




Country (NIKAS)	NIKAS springs	Coordinates / Nearby City	Spring discharge (Q in l/s,min/av/max) / tapped or not	Criteria* order / Main justification */ H-historic, A-aesthetic, S-scientific, E-Economic, Ec-ecologic	Data collected by
Bulgaria 	1. Glava Panega	N 43°5'17" E 24°9'32" Z = 185 m asl Zlatna Panega village, Lovech	580/3,643/35,700 Tapped, water supply of nearby village and cement factory	S, H, E, A, Ec <i>One of the biggest karst springs in Bulgaria recharged by water from Vit River (68%) and rainwater infiltration (32%). The connection was proven between the sinkholes of Vit River and Glava Panega spring in 1955. The spring consists of two lakes (Upper and Lower) hydraulically underground connected. Around the Upper Lake a complex of caves with total length of 660 m is explored. The area along Glava Panega spring has attracted people since ancient times. At the beginning of the last century, the first archaeological excavations were conducted here by Dobrusky (1907), which found evidence of the existence of a big Roman sanctuary. A plate near the spring was found, on which the god of medicine Asclepius is depicted together with his daughter Hygia and his son - the god Telesphorus. People believed that the water of Glava Panega was healing, and the god Asclepius lived in the lake, who helped the sick people who dipped in the water or drank from it. The beautiful nature and the mild climate, in addition to the healing spring, made the place suitable for the construction of a sanctuary and a hospital. The Glava Panega spring was declared a protected natural landmark by the Ministry of Environment and Water.</i>	Konstantin Kostov
	2. Kleptuza	N 41° 59' 56.5" E 23° 58' 55" Z = 753 m asl Velingrad	56 / 496 / 1,424 Tapped and partly used for water supply of Velingrad	A, E, Ec, S, H <i>The spring is located at the lowest outcrop level of the karstified Paleozoic marbles, at their contact with the granites. Spring has been known since ancient times. Its name is thought to be derived from the Greek word "kleptos", which means "to hide, steal" and gives an idea of the large amount of water hidden in the ground below the spring. Kleptuza spring is the largest and most important spring draining the Velingrad (Chepino) karst basin - a narrow and long strip of karstified marbles with 22 registered caves in the area. The largest cave is Lepenica with a length of about 2 km. More than 16 ponors have been identified, located at a distance of more than 10 km from the spring. The connection between the sinking rivers and the springs was proved by a tracing experiment in 1955. In 1933 -1937, two artificial lakes were created thanks to the voluntary work of the local residents.</i>	Boyka Mihaylova

				<i>Trees have been planted, alleys, stairs and observation decks have been designed. Since 1966, the area around Kleptuza spring (412 ha) has been declared a protected natural area.</i>	
3. Kotel spring	N 43°53' 27.36" E 26°25' 57.15" Z = 718 m asl Kotel	40 / 508 / 20,061 Tapped, used for water supply of Kotel town	Ec, E, A, S, H <i>The spring is issuing from Upper Cretaceous limestones located in Kotel karst basin. It is a typical spring for studying the movement of water in channel-type karst. The karst spring Kotel is the reason for the foundation of settlement around it since ancient times, as well as the origin of the town in the Middle Ages. The spring forms a beautiful lake, about which G. Bonchev wrote in 1939 that the spring water is the "decoration of the town". The water flows into the lake from 5 separate channels, which in depth unite into a common flooded gallery, continuing into a cave. Kotel spring has been declared a Natural Landmark and is located within the boundaries of NATURA 2000 zones. The spring is on the territory of "Izvorite" Park and has local touristic and aesthetic significance.</i>	Boyka Mihaylova	
4. Zhitolyub (Lakatnik spring)	N 43°05' 18.5" E 23°23' 00.40" Z = 359 m asl Gara Lakatnik village, Sofia	9 / 594 / 23,470 Tapped for local village water supply	A, Ec, S, E, H <i>Zhitolyub spring and connected the Temna dupka cave are interesting karst sites, both aesthetically and ecologically, as well as scientifically. The first data on the Zhitolyub spring (Lakatnik spring) and the Temna dupka cave were published by Zheko Radev in 1915. The spring is located inside the Iskar gorge under the steep to almost vertical slopes, up to 350-400 m high. The Temna dupka cave, which entrance is located about 40 m higher, should be considered as an integral part of the spring. Its length is about 8000 m. The cave is a system of two main galleries with adjacent labyrinthine parts developed on four levels. In the longer NE part of the cave flows the main underground river. The lowest point of the river in the cave is Zhekovo lake (about 20 m below the level of the entrance), from where the water enters a siphon and exits into the Zhytolyub spring. This connection was proved by a tracing experiment in 1966. The cave is a habitat for bats and endemic stygobiont fauna. More than 17 species of stygofauna have been found in the area. The spring and the cave are important tourist site, both because of its natural features and because of its proximity to the city of Sofia. The spring is located in the "Vrachanski Karst" reserve (established in 1983) and Natural Park "Vrachanski Balkan" (established in 1989).</i>	Aleksey Benderev	

				<p>The spring and the cave are part of the Protected Area "Lakatnik rocks" (established in 1966). The Temna dupka cave is a Natural Landmark (established in 1962) The objects also fall into NATURA 2000 areas for habitats and for birds.</p>	
5. Karst springs Yazo and Kyoshka	<p>Yazo N 41°51'19.37" E 23°25'35.50"</p> <p>Kyoshka N 41°51'13.07" E 23°26'8.15"</p> <p>Razlog, Bansko</p>	<p>Yazo 380 / 1000 / 2725</p> <p>Kyoshka 14 / 318 / 2071</p> <p>Tapped, water of Yazo is used for potable water supply of Razlog</p>	<p>S, Ec, E, A, H</p> <p>The first published data about the springs Yazo and Kyoshka was found in the monograph of An. Benderev (1890), who also mention a cave connected to the springs. The main feature is that the two springs, although located at a distance of 750 m from each other and having a different nature of outflow (scattered and concentrated, respectively), have a common recharge area, which is unique for Bulgaria - built of marbles with an altitude of about 2000 m. An interesting karst phenomenon is the deposition of marble breccias of deluvial-proluvial origin, which are karstified. Several caves have been formed in them, including the 605 m long Spropadnaloto Cave, through which an underground river passes, connected to the Kyoshka spring, which is a protected natural landmark since 1972. The main part of the catchment area of the springs is within the borders of the Pirin National Park, which is included in the UNESCO World Heritage List. The central part of the catchment coincides with the nature reserve "Bayuvi Dupki – Djinjiritsa" - part of the network of biosphere reserves under the program "Man and Biosphere" of UNESCO.</p>	Konstantin Kostov	

NIKAS - Zlatna Panega



The Upper Lake of
Glava Panega
spring



The Lower Lake of Glava Panega spring

NIKAS - Kleptuza



Kleptuza spring (photo by E. Damyanova)



Kleptuza Park – Lower Lake (photo by E. Damyanova)

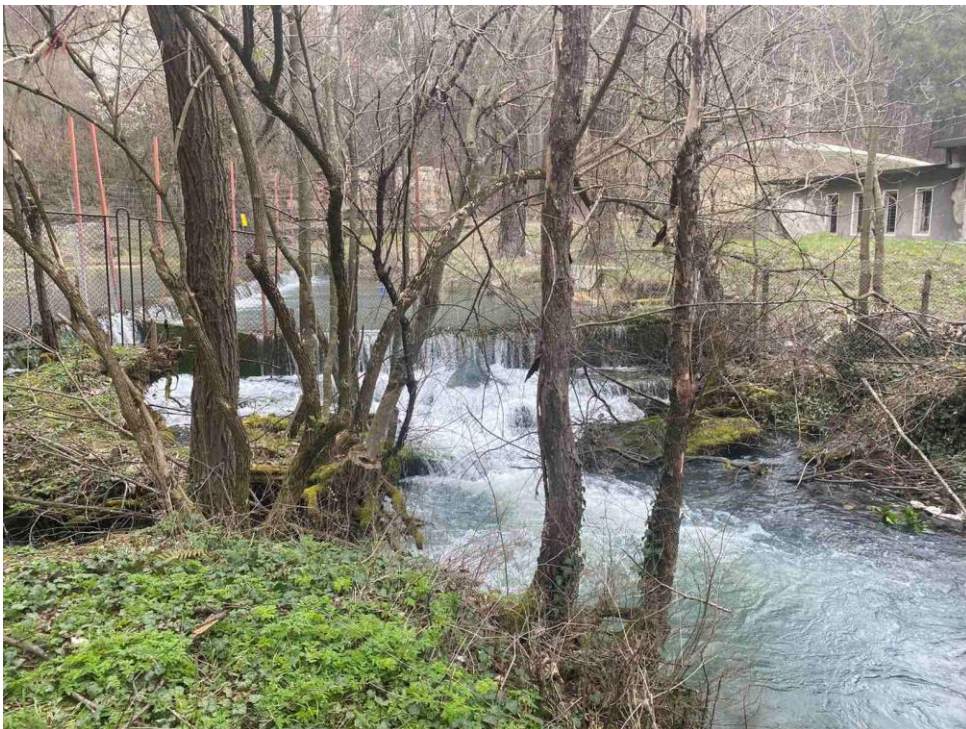
NIKAS - Kotel spring



General view of Kotel spring (photo by A. Toteva)



Kotel spring and the river flowing from it (photo by E. Damyanova)



The river flows from Kotel spring (photo by E. Damyanova)

NIKAS - Zhitolyub (Lakatnik spring)



Lakatnik rocks with location of Zhitolyub spring and the entrance to Temna dupka cave (photo by A. Benderev)



Zhitolyub spring at low and high flow rates (photos by E. Damyanova)



The entrance of Temna dupka cave (photo by A. Benderev)



Water flowing through the entrance of Temna dupka cave (photo courtesy by E. Damyanova, author unknown)



Kyoshka spring (photo by E. Damyanova)



Karstified marbles at more than 2500 m a.s.l. in the catchment area of Yazo and Kyoshka springs in UNESCO Pirin National Park (photo by A. Benderev)