
Preface

A good knowledge of the natural and cultural heritage of karst is a precondition for the rational planning of life on it. The karst can be known and understood primarily through the comprehensive study of its surface, caves, waters, and ecological characteristics.

The Karst Research Institute of the Research Centre of the Slovenian Academy of Sciences and Arts has been involved in developing this basic knowledge, establishing interdisciplinary connections among the most important fields of karstology, and in consolidating them into an integral science of karstology for almost seven decades. We try to organize the knowledge to make it as useful as possible for planning life in karst regions and are directly involved in larger major projects. The Institute regularly publishes a selection of new research and knowledge.

Planning without a thorough understanding of the environment and consequently a vision of its development—even though within the boundaries of environmental protection legislation—is certainly not sufficient. We wish to build a foundation for the rational planning of activities on karst based on good karstological research, as much in individual fields of karstology as in interdisciplinary studies. Such planning must take natural and cultural characteristics and vulnerability of karst landscapes into consideration and overcome the inevitable pursuit of profit. Environmental planning must realistically consider the socioeconomic conditions for the benefit of local karst population and the short- and long-term development of karst regions. While the mission of the Karst Research Institute is primarily to expand the basic knowledge of karst, karst phenomena, and karst waters, we are also aware of the need for the continuous and effective communication of karstological knowledge to the wider social community, including through our participation in the more important and directly useful projects.

Ten years ago the Karst Research Institute established a postgraduate karstology program and incorporated karstology courses in the undergraduate geography curriculum. The International Academy of Karst Sciences, an international association of karstologists, was established to link international knowledge and experience more effectively and to find the best foundations for the rational planning of life in various karst regions around the world.

The Karst Research Institute is involved in individual projects, related to the development and protection of the natural and cultural heritage of karst areas, regional planning, water supply systems, the construction of transportation infrastructure, the closure of dump sites in karst areas, the collection of data on karst caves and their protection, karst ecology and determining the extent of human influence on the karst underground, and planning and monitoring the exploitation of karst phenomena for tourism.

We have assembled and published extensive sets of selected directly applicable research studies on karst waters, results of our participation in the planning and construction of expressways on karst, management of caves for tourist purposes, and ecology and protection of the underground. This time we are adding experience acquired in karst planning of the railway route, one of the most demanding projects on Slovenian karst. We recognize that this does not include certain individual topics or the total contribution of karstology to planning life on karst, but we do hope they are a step in the right direction and a challenge for the future.

The area where the new Divača (435 m above sea level)—Port of Koper (0 m above sea level) track will run is divided into two sections. The first leg will run mainly on carbonate rock from Upper Cretaceous, Paleocene, and Eocene. The second leg will run on Eocene flysch. The book presents results of the research on the northern section of the railway running on and through the karst.

The route of the railway near the Divača station on top of the Classical Karst plateau runs about 3 km on the surface and then enters the first, 6,700 m tunnel (T 1), which ends in the upper part of the valley of the Glinščica stream. After a 250 m bridge the railway enters the second, 6,000 m tunnel (T 2). In some places the route runs more than 300 m below the surface.

The last part of the second tunnel passes from the Classical Karst plateau area to the first, 450 m viaduct below the Črni Kal motorway viaduct. The route then runs almost entirely in tunnels T 3, T 4, T 5 and T 6, and in the penultimate T 7 tunnel turns south. With the last, 650 m viaduct the track nears the border with Italy and enters the final, 3,800 m tunnel T 8. The route continues down the Rižana River valley where the otherwise constant 17 % grade eases. The track meets the Port of Koper loading station at sea level.

The total length of the route is just over 27 km, which includes eight tunnels (20.5 km, 75 % of the route), the longest two (near 13,000 m) running through karst. The route also includes three bridges and two viaducts with a combined length of 1,100 m (5 % of the length of the route).

During the initial planning stages, the northern section of the route of the future railway across the karst was considered part of the fifth Pan-European Transport Corridor Barcelona–Kiev.

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The Beka-Ocizla Cave System

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