

# Science in Service of Environment Protection in the Western Carpathians

Slovak Academy of Sciences

Brussels, 24th April 2012

# Long tradition of science in nature protection

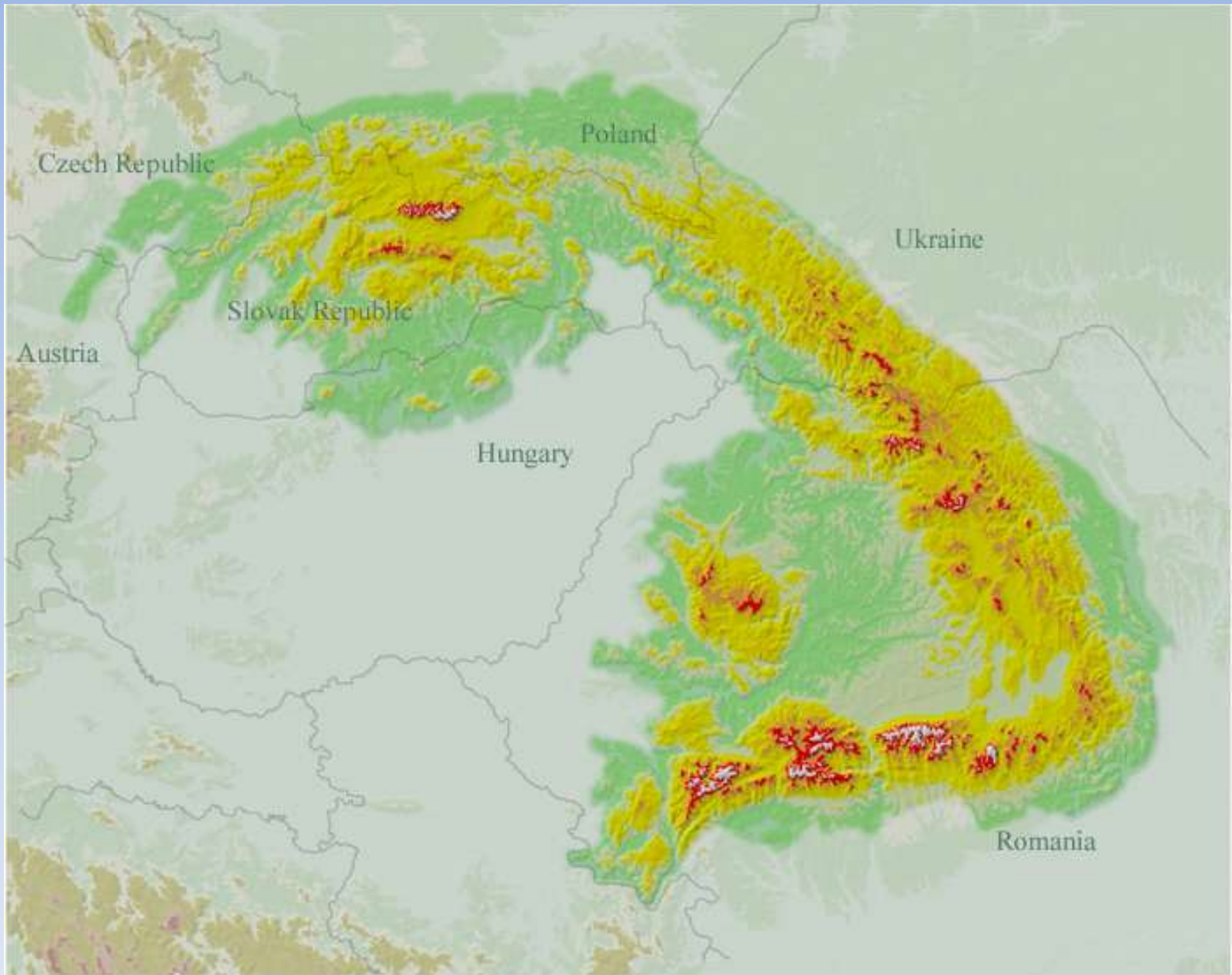
- 1762 - first ever Mining Academy in Banská Štiavnica /Schemnitz/Selmecebánya with separate department of forestry management, sustainable forestry, forest and nature protection
- 1930 - foundation of long-term research plots in forests
- 1965 - Institute of Landscape Biology, later Institute of Landscape Ecology of the Slovak Academy of Sciences
- 1985 – LANDEP
  - methodology of landscape management in sustainable way
- 1992 – this methodology recommended by Summit In Rio de Janeiro,

# Conventions, treaties

- Convention on Biological Diversity. 1992, Rio de Janeiro
- Bern Convention, 1979, (protection of plants and animals)
- Bonn Convention, 1979 (migratory species protection)
- Ramsar Convention, 1990 (protection of wetlands)
- Danube Convention, 1994, Sofia (protection and sustainable utilisation of the Danube)
- Water Framework Directive, 2000
- European Convention on Landscape, 2000, Florence

# Conventions, treaties

- Genf Convention, 1979 (air pollution)
- UNO Framework Convention on Climate Change, 1991, New York
- Kyóto Protocol, 1997 (air pollution, greenhouse gasse)
- Vienna Convention, 1985 (protection of ozon layer)
- and others



# Examples of ongoing or recently finished projects

- Gloria – Influence of global climate changes natural and antropogenerous inputs stress factors on changes of biodiversity of selected high-mountain ecosystems
- Responsiveness of Alpine vegetation to N
- Biodiversity reassessment and evaluation of its trends in 26 forest sites in the Carpathians
- A long-term Biodiversity, Ecosystem and Awareness Research Network (6th FP)
- Threat to biodiversity through invasive non-native species – a long-term monitoring network
- Mapping of main sources of pollutants and their transport in the Visegrad space

# Examples of ongoing or recently finished projects

- Carbomont - Effects of land-use changes on sources, sinks and fluxes of carbon in European mountain areas
- Long-term studies on biodiversity changes in natural and semi-natural forest ecosystems, grassland and wetland ecosystems (Báb – since 1967, Kováčová – since 1985, meadows in Bukovské vrchy, since 1988, wetlands Parížske močiare, since 1992)
- Ecological answer of floodplain ecosystems to the decrease of underground water level
- Inventory of terrestrial ecosystems depended on underground water bodies in the Upper Hron Valey

# Examples of ongoing or recently finished projects

- Historical landscape preservation (Svätý Jur, Liptovská Teplička)
- Sustainability Impact Assessment: Tools for Environmental, Social and Economic Effects of Multifunctional and Use in European Regions (Sensor, 7thFP)
- Mobilising the European Social Research Potential to Support of Biodiversity and Ecosystem Management (Sobio, 6thFP)
- Linking Pan-European Landcover Changes to Pressure on Biodiversity (Biopress, 6thFP)



# Examples of ongoing or recently finished projects

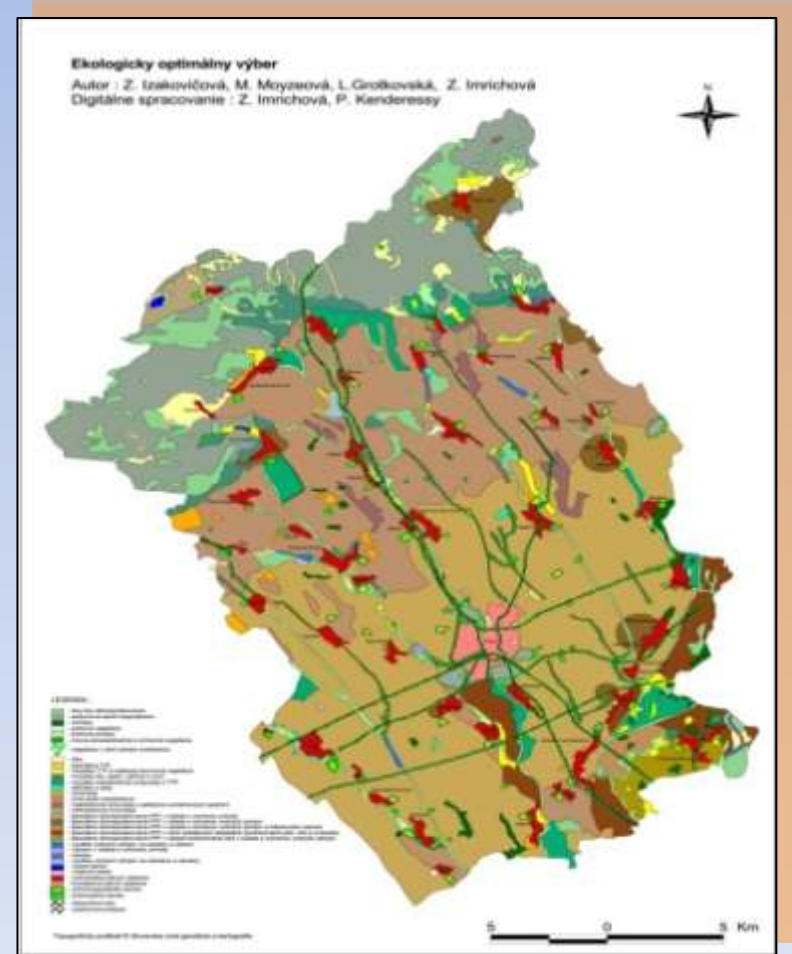
- Environmental Monitoring of the Surroundings of Slovalco, Žiar nad Hronom (Aluminium Plant)
- Creation of Environmental Limits for Sustainable Development
- Integrated Landscape Management
- Evaluation of Agricultural Landscape in Transitive Economy
- The Rural Agricultural Landscape and its Biodiversity in Transforming Socio-Economic Environment
- Landscape Ecological Optimal Territorial and Functional Utilization of the Biosphere Reserve Tatry





# Sustainable land use

- Methodology of landscape management in sustainable way - the basis for the creation of urban planning documentation





# Protection against natural hazards, risk

Protection against floods, draught, erosion, landslides



# Transfer scientific knowledge

- The transmission of scientific knowledge into science administration, participation in the development of environmental policy, strategic documents, creation of the indicators



# Environmental education, raising environmental awareness

- The transfer of knowledge to the educational process, increasing environmental awareness





# Initiatives of scientists

- S4C – Science for Carpathians, founded 10 June 2009, Bratislava, Regional network of scientists
- Forum Carpaticum – Scientific event, scientists from S4C to discuss common problems, preparation of scientific projects, next 30th May - 2nd June 2012, Stará Lesná, Slovakia
- Carpathian Convention, Secretariat in Vienna, support of science in the countries in the Carpathian region (not funding)
- Assistance to EU DG ENVIRONMENT in management of NATURA 2000 sites in SK, CZ, HU, (PL, RO)
- Landscape Europe, network of scientific institutes

# Contribution to the Knowledge Society

Regional (small) scale projects – examples:

- Learning together – Establishment of the Ecological Laboratory at basic school
- Open-door days in the Biosphere reserves
- Publication of easy-read books and brochures on solving environments problems

# Contribution to the Knowledge Society

Danube Knowledge Cluster, open for institutes, universities, scientists

- Projects under preparation focused on integrated management of tributaries of the Middle Danube to contribute to ecological stable landscape, prevent flood and erosion.

Danube Academies Conference – periodical event of representatives of the Danube Catchment Academies

- Common strategy in the field of sustainable development of the region – including environment

# Challenges of Science in Service of Environment Protection

- Integrated river basin management
- Implementation of Danube Strategy
- Consequences of global changes , including climatic changes
- Forecasting, monitoring, modelling and prevention of natural risk and hazards
- the use of renewable energy sources
- Close –to- nature, ecological forestry, to ensure sustainability of wood production, soil protection, adaptation of forest ecosystems to climate change, to air pollution, to soil pollution, to decrease/increase the ground water level caused by Man
- Further long-term ecosystem research in the already established research plots to obtain data on trend of ecosystems production, biodiversity, stability

# Challenges of Science in Service of Environment Protection

- Ensure sustainability of forestry, agriculture and fisheries
- Ecologisation of large-scale agriculture, providing scientific arguments for bio-farming, for maintenance of agricultural landscape in mountaineous regions (similar to Alps), for stopping the land abandonment
- Establishment and ecology-based management of sites of EU importance (NATURA 2000), birds territories, nesting territories, national parks and landscape protected areas, forests, grasslands, croplands, urban areas

# Challenges of Science in Service of Environment Protection

- Maintain and enhance ecosystem services
- Dissemination of knowledge on all ecosystem services (production, protection, prevention of floods, providing fresh water, fresh air, good living conditions) to broad public, to politicians, repeatedly
- Address the problem of invasive alien species
- Elaboration of ecological and environmental indicators of sustainability
- Address the global biodiversity crisis in the Danube Catchment

