TRANSGREEN. Integrated Transport and Green Infrastructure Planning in the Danube-Carpathian Region for the Benefit of People and Nature
January 2017 – June 2019

Specifics of the Carpathian countries

Project co-funded by the European Regional Development Fund (ERDF).
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Geographical description

- **1,500 kilometres**-long arc across Central and Eastern Europe

- About **209,000 km²** and stretch through the territories of **eight countries** (from west to east and south-east): Austria, the Czech Republic, Slovakia, Poland, Hungary, Ukraine, Romania and Serbia

- **Highest peak**: Gerlachovský štít in Slovakia with 2,655 m a. s. l.

- Divided into three main geographic areas: Western Carpathians, Eastern Carpathians and Southern Carpathians

- Form the watershed between the Baltic Sea and the Black Sea and are surrounded by three large plains: the Pannonian basin to the southwest, the plain of the Lower Danube to the south and the Galician plain to the northeast.
- Origin: younger Tertiary (15 million years ago) then finalized during the Quaternary period by shifting of glaciers between the glacial periods. The landscape was shaped by volcanic activity as well, its remnants can be found in the Southern Carpathians, in southern parts of Slovakia and Hungary (many thermal and mineral waters)

- Low and forested mountains. 5% of the area lies above the timberline and parts with snow all-year-round or glaciers are basically missing (only one recently discovered permafrost and glacial area)

- Climate: moderately cool and humid, temperature and precipitation strongly correlated with elevation. Snow cover lasts from less than three months in the foothills to more than seven months in the alpine zone.

- Long tradition of mountain agriculture and sheep grazing

- Human population of the area: 17 million people

- Some of the most intact ecosystems in Europe, provide important ecological services and also serve as habitat for numerous indigenous wildlife species → corridor for dispersal and genetic exchange throughout Europe
Vegetation

- Zonation of the vegetation in the Carpathians, with the following main zones:
  - foothills (below 600 m, mostly covered by mixed deciduous forests),
  - montane zone (600–1,100 m in the North and 650–1,450 m in the South, dominated by European Beech and Silver Fir),
  - subalpine zone (1,100–1,400 m in the North and 1,400–1,900 m in the South, with Norway Spruce forests or Stone Pines),
  - krummholz zone above timberline (1,400 m in the North-West, 1,900 m in the South, with Mountain Pine, Dwarf Juniper and Green Alder),
  - lush alpine meadows or rocky areas with very sparse alpine vegetation.

- Habitats extremely rich and overall high in biodiversity
High biodiversity and number of rare species of lower plants, lichens and fungi is expected as well in the Carpathians, especially in association with the old-growth forests and dead wood, but unfortunately not enough is yet known about these organisms.
Wildlife

- Large carnivores: 7,200 brown bears, 3,000 wolves and 2,300 - 2,400 lynxes in the region

- Other large mammals, especially herbivores: important ecological role linked to the presence of large carnivores
  - Most common ungulates in the Carpathians are Roe Deer and Red Deer
  - Chamois occurs in lower numbers and only in certain isolated high mountain areas
  - Moose, whose main area of distribution lies in northern Europe
  - European Bison often associated with the Carpathians, since the only free ranging population of the species exists here
  - One of the last European refuges for European Wild Cat
  - nesting range for Golden Eagle and other rare raptors

High diversity of other animal groups in the Carpathians (birds, reptiles, amphibians, and especially invertebrates) and plant species associated with the various habitats described above, should not be forgotten either.
Legal context

- 18% of the Carpathian Mountains under some form of legal natural protection. More than half of this area belonging to Category V according to the IUCN Protected Area Management Category System.

- Types of designated protected areas and associated conditions of protection vary among individual countries, with differences given most notably by the current status of EU membership.

  - Non-EU Carpathian countries (Serbia and Ukraine): implementing international agreements (e.g. the Bern Convention that entails designation of sites as part of the Emerald Network – a parallel to the Natura 2000 network) and contributing to the Pan-European Ecological Network (PEEN).
  
  - EU Member States (the Czech Republic, Hungary, Poland, Romania and Slovakia) have designated sites under the Birds and the Habitats Directives as part of the Natura 2000 network of the European Union.

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Transportation infrastructure and traffic in the Carpathian countries

- Foundations of transport networks: mid-19th century
  Train reached its peak at the beginning of World War I, but its influence soon began to decline in favour of the emerging road transport → significant increase of motorisation and traffic intensities

- One of the crucial transport problems: long-term unfavourable development of modal split, with rising road transport
  Underdeveloped transport network in the Danube-Carpathian region: not designed to meet all rising mobility needs
  → improve the TEN-T Core Network Corridors crossing the region

+ Project of strategic importance: Via Carpathia transport corridor → international route, leading from Baltic port Klaipeda (Lithuania), passing through Eastern Poland, Slovakia, Hungary, Romania, Bulgaria to Greece, with some branches through Western Ukraine; partially overlaps the existing TEN-T corridors.
Main transport corridors in the Carpathian area. (Source: EU TEN-T flyer with own drawing of Via Carpathia)
- Completion of the core transport networks: **fulfil the goals of European transport policy** (EC 2011)

Much to be improved in these corridors, lack of capacity may occur in specific time periods for high utilisation and nearby urban agglomerations, where traffic is mixed

- EU-members from the Carpathian countries: states with the worst quality of roads ⇒ necessary to increase the scale of reconstruction of existing roads, which may lead to further fragmentation

+ opportunity to reduce the degree of fragmentation by improving permeability for wildlife while upgrading the existing roads
Completion of TEN-T Core Road Network in %, 2015 (EU 2018).

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- Core railway network: defined by the TEN-T Directive = sets up the Trans-European high-speed rail (HSR) network and the Trans-European conventional rail network.

- Majority of railways in the Carpathian countries are underdeveloped. The main lines have been upgraded to increase travel speed up to 160 km/h in the recent years.
  → important for the competitiveness of the railway sector in passenger transport for long-medium distances from 300 to 800 km.

- Started to think about construction of HSRs.

- Cargo sector: most painful problems are the lack of capacity of the major railways, limitations in the transit of main railway hubs and insufficient interoperability.
Settlement and traditional life in Carpathian countries

- Carpathian countries → two completely different worlds in terms of settlement in rural areas:
  - Fertile lowlands and hillsides along main rivers in the Outer Carpathian: depressions have attracted inhabitants from prehistoric times and were always the core settlement regions

The landscape began to be cultivated for the benefit of agriculture. The continuous process of intensifying production in these favourable conditions slowly turned landscape into agrarian wastelands, poor in biological diversity with only scattered remnants of nature to be preserved.
• Hilly parts of the Carpathian Range: less favourable conditions forced people to adapt their farming and whole life to the natural conditions. Crop fields are restricted only to the fluvial modelled valleys in lower altitudes, higher grasslands suitable for pastures → Extensive sheep and goat farming with typical dispersed settlement

Forestry: important part of Carpathians’ economy as wood became the main construction and industrial resource in the area.

Changes in land-use expected: decline in these traditional occupations and ways of living but preserved patterns of land use, vernacular architecture, handcrafts and cultural heritage
- Long narrow valleys of the Carpathians highly impacted the structure of dwellings. Villages of elongated shape were established along mountain streams and due to the lack of suitable space, they stretched up to communities several kilometres long. This phenomenon itself then often constitutes a **linear barrier** with respect to landscape connectivity.
Early-Medieval Hungary

Cities emergence (Europe)

Industrial Revolution

1000 1300 1800

Concentration of factories in the city
Labour force attracted
Fast urbanization growth

Project co-funded by the European Regional Development Fund
Implemented socialist economy principles

- Growth of heavy industry and further concentration of inhabitants
- Demand for quality of life increased
- Process of suburbanization

High demand for individual recreational facilities

- Recreate the working class and rising intensity of recreation
- Impact also on biodiversity
- Original ways of farming replaced by activities in the field of recreation
Thank you!