speed of 140–160 km/h. The line is electrified with double tracks) and the intercity train service between the two biggest cities of Slovakia has intensive passenger traffic.

The 4th corridor between Berlin and Istanbul connects Germany with one of its biggest market and labour force source in Europe. Two parts of this corridor are crossing the Carpathian region. On the Bratislava–Komárno–Budapest railway section the quasi high-speed train service can be introduced in 2007 and some sections of the Bratislava–Nitra–Zvolen dual carriageway have already been completed.

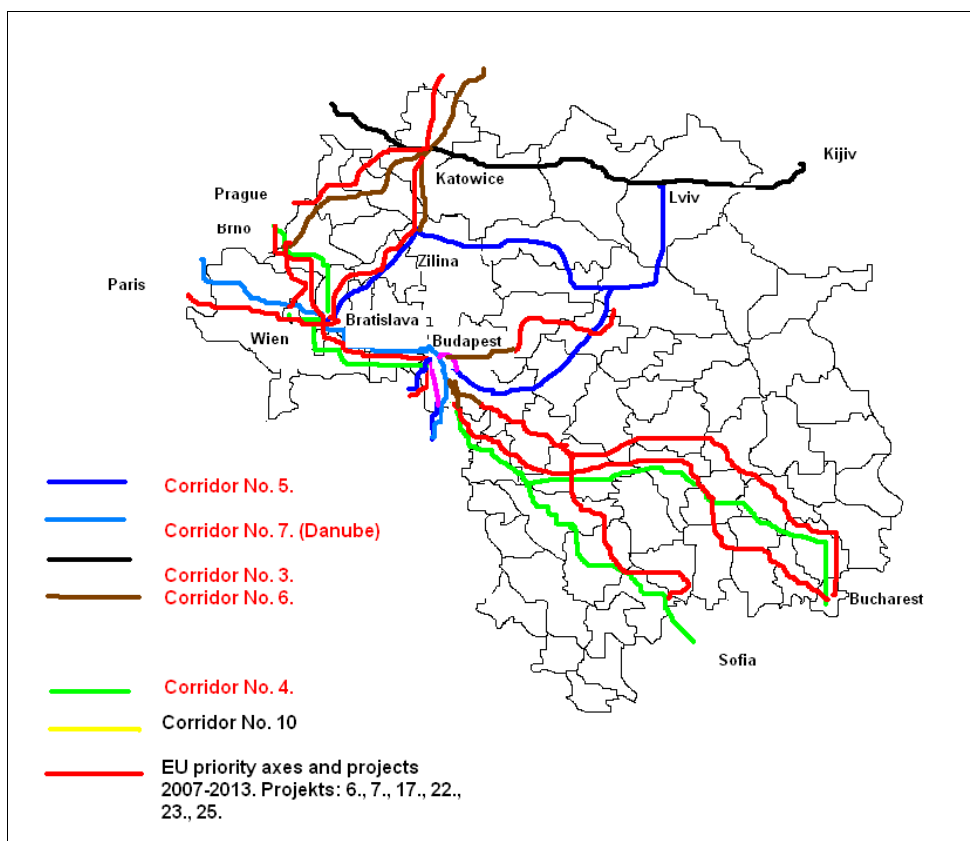
The other planned part of the corridor is crossing South-Transylvania (along the Maros Valley) through the South-Carpathians reaching the Black Sea at Constanta. The motorway is crossing the Carpathians at Turnu Rosu while the corridor railway line at Predeal Pass. The Romanian section of the 4th corridor is under preparation and its railway line is undergoing a partial modernisation.

The M3 motorway in Northern Hungary is a part of *the 5th corridor*. It has practically been completed until Debrecen/Nyíregyháza area and its continuation towards Carpathian-Ukraine is in planning process. Although there have been declarations on building it further until Kiev, it is doubtful whether this project can be completed.

The Danube waterway is *the 7th corridor* but its navigation with ships above the capacity of EU economical threshold value (1350–0500 tons) called “European” ships is quite problematic on the Bratislava–Vác–Budapest section due to the low water level in the end-summer and autumn seasons. Although maintaining the continuity of navigation on the Slovakian–Austrian, Slovakian–Hungarian, Hungarian and Romanian Bulgarian river sections is a priority task of EU Quick Start Programme no major steps have been done so far for the achievement of this target.

Figure 15

Helsinki corridors and EU priority projects in the Carpathian area



Source: Maciej Borsa, Urbanproject (Romania).

The primary mission of corridors is providing quick transport facilities between capital cities/big economic centres (e.g. on Prague–Bratislava–Budapest–Trieste route) therefore they are serving as means for internal cohesion within the European Union as a complex system of transportation facilities providing quick access in several sub-sectors.

There are big differences in the completion stage of these corridors which is mostly depending on the degree of their funding. There have been spectacular improvements in those projects that had received heavy sums funded from national resources and loans for implementation. (Until 2004 the EU funded the costs of preparatory plans, feasibility studies, environmental impact assessments, and the guarantee interest sums of loans having been disbursed by the banks of the Euro-

pean Community. However, in the future, EU member countries may receive more significant EU grants (e.g. from Cohesion Fund).

The territorial impacts of these corridors are rather ambivalent:

These corridors are significantly contributing to the increase of the flow of goods and labour force (and indirectly they are accelerating information and capital flow as well). At the same time, they have a strong attractive force in their hinterlands generating effects of exhaustion. Along the corridors, several new plants of innovative industries and services are built with logistic and distribution centres, attracting the potential labour force of the skilled young generation from their hinterland. Agricultural production segments in their neighbourhood are producing high quality, transport intensive, valuable products (greenhouse flower and fresh vegetable farming, biotechnology based knowledge intensive production methods etc.). On the other hand, what remains in the peripheral areas of corridors, it is ageing population, critically high rate of unskilled labour force. The outmigration of qualified population will accelerate demographic erosion both in quantitative and qualitative aspects.

The air traffic centres of the Carpathian region, the big airports of capital cities are located at the edge or outside the region (Vienna-Schwechat with an annual passenger traffic of 17 million, Prague with 11 million, Budapest with 8 million, Bucharest with 3 million, Belgrade with 1.8 million, Bratislava with 1.5 million. Out of regional airports, the passenger traffic of Krakow and Katowice are exceeding the figure of 1 million. The annual air passenger traffic of Timisoara belongs into the category of 0.5–1.0 million, while of Košice and Cluj-Napoca (and Constanta) into the 0.3–0.4 million. The annual air passenger traffic of the remaining airports (Tirgu Mures, Oradea, Satu Mare, Sibiu, Bacau, Jassi, Suceava, Debrecen, Užgorod, Cernovitz, Posten, Sliac, Poprad-Tatry, Rzesov) is below 0.2 million (the majority has some ten thousands only annually). A growing number of regional airports are running international air services beyond the domestic ones (mostly in the summer tourist seasons by charter flights carrying tourists into the holiday resorts of the Mediterranean region).

Crossing the Carpathians today ...

Development of the transport systems (highways, main roads, railways...) that cross the Carpathians could be, on one hand, of great importance for the economical growth of the new countries of the European Union and, on the other hand, a good opportunity for bettering security on Carpathian roads and for making easier to reach areas of tourist or natural interest. In fact, diverting international trade transports on the new highways of TEN Corridors could dramatically reduce traffic on the other roads, with great advantage for local and tourist traffic, particularly in the mountainous districts.

By road ...

Two major Corridors (number 5: line Bratislava–Zilina–Lviv, and number 6 lines Katowice–Bielko Biala–Zilina and Katowice–Ostrava–Brno) cross the Carpathians, while other two Corri-

dors lie respectively in the northern (number 3: line Katowice–Krakow–Lviv) and in the southern part of the region (number 4: a line almost entirely crossing the Romanian territories of Timisoara, Sibiu and Bucharest). They are multimodal Corridors, and the modal split is favourable to roads, along which about 70% of goods are transported

In these Corridors technical characteristics and quality of facilities of roads are changing from a tract to another. In fact, in a single road there are tracts that have the characteristics of a highway (two roadways with two/three lanes for each direction) and tracts in which there are only one roadway, with one lane for each direction).

On a working day about 20,000–25,000 vehicles run, in the two directions, on the roads of the two main Corridors, particularly along the lines Katowice–Bielsko–Biala–Zilina and Katowice–Ostrava–Brno. About 20–40% of the total traffic is freight traffic. The Romanian trans-Carpathian Corridor (route E 60: Oradea–Julia–Sibiu–Pitesti) is crossed by 15,000 vehicles per day. About 25% of the total traffic is freight traffic (see: Sectia Traffic, 2006).

This traffic runs on roads that mostly have only one lane for each direction (each 8–9 meters wide), that cross numerous villages and towns and it is not only long-distance freight traffic but also local and tourist traffic. A fact, clearly, that causes heavy problems to people living in the area.

Freight traffic along Corridors 5 and 6 is progressively increasing as a consequence of the increased industrialization (in large part due to automobile industries: FIAT, GM, Toyota, PSA) of the Ostrava–Zilina–Bielsko Biala area. This forces to plan the construction of infrastructures adequate to the increasing traffic, especially in the north-east/south-west directions.

Even if there is less traffic than in Corridors 5 and 6, the same problems exist for Corridor 4, that connects Budapest with Constance (Black Sea) crossing the mountainous area of Hunedoara, Sebes and Sibiu. These roads are absolutely inadequate to the traffic needs and have a high level of car accidents.

In consideration of these problems and in order to ameliorate the situation of the traffic, works are presently in progress on the two more important Corridors, number 5 and 6. They consist of the completion of the highway Povaska–Milowka, line Bratislava–Zilina–Bielsko Biala, and of the completion of the highways Zilina–Liskova and Vazec–Presov (in the Carpathian territory of Slovakia) and Uzhorod–Kosice (in the Ukrainian–Slovak area).

Completing these traffic systems will reduce also the traffic on the nearest (very crowded) roads as well as that of other important roads, like the Cadca–Bystrice tract, route E75, on the Czech–Slovak pass.

Unfortunately, frequently the new highways appear to be highly disfiguring the natural scenery, particularly in the areas of Breskydy Morava (Skalite), Javorniky (Bytca) and to the south of Tatra Park

By rail...

The most important Trans-European corridors include the major railways. At present, railways play an important role in the modal split of passenger and freight traffic, with mean quotas larger than those, for example, of the railway lines that cross the Alps.

The more important role played by railways in the Carpathian traffic is a consequence of the social and productive shape of the region and of the inheritance of the collectivism, typical for the socialist countries. The new political order in the Carpathians and the opening to the market is producing an increase in freight and passenger traffic and, as a consequence, an increased importance of road systems. However, still 30% of freight and passenger transport in the Carpathian area is railway transport, an important quota if one considers the low quality of trains, railway stations and so on. But passenger transport has a good standard of punctuality and reliability, especially on double track lines at the border between Poland, Slovakia and Czech Republic (Trencin–Olomouc, Zilina–Cesky Tesin) or on the Ukrainian line Turka–Velikiy–Berenznyi–Uzhorod.

The necessity of a modal integration of transport systems, and the aim of privileging the long distance railway transport, has caused a relevant multiplication of railway lines connected with the newly industrialized areas and of inter-modal terminals in the Carpathian area. Consequently, some railway stations near Carpathian mountain passes are gaining strategic importance for the distribution of goods in the railway network. This fact, however, in many stations, for example that of Skalite, line Zilina–Bielsko Biala, causes problems in passengers conveyance.

10.1.1 The main transport indicators of Carpathian countries

There are substantial differences among Carpathian countries in respect to transport infrastructure and transport performance. Nevertheless, there is a common feature: with the exception of Austria, all have to make serious efforts to comply with the European standards (Table 7–10).

Table 7

Indicators of the road network

Country	Length of motorways km 2003	per 1000 inhabitants	per 1000 km ²	Length of other roads km	per 1000 inhabitants	per km ²	of which: state roads
Austria	1670	0.2057	19.91	105,040	12.94	1.25	...
Czech Republic	518	0.0507	6.57	127,229	12.46	1.61	54,929
Hungary	542	0.0536	5.83	160,215	15.84	1.72	30,536
Poland	405	0.0106	1.30	377,289	9.88	1.21	18,253
Romania	113	0.0052	0.47	73,061	3.37	0.31	9,182
Slovakia	313	0,0582	6.38	17,459	3,25	0,36	3,335

Source: UN ECE statistics.

Table 8

Indicators of the rail network

Country	Length of railway network km	per 1000 inhabitants	per 1000 km ²	Standard gauge network	Double track network
Austria	...				
Czech Republic	9,602	0.94	121.75	9,500	1,845
Hungary	7,681	0.76	82.56	7,432	1,292
Poland	20,665	0.54	66.09	19,748	8,896
Romania	11,077	0.51	46.47	10,946	2,965
Slovakia	3,675	0.68	74.95	3,507	1,020

Source: UN ECE statistics.

Table 9

Indicators of tkm performance of road and rail transport

Country	Road transport					Rail transport	
	million tkm performance	per 1000 inhabitants	of which: national	export-import	transit crossing	million tkm performance	per 1000 inhabitants
Austria	18,141	2,23	12487	4981	673	16879	2,08
Czech Republic	46,564	4,56	17395	26022	3147	15862	1,55
Hungary	18,199	1,80	10669	7137	393	8028	0,79
Poland	78,160	2,05	42379	34740	1041	49595	1,30
Romania	30,854	1,42	13637	17146	71	15039	0,69
Slovakia	16,859	3,13	5246	8931	2682	10113	1,88

Source: UN ECE statistics.

Table 10

Indicators of passenger traffic

Country	Railway passenger km-s (million)	Number of passenger cars 1993	Number of passenger cars 2003	per 100 inhabitants 2003	Increase, % 2003/1993
Austria		3,367,626	4,054,000	49.94	120.4
Czech Republic	174,179	2,833,143	3,706,012	36.29	130.8
Hungary	159,871	2,093,529	2,777,000	27.45	132.6
Poland	283,359	6,770,557	11,243,800	29.43	166.1
Romania	94,810	1,793,054	3,087,600	14.24	172.2
Slovakia	51274	994,933	1,356,200	25.21	136.3

Source: UN ECE statistics.

10.2 Policy recommendations for transport development for Carpathian countries

Policy recommendations for transport development for Carpathian countries are divided according to local, regional and international transport.

10.2.1 Recommendations for local transport

Accessing highland settlements (villages, forest farms, mining sites and recreational villages) has only one real alternative today (and possibly in the future): It is the network of public (and partially private) roads with technical parameters adapted to current traffic situations and providing easy access to main roads. Although local stone for road building can easily and cheaply be accessed from a short distance, this has no relevance for the costs of road building as the building costs of road structures necessary for overcoming the slopes of mountains are increasing the total costs of road building to several times, compared to the costs in plain areas. Due to the expansion of motorized road transportation, the number of traditional local instruments of wood transportation (long lumber slides, cable ropeways and narrow-gauge wood transportation railways) has strongly diminished. However the quality of roads, especially in the mountains of Romania and Poland is very poor and the asphalt cover of roads has been strongly damaged.

The assessment of the real demands for mountain side-roads (including the future demands as well) should carefully consider the local environment with special regard to meeting the requirements of environmental sustainability.

Under the conditions of mountainous surface and low population density:

- A denser and better quality road network is needed in areas exposed to big tourist traffic but the impacts of its higher environmental load should also be foreseen (including the building of a bicycle road network which is considered as an acceptable infrastructure of ecotourism). Strict limitations should be applied regarding cross-motorcycling and quad cycling which heavily damage forest plants and soil (accelerating the erosion process as well). These unfriendly for nature activities generate big noise, disturb and scare away wild animals and tourists searching for peace and quiet. Therefore, they should be permitted only at a few places.
- Motorcycles should be banned from tourist paths and walkways. Truck traffic on one-lane roads should be limited in time for some hours' period only (ensuring just the provision of local shops with the essential goods for tourists and locals).

- Car traffic and road usage should be minimized in the territory of wild forests which are valuable for the ecosystem and are still ‘untouched’.
- The still operating mini railways in forests should be preserved because their passengers enjoying the beauties of nature and they are less harmful for the environment than any other means of transport. In places where tourists have great affinity for exploring nature in such a way and relatively small ground-work is needed for the building of a narrow-gauge railway line, the construction of even further forest mini-train services seems advisable. For exploring those parts of national parks that are open to the public, battery powered electrical mini- and middle-size buses (operated by light sulphur/sodium batteries) are the most suitable means of transport.

10.2.2 Recommendations for regional and interregional transport in the region

Transport policy objectives in respect to connections between provincial cities and in urban agglomerations should be the preservation of the present role of railway services or at least halting the radically dropping tendency of their use. (The use of small – even one carriage – trains with scheduled e.g. hourly, two hourly services is recommended. It can reduce the costs below the present level.)

Bus services in areas with low passenger traffic should be reorganised by introducing flexible, demand-oriented bus services with call-centre based minibuses or bigger share taxis following the example of the systems implemented in the Italian Apennines. In short-distance cargo delivery the use of railway can be profitable only in exceptional cases (e.g. the delivery of bulked mining products into power plants) in other cases cargo transportation by trucks and lorries has more reality. At certain places rafts and small ships may be used as alternative means of timber transportation. (For example national transport concepts mentioning Upper-Tisza, Hernád, and also on the lower sections of Vah and Hron rivers as potential places).

In respect to domestic passenger transport between regional centres, the use of fast, modern and comfortable IC train services should get a priority. Cargo can be delivered by fast light trains. For faster access of cities, dual carriageways or motorways should be built and air taxi services should be launched.

10.2.3 Recommendations for international (cross border) transport in the region

The international traffic of the majority of countries in the Carpathian region is carried out not in the high mountain areas, rather in ‘mountain slope’ zone or in the basins.

Unfortunately, the number of railway border crossings and the number of road border stations across the Carpathians is still very low. These borders are already borders inside the EU (since the 21st of December 2007 even within the Schengen zone). One of the main priorities should be the improvement of the present cross-Carpathian lines and the establishing of new ones.

Considering the intensity and the structural features of international traffic between cities, the Carpathian region:

- should be connected with a greater number of directions and with higher intensity into the system of international rail services (Eurocity, Euronight, IC and express trains).
- Air connection should be established with a wider circle of cities.
- Carefully planned complex systems of high-speed road should be planned consisting of dual carriageways and motorways oriented towards such directions that are not disturbing seriously any country's national interests.

Unfortunately, the proposed network of highways and high-speed railway lines, prepared in the framework of the TINA project, is up to this day not sufficiently coordinated between the individual countries, or with the TEN networks of former EU member states. E.g. there are still undecided alternatives of road and railway tracks between Poland and the Czech Republic (or between Austria and Germany on the one hand and the Czech Republic on the other). The question should be also reconsidered: What is the more efficient way of transport between Poland and Slovakia: direct crossing the Carpathians, or through the Czech Republic, using the Silesian Gate's well established infrastructure?

Uncertainty is revealed also in the new and new ideas concerning the track of the cross-Romanian international motorway to Western Europe. The original line was the Southern line through Timisoara–Nadlac. The next one was the Central track through Brasov–Cluj–Napoca and Oradea. Recently there emerged new ideas about a Northern line Chisinau–Iasi–Satu Mare–Oradea. It is clear that different regional political and economic interests are behind these different variants. But too many project ideas are delaying the implementation of the single one which is realistic.