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ASSESSMENT OF THE OPPORTUNITIES OF MINERAL WATER RESOURSES FOR REGIONAL DEVELOPMENT – A CASE STUDY OF SOUTH-WESTERN PLANNING REGION, BULGARIA

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Abstract: The mineral water resources are the basis for the development for regions of balneology and SPA activities. The main goal of the present study is to analyze and evaluate the potential of mineral water resources and the state of balneo and SPA tourism in the South-Western Planning Region of the country. Methods of scientific analysis and synthesis of the collected information database, and geographic information systems (GIS) were applied. The obtained results demonstrate that territory of the studied area has a serious potential of mineral water resources, which in case of sustainable and effective use, would contribute significantly to the development of tourism in the region.

Keywords: balneo and SPA tourism, mineral waters, South-West planning region, Bulgaria

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INTRODUCTION

Use of Mineral Water Resources and Its Social, Economic and Cultural Impact Over Society

Water, energy and food are interconnected and interdependent. They constitute a single and balanced system, characterized by specific complexity and feedback. In the modern world, economic benefits drive the design and implementation of policies for managing and using resources in the water-energy-food nexus. Different water resources, including mineral springs, provide many different benefits to society. With a therapeutic and prophylactic effect are the mineral waters extracted from water layers or aquifer systems, protected from anthropogenic influence, which have preserved their natural chemical composition, mineralization or content of certain biologically active components (Daukaev, 2020).

The deposits of mineral water resources are the basis for the development of balneology and SPA tourism. Mineral waters with their specific physico-chemical characteristics (temperature, pH, total mineralization, hardness, color, smell, taste, etc.) are used for the treatment and prevention of a number of diseases, for drinking and providing recreation and rest for the population. The balneo and SPA tourism can contribute to the stable and dynamic economy of the country in addition to the restoration of human health. This type of tourism has high economic and social benefits (Zeynalova, 2022). As a result of the changed structure of morbidity and frequency of some socially significant diseases (due to overexertion and nervous fatigue) in recent decades, the need for spa treatment and balneo prevention worldwide is growing (Kotsakov, 2021). Balneotherapy and SPA procedures ensure the development of regions in countries which has such types of water resource, stimulate the improvement and construction of infrastructure, provide jobs, create areas to serve the tourist flow, expand public catering activities, etc. The development of tourist areas, as a rule, is directly related to the natural resource potential, cultural identity, social interaction, security and prosperity of settlements (Cole et al., 2020). Depending on the specific additional facts and socio-economic status of the regions, there are often conditions for combining and developing several types of tourist activities. Bulgaria is one of the oldest European countries. It is a heir of ancient civilizations. The country has diverse natural, cultural, architectural, archaeological, religious, ethnological, culinary, etc. potential for tourism development.

Striving for and achieving future sustainable development of the regions and the country is directly related to the implementation of sustainable development strategies on local and national level. By updating the National Strategy for Sustainable Development of Tourism in the Republic of Bulgaria 2014-2030, the Ministry of Tourism accepts the European and national commitments regarding sustainable development and presents a plan for their achievement in the field of tourism (National strategy for sustainable development of tourism in the Republic of Bulgaria, 2014-2030; Varadzhakova, 2017; Varadzhakova, 2020). For sustainable and efficient management of water resources inclusive minerals, it is necessary to identify their quantitative and qualitative characteristics, the needs of the population and the conditions for the complex use of water (Ahmadov, 2020). The South-West planning region has favorable opportunities

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for effective development, and is one of the six planning regions in Bulgaria, regulated according to the introduced general classification of territorial units for statistical purposes of the European Union, called "NUTS".

In the conditions of marked synergy between the main structural units of the water-energy-food Nexus, the South-West planning region has a great potential for the development of balneo and SPA tourism. The presence of a large number of natural mineral springs with different water properties, favorable geographical location, attractive climate, cultural and historical sights, natural phenomena and authentic local folklore, create opportunities this type of tourism to be combined with other types, for example: cultural, rural, wine, culinary, educational tourism, etc.

A brief review over the available scientific research on the issue of the regional status and use of mineral waters as an element in the water-energy-food nexus shows that they are too limited. This, in turn, justifies the conduct of the present study. The article presents the curative and preventive properties of mineral waters and some of their basic physical and chemical characteristics. The classification and status of the mineral deposits, as well as the balneo and SPA destinations formed in the SW region, are presented. The main goal of the present study is to analyze and evaluate the potential of mineral water resources and the state of balneo and spa tourism in the SW region of the country. The subject of the study are the mineral and drinking waters that are used in the procedures offered by balneo and spa complexes on the territory of the South-West planning region. The object of the present study are the spa and balneo destinations formed in the SW region. To achieve the set goal, the following tasks were completed during the research:

- creation of an information base on the distribution of mineral waters in the studied area and its visualization;
- description of the balneo and spa centers and their tabular and graphic presentation;
- characterizing the potential of mineral waters for prevention and treatment of specific groups of diseases;
- revealing the possibilities of combining balneo and spa tourism with another type, e.g. cultural, festival, wine, culinary and educational.

2. Natural, Economic and Social Characteristics of the South West Planning Area

The South-West planning region covers territories from South-West and North Bulgaria, including the districts of Blagoevgrad, Kyustendil, Pernik, Sofia and Sofia City. Its area is 20,306 km², and the population as of 31.12.2022 is 2,016,554 people (National Statistical Institute of the Republic of Bulgaria, Population - Demography, Migration and Projections, 2022). It is the most densely populated region in the country, with the population concentrated in the big cities. The geographical position of the region is favorable, international roads No. 4, 8 and 10 pass through it. The area is an external border for three countries - the Republic of Serbia, the Republic of North Macedonia and the Republic of Greece. The northern border runs along the ridge of the Western Stara Planina. The eastern border of the region reaches the Greek border and follows the Rhodope Dabrash hill. The southern border is the shortest and determines the development of the border territories, and the western border, which is mostly mountainous, is the least developed.

Several border crossings were built in the SW region, the most important being Kalotina (with the Republic of Serbia) and Gueshevo (with the Republic of North Macedonia). The relief of the Southwest region is diverse and consists of picturesque valleys, mountains, gorges and river valleys. In terms of climate, the region is characterized by significant differences - mountainous (Rila, Pirin, Vitosha and Osogovo), moderate-continental (the northern and high valley fields), and in the Sandansko-Petrichko field a continental-Mediterranean climate is observed (Donchev and Karakashev, 2004). The region has more than 1/5 of the country's river and groundwater. They are used in a complex manner (water supply, irrigation, electricity generation). The mineral waters in Sofia, Bankya, Sandanski, Kyustendil, Sapareva Banya, etc. are a great asset, which is a prerequisite for the development of spa and balneo tourism. SW region has a clear territorial specialization in the development of tourist activities, e.g. mountain tourism (Borovets, Vitosha, Bansko), spa (Bankya, Sandanski, Kyustendil), educational and cultural. It has all the favorable conditions for the development of rural tourism (Leshten, Kovachevitsa). In general, the southwestern region is characterized by significant territorial differences - the northern part with Sofia as its center is distinguished by a large concentration of population, production facilities and service activities, while the southern part is developed on the basis of the concentration of a number of economic branches and the passage of important road arteries.

MATERIALS, METHODS AND LEGISLATION

1. Historical Overview on Mineral Waters and Balneology in Bulgaria

Mineral waters have been used in Bulgarian lands since ancient times. The Thracian tribes, and later the Roman government, actively used this natural resource. Numerous testimonies have reached us in the form of archaeological finds and remains of buildings, proving that there is a millennial interest in mineral waters in Bulgaria. Cities such as Serdika, Sandanski, Kyustendil, Varshets, Hisarya, etc. arose around the mineral springs. These natural resources are the reason for the creation of religious, administrative and balneological centers, established over time as permanent settlements. After the Liberation from Ottoman slavery at the end of the 19th century and the beginning of the 20th century, balneology in Bulgaria marked significant progress. Numerous modern public baths have been built throughout the country. Many current European and world practices are applied. In the 1950s, medical facilities were established, profiled by groups of diseases that are affected by mineral waters. After the collapse of the socialist bloc and the transition to a market economy, balneology and spa tourism in the country are entering a new stage of development. Many new hotels and spas have been built, offering modern services and treatments.

2. Study Area

According to official data of the Bulgarian Ministry of Tourism, two main balneo and spa destinations have been

formed in the South-West planning region: Sofia balneo and spa destination also known as "Thermes of Emperor Constantine the Great" (Ministry of Tourism of the Republic of Bulgaria, Balneo and SPA destinations, 2024). It includes the cities of Sofia, Bankya, Momin Prohod, Kostenets, Sapareva Banya, Dolna Banya, the village of Pancharevo, the village of Belchinski Bani, the Pchelinski Bani resort near the village of Pchelina (Figure 1).

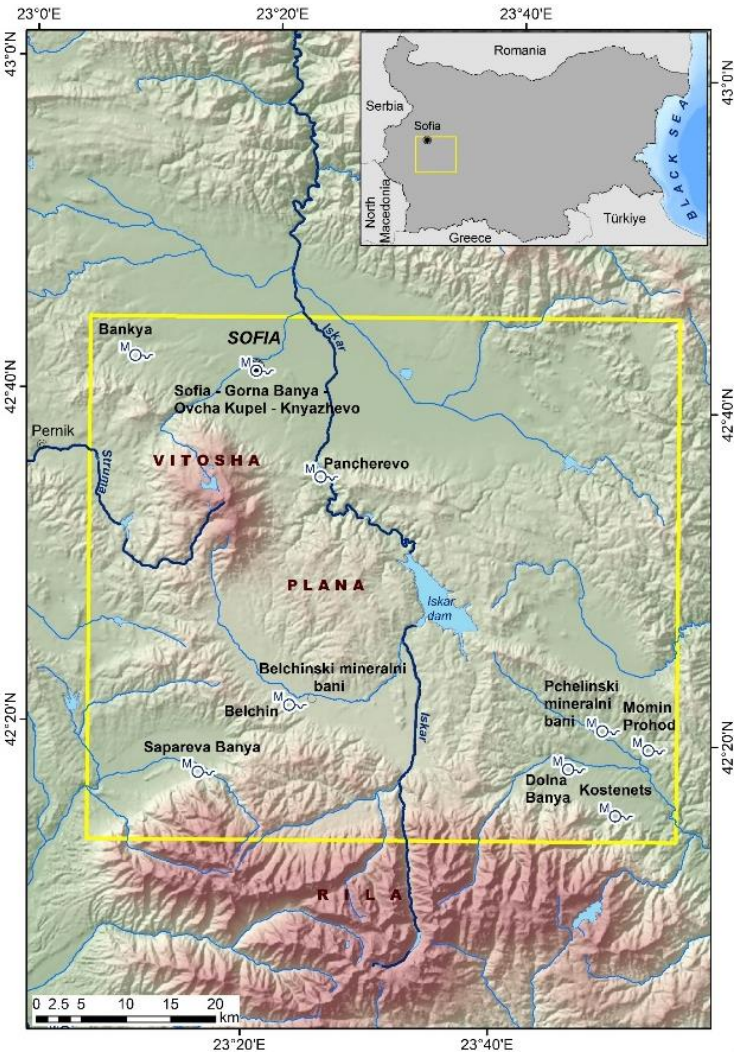

Figure 1. Sofia balneo and spa destinations - "Thermes of Emperor Constantine the Great"
(Source: Ministry of Tourism of the Republic of Bulgaria, Balneo and SPA destinations, 2024)

Southwestern balneo and spa destination also called "Health along the valleys of the Struma and Mesta rivers", which includes the cities of Kyustendil, Blagoevgrad, Sandanski, Dobrinishte and the villages of Marikostinovo, Banya (Guliina Banya), Ognyanovo and Rupite (Figure 2). In regard to the purpose of the present study, a brief description of the mineral springs of the two balneo and spa destinations in the SW planning region of Bulgaria is presented below (Datasource: Ministry of Tourism of the Republic of Bulgaria, Balneo and SPA destinations, 2024). On the territory of the city of Sofia there are many mineral springs, some of which have been used since ancient times. Such one is the spring at the city's centre, the first catchment of which dates back to Roman times. The water is hyperthermal with a temperature at the source of 45°C, pH 9.3 and a total mineralization of 0.28 g/l. Another deposit is the one located in the tectonic faults between the Vitosha and Lyulin mountains in Knyazhevo quarter. The water of the mineral springs is hyperthermal 31°C, pH 9.5 and total mineralization is 0.12 g/l. The mineral waters in the Gorna Banya district are poured from a total of 4 springs (two of the boreholes are plugged). They are defined as hyperthermal with water temperature 42°C, pH 9.7 and total mineralization 0.15 g/l.

According to historical data, until the middle of the 19th century, a small warm mineral spring existed on the territory of the capital district of Ovcha Kupel. After a strong earthquake in 1858, in the same area, a large flow of water gushed out from a crack in the ground. The first boreholes were made at the beginning of the 20th century, and subsequently, in the 1950s and 1960s, new surveys were made and two new boreholes were captured. The springs are hypothermal - 32°C, pH 7 and total mineralization is 1.19 g/l. Approximately 12 km southeast of Sofia, in the valley of the Iskar River between the Vitosha and Lozenska mountains, lies the village of Pancharevo. The area has been known for its mineral springs since ancient times. Before the dam was opened, everything necessary to preserve the mineral springs was done. A vertical shaft (catchment) was built in the lake, reaching its bottom. With the help of a pump, the mineral waters are taken from the catchment outside the dam, where they are used by consumers. The visible part of the catchment is an original architectural facility, resembling a mushroom, connected by a bridge to the shore of the reservoir. The deposit of mineral waters is

composed of two groups of springs. The waters from the upper spring flow from cracked Middle Triassic dolomites along a fault in an east-west direction. This source was captured in 1937 by means of a horizontal gallery under the road to Sofia. The second group appears 20m lower and falls within the inundated volume of the dam as described above in the text. By its nature, the mineral water from the springs is hyperthermal (48ºC), pH 7.1 and with a total mineralization of 0.47 g/l.The region has beautiful nature and precious mineral waters. These facts, in combination with a large artificial reservoir, offer excellent conditions for recreation and sports in close proximity to the capital city.

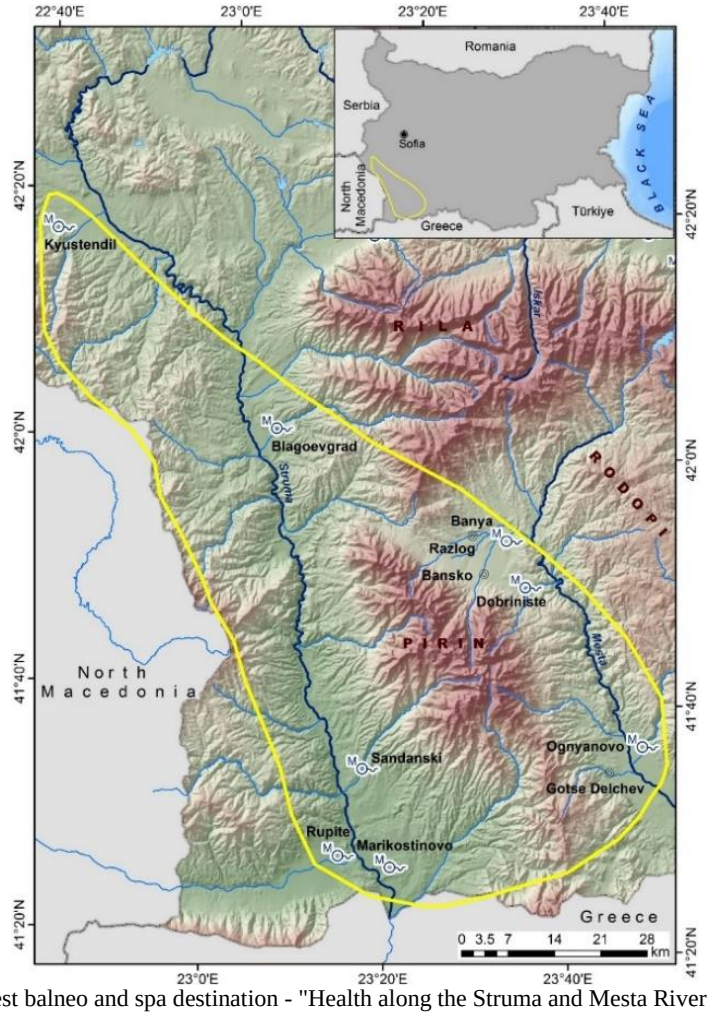

Figure 2. South-west balneo and spa destination - "Health along the Struma and Mesta River Valleys"
(Source: Ministry of Tourism of the Republic of Bulgaria, Balneo and SPA destinations, 2024)

The town of Bankya is located about 17 km from the center of the capital. The springs are formed in volcanic rocks and materials of Upper Cretaceous age. There are about 15 deposits and their capture was carried out at the beginning of the 20th century (1905). Over the next few years, the small and large baths were successively built, the latter one being the symbol of the city to this day. By its nature, mineral water from the Bankyan springs is homothermal (36ºC), its alkalinity is pH 9.6, and its total mineralization is 0.28 g/l. The municipality of Kostenets is a well-established traditional balneological destination in the country. The three main areas for balneological tourism have been formed around the deposits of mineral waters - Momin Prohod, Vili Kostenets and Pchelinski Bani.

The springs in Momin Prohod were the main reason for the foundation of the settlement by the Thracian tribes - Serdi and Besi already in antiquity. The nine mineral springs have a water temperature above 56ºC, reaching even 64ºC, pH 7.8 and total mineralization 0.95 g/l. The mineral water in the balneo resort "Pchelin Mineral Baths" located near the village of Pchelin is internationally known for its healing properties. The water temperature is hot and reaches 72ºC, the pH is 9.2, and the total mineralization is 0.97 g/l. The municipality of Dolna Banya is located in Southwestern Bulgaria and offers excellent conditions for an year-round development of balneo and spa tourism. Numerous mineral springs have been discovered in the municipality, which were tapped for the first time in the early 1940s. Their use gradually continued in the middle of the 60s of the 20th century. The water temperature is about 64ºC, pH 8.8, and the total mineralization e 0,57 g/l.

One of the highest mineral springs in the country is located near the village of Belchin, at about 900 m above sea level. The mineral water in the deposit is hot reaching 72ºC, with pH 9.2 and total mineralization 0.97 g/l.

In Sapareva Banya springs the hottest geyser in Europe - 103 ºC. The spring is also one of the world's hottest mineral water sources. The mineral water in Sapareva Banya has exceptional healing properties. It was highly valued and used as a medicine by the Thracians and Romans. The water is clear, colorless, with a pH of 9.3 and has a total mineralization of 0.65 g/l. According to the temperature it is hyperthermal with a hydrogen sulfide content of 15.5 mg/l (Sapareva Banya

Municipality, 2012-2022). For this reason, the characteristic smell of sulfur can be seen near the geyser. In winter, no snow cover remains around the geyser fountain. Colorful lights are turned on around the fountain in the evening in the summer, which makes it an attractive and at the same time beautiful sight. Northeast of the town of Gotse Delchev, 12 km away, is the famous balneological center near the village of Ognyanovo. It is part of a larger area for unloading thermal waters, which also includes the springs near Gotse Delchev. The mineral water in the deposit is hyperthermal (40ºC), with a pH of 9.3 and a total mineralization of 0.27 g/l. It contains R. The town of Dobrinishte is a balneotherapy resort in South-West Bulgaria with 17 mineral springs. The mineral water is hyperthermal (43ºC), with a pH of 9.1 and a total mineralization of 0.29 g/l. In this resort, as in Ognyanovo village, the water has a R. content.

The village of Banya is located 850 m above sea level in the center of the Razlozhka Valley. The area is markedly mountainous. The Guliina Banya mineral water deposit is one of the largest in the country. As a result of the combination of the many hot mineral springs, the climate (moderate continental and mountainous) and its location, the village of Banya is an extremely promising balneo and spa destination. The water in the deposit has a temperature of 57ºC, pH 9.3 and total mineralization 0.33 g/l. Before drilling explorations began, there were two groups of natural water sources, in the valleys of the Pihla River in the west and of the Konestchitsa River in the east. Their total number was 27 catchments, fountains, and springs. After 1956, 8 boreholes with a depth between 85 and 500 m were drilled. Initially, after the penetration, the water flow rate increases almost 2.5 times but gradually decreases to approximately the original water amounts over time.

The village of Marikostinovo is 11 km away from Petrich and 17 km from Sandanski. In the area of the village, there were originally about 50 natural mineral springs that came to the surface of the waterspouts. In the 1930s, only one spring was captured. In the 1950s, 47 boreholes were drilled, with a depth between 23 and 125 m. The mineral water in the area is hot (62ºC), with a pH of 7.3 and a total mineralization of 1.01 g/l. It also contains carbon dioxide, hydrogen sulfide and R. A lake with healing mud has formed around the springs. The village of Rupite is located in the Petrichko-Sandansky valley at 147 m above sea level eastern of the Kozhuh volcanic plateau. The mineral waters at Kozhuh are connected to the youngest volcanic rocks in Bulgaria. The area is known for its healing mineral springs with temperatures up to 75 °C, pH 6.7 and a total mineralization of 2.2 g/l. The presence of hot mineral springs was the leading factor for the settlement of the area around the present-day city of Sandanski. Initially, there were 16 springs along the Sandanska Bistrica river, among which the largest was the so-called "Parilloto". Today there are about 80 deposits. The mineral water in the area is hot (80ºC), with a pH of 7.8 and a total mineralization of 0.59 g/l. Popular for its abundance of mineral springs since ancient times, the city and the area around it attracted people and it is the main reason for its development and prosperity. The town of Sandanski, with its wealth of mineral waters, is a famous natural balneological center for the treatment of diseases concerning respiratory system - an excellent destination for balneo treatment or a spa holiday all year round. The mineral waters in the area are clear, odorless and safe to drink. The thermal springs in the area of Blagoevgrad have been known since Thracian and Roman times. In modern days deposits were captured at the end of the 1930s (in 1939). The mineral water is hot (60ºC), with a pH of 9.3 and a total mineralization of 1.08 g/l.

The Kyustendil thermal mineral deposit is known and used since ancient times. The well-known Roman resort of Ulpia Pautalia is located around it. There are more than 40 mineral springs in Kyustendil, and the first modern catchments were drilled in 1910-1911. In the 1950s and 1960s, additional drillings were made, which revealed thermal waters with a temperature between 26 and 76 g. The waters are hot (74ºC), with a pH of 9.3 and a total mineralization of 0.62 g/l. The city has more than 20 centuries of history as a balneological center. Of particular importance is the composition of the mineral water, which has low mineralization and contains sulfur, salts and various ions. It is clear, colorless with a slight smell of hydrogen sulfide (Specialized Rehabilitation Hospitals-National Complex Joint- Stock Company, 2024).

3. Materials

The conceptual framework of the article is based on a pre-collected and processed base of materials in two main directions: sources of information on the set issue - scientific publications, official information sources (sites, reports, decisions, references, informational messages, protocols) and relevant administrative legal documents (Directives, laws, regulations, strategies, etc.).

4. Methods

In order to achieve the goal set in this article, the methods of scientific analysis and synthesis of the collected information database, and geographic information systems (GIS), through which the study area is visualized, were used.

5. Legislation on Mineral Water Resources in Bulgaria and Related Administrative Documents

This research is based on a wide range of legal documents with direct or indirect relevance to the issue under consideration, some of which are shown below:

- Water Framework Directive (WFD) – 2000/60/EC, which introduces a holistic approach to water management in the EU;
- Directive 2006/118/EC on groundwater (GWD), regulating groundwater quality standards and measures for prevention from all forms of pollution;
- Directive 2009/54/EU on the exploitation and marketing of natural mineral waters;
- Water Law. Announcement, SG No. 67 of 27.07.1999, in force since 28.01.2000;
- Environmental Protection Act. Announcement, SG No. 91 of September 25, 2002;
- Concessions Act Promulgated, SG No. 36/2.05.2006, effective 1.07.2006;
- Subsurface Resources Act Promulgated State Gazette No. 23/12.03.1999, amended SG No. 28/4.04.2000;
- Law on Energy from Renewable Sources, effective from 03.05.2011. Official Gazette No. 35 of May 3, 2011;
- Municipal Property Act, effective from 01.06.1996;

- Law on Public Health (Repealed, SG No. 70/2004) in force from 01.01.2005);
- State Property Law, Promulgation of State Gazette No. 44 of May 21, 1996;
- Law on Access to Public Information. Announcement, SG No. 55 of 7 July 2000;
- Law on Territorial Planning. Announcement, SG No. 1 of January 2, 2001, the Protected Areas Act. Announcement, SG No. no. 133 of 11 November 1998;
- Regulation (EC) No 1059/2003 of the European Parliament and of the Council of 26 May 2003, on the establishment of a common classification of territorial units for statistics (NUTS), OJ L 154, 21.6 .2003;
- Law on Tourism Promulgated, SG No. 30 of March 26, 2013;
- National Strategy for Sustainable Development of Tourism in the Republic of Bulgaria, 2014-2030, with Decision No. 65 of February 2, 2018, of the Council of Ministers, Based on Art. 16, paragraph 1 of the Tourism Law (ZT), with Order No. T-RD-16-103/11.03.2015;
- Regulation No. 1 of 10.10.2007 on research, use and conservation of groundwater;
- Regulation No. 3 of 16.10.2000 on the Conditions and Procedures for the study, design, approval and operation of Sanitary protection Zones around Water Sources and Facilities for drinking and Domestic Water Supply and around Water Sources of Mineral Waters used for Medicinalq Preventive, Drinking, and Hygiene Needs, Pron. DV. No. 88 of 27.10.2000;
- Regulation No. 1 of 11.04.2011 on Water Monitoring, Promulgation DV. No. 34 of April 29, 2011.

RESULT AND DISCUSSION

1. Defining the Basic Concepts of Balneology and Spa Tourism

Balneology (lat. balneum, bath) is a form of treatment and rehabilitation of various disease states through the healing powers of water. According to the Collins English Dictionary, balneology is defined as a branch of medical science concerned with the therapeutic value of baths, especially those taken with natural mineral waters (Collins English Dictionary). It has been known since ancient times and is practiced by bathing or various procedures in places (balenoresorts) where there are mineral springs. Different types of healing clay could also be used in balneology. The term *Balneology* refers also to the activities related to healing and rehabilitation practice, bathing, hot baths, and pools with natural steam, as well as to various procedures with mud or sand. As with any medical treatment, it must be recommended or prescribed by a doctor. In some cases, such as cardiovascular diseases and pregnancy, balneotherapy may be contraindicated and lead to adverse effects (Health and Medical tourism in Bulgaria, 2024).

According to the International Spa Association, (an American organization set up to 'advance the spa industry') 'Spa' is a place: "devoted to overall wellbeing through a variety of professional services that encourage the renewal of mind, body and spirit" (International Spa Association, 2019). Cambridge Dictionary defines a spa as: "a town where water comes out of the ground and people come to drink it or lie in it because they think it will improve their health", or "a place where people go to become healthier, by doing exercises, eating special food, etc" (Cambridge Dictionaries Online). It is thought that the word Spa it is either an acronym for the Latin phrase 'sanus per aquam' ('health through water'), or it comes from the town of 'Spa' (in Latin Aquae Spadai) – a spa town in Belgium.

2. General Categorization and Status of Mineral Water Resources. Peculiarities of Bulgarian Mineral Springs.

Mineral waters in Bulgaria are classified as waters with very low mineralization < 50 mg/l, low mineralization 50–500 mg/l, medium mineralization 500–1500 mg/l, high mineralization > 1500 mg/l (Quattrini et al., 2016). By temperature, mineral waters are classified as cold (< 20°C at source), hypotermal (20–30°C at source), mesothermal waters (30–40°C at source) and hyperthermal waters (> 40°C at source). Other physical parameters of the mineral waters are pH and hardness (Albertini et al., 2007). According to the legislation in the Republic of Bulgaria, mineral waters can be used for economic purposes only after granting a concession or issuing a permit for water abstraction. This is done in accordance with the Water Act on the one hand and is issued by a relevant competent authority on the other - director of the Basin Directorate, mayor of a municipality, etc. The most significant deposits are comprehensively listed in Appendix 2 of the Water Law. They have proven qualities of mineral waters and are exclusive state property - 102 in total. The remaining deposits and manifestations of mineral water are public municipal property.

The diverse composition, properties and temperature range (up to 103°C) of the mineral waters in the country is determined by the specific natural conditions, which help to enrich them with valuable microcomponents, gases and bioactive substances. The high temperature of the Bulgarian mineral waters is a mark of their deep origin. This is a condition for protection from surface influences, as well as their formation under specific conditions determining their healing properties (Ministry of Environment and Water, Mineral water resources,2024). As a result of the analysis, the following important generalizations can be made: The southwestern planning region has favorable conditions for the development of balneological and spa tourism. Among the reasons, in the first place, the large number of natural mineral springs with diverse water properties should be mentioned. Based on the analysis of the curative and prophylactic properties of the mineral springs in the studied area, a systematization of their impact on certain groups of pathologies was carried out, presented in Table 1 and Table 2.

The mineral water wealth in combination with long-term scientific experience in the field of balneology, the use of modern technologies and the application of the best European and world practices give Bulgaria and the region in particular the opportunity, with good management, to rank at the forefront of the development of health and wellness tourism in Europe. In the last three decades, after the collapse of the socialist block and overcoming the initial shock of the transition to a market economy, one of the sectors in which serious investments were made was precisely tourism. Although not everywhere, much of the water's potential and its benefits to society and the economy have been appreciated

by investors, and major investments have been made in numerous new hotel complexes with spa centers offering wellness and health treatments. The emergence of modern spa and balneological centers on the Bulgarian market has increased interest not only at the local level, but as a result of this development, the flow of foreign tourists has increased. Visitors from abroad are mainly from Scandinavia, the United Kingdom, Israel, Russia, Cyprus and Greece. In recent years, net sales of spa and water-related therapeutic services have shown an upward trend. The lack of seasonality in this type of service is the reason why health and wellness tourism in Bulgaria is second in popularity after beach tourism.

Table 1. Treatment and prevention of the main groups of diseases
(Source: Ministry of Tourism of the Republic of Bulgaria, Balneo and SPA destinations, 2024)

A Group of Diseases → **Mineral Spring (settlement) ↓**	Female and Male Reproductive System	Peripheral Nervous System and Metabolic Disorders	Dermatological Pathology	Musculoskeletal System and Spinal Column Diseases
Sofia	*	*	*	*
Pancharevo village	*	*	*	*
Bankya	*	*	*	*
Momin Prohod	*	*	*	*
Kostenets	*	*	*	*
Dolna Banya	*	*	*	*
Pchelin village	*	*	*	*
Belcinski Bani village	*	*	*	*
Sapareva Banya	*	*	*	*
Kyustendil	*	*	*	*
Blagoevgrad	*	*	*	*
Sandanski	*	*	*	*
Rupite village	*	*	*	*
Marikostinovo village	*	*	*	*
Banya village (Razlog)	*	*	*	*
Dobrinishte	*	*	*	*
Ognyanovo village	*	*	*	*

Table 2. Treatment and prevention of specific groups of diseases
(Source: Ministry of Tourism of the Republic of Bulgaria, Balneo and SPA destinations, 2024).

A Group of Diseases → **Mineral Spring (settlement) ↓**	Gastrointestinal Tract and Liverbiliary system	Urinary Excretory System	Cardiovascular System	Respiratory System	Rheumatic, Orthopedic and Traumatological Diseases
Sofia	*	*	*	*	
Pancharevo village	*	*	*	*	
Bankya	*	*	*	*	
Sapareva Banya					*
Kyustendil			*	*	*
Blagoevgrad					*
Sandanski				*	*
Rupite village					*
Marikostinovo village					*
Banya village (Razlog)					*
Dobrinishte					*
Ognyanovo village					*

According to the official register on the website of the Ministry of Tourism in the Republic of Bulgaria, there are 26 spa facilities in the region with a valid certificate that welcome guests from the country and abroad (Figure 3). The largest number spa facilities are in the territory of the municipality of Bansko and in the city of Sofia, 7 and 5, respectively. Most facilities are modern and offer a wide range of procedures to their clients (Figure 4). There are also 5 certified balneo sanatoriums operating in the Southwest Planning Region.

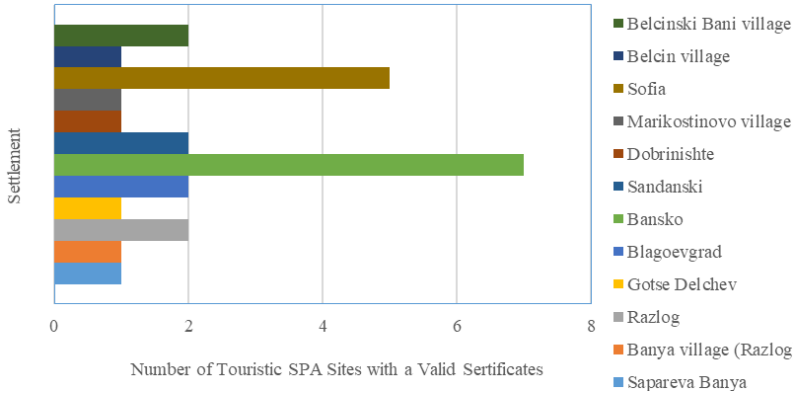

Figure 3. SPA sites with a valid sertificates in the study area

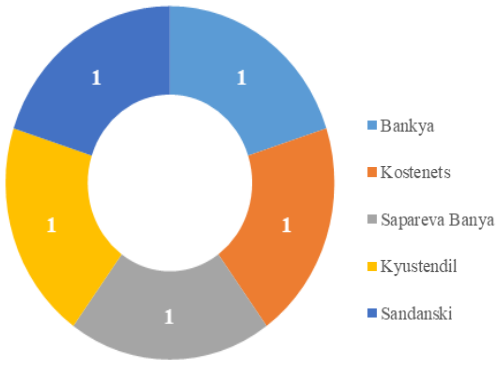

Figure 4. Number of certified balneo sanatoriums

(Source: National Tourist Register; Balneotherapy (medical spa), spa, wellness and thalassotherapy centers, 2024)

3. Additional Attractions in the Study Area

The area is rich in cultural, cultural-historical and religious sites. An interesting group of elements of this variety is the so-called Sofia's Holy Forest, which is a peculiar complex of 14 monasteries, located mainly around Vitosha Mountain, Western Stara Planina and the neighboring mountain ranges. The development Sofia world is burning or the so-called Small Holy Forest dates back to the 13th century. The more significant monasteries are the Dragalevski Monastery "St. Mother of God", Etropolski "Holy Trinity", Osenovlashki "Seven Thrones", Klisurski Monastery "Saint Petka" and others. Over the centuries, settlements were gradually created around these religious centers, some of which are now part of the capital Sofia.

Near the village of Belchin is the restored fortress "Tsari Mali Grad". The complex itself includes several sites: a medieval church, an ethnographic complex and a late antique fortress (Ministry of Tourism of the Republic of Bulgaria, Tourist destinations, 2024).One of the symbols of the country in religious terms is located in the research area - the Rila Monastery of St. Ivan Rilski. Being a protected place in the lists of cultural heritage of the international organization UNESCO since 1983, the holy abode attracts laity and tourists from the country and the world. In the southernmost parts of the researched area is one of the oldest monasteries in the country - the Rozhen Monastery "Rozhdestvo Bogorodichno". It is considered to have been created at the end of the 9th century and is the largest spiritual abode in the Pirin region. The monastery is famous for its well-preserved wall paintings, its stained glass windows and unique wood carvings.

At a distance of a few kilometers from the Rozhen Monastery is the smallest town in the country - the town of Melnik. The city is located in the midst of picturesque nature, represented by natural phenomena, for example, the so-called Melnik pyramids. The area has been known for its vineyards and wine production since ancient times. Houses of rich wine merchants have been preserved as a historical and cultural value, for example, the Kordopulova house.

Museum collections of national, regional, and local importance are organized in the study area. In the first place is the National History Museum, located on the outskirts of the capital city and near the Vitosha Nature Park. The museum's collections include over 650,000 cultural and historical exhibits (National Historical Museum, Sofia, Bulgaria, 2024). The National Natural Science Museum is another unique museum collection, presenting a large array of exhibits and artifacts related to nature and species diversity. It is located in a building in the ideal center of Sofia, next to the National Art Gallery. There are also many museum collections and art galleries operating in the area, such as: Regional History Museum - Blagoevgrad, Archaeological Museum - Sandanski, History Museum - Melnik, Regional History Museum "Academic Yordan Ivanov", Museum Complex Church "St. Georgi", Art Gallery "Vladimir Dimitrov - the Master", Kyustendil, History Museum - Razlog, etc. The territory of the study area includes the Vitosha Nature Park and the Rila and Pirin National Parks, providing excellent recreation opportunities combined with rich biodiversity.

4. Recommendations

In regard to the analysis and evaluation carried out in the present study, the following summaries and recommendations can be made, which will serve as a good basis for making informed decisions and preparing policies by the branch organizations, bodies and institutions for local, regional and national governance:

- The effective and sustainable development of balneo and SPA tourism should become a priority of the state;
- It is necessary to transform them into a year-round tourism industry;
- It is imperative to regulate the conditions for the development of balneology and SPA activities in parallel with the development of the territory adjacent to the springs;
- Development of new regulations for professional categorization and requirements for retraining, as well as initial training in the sector by the established norms;
- Implementation of transfer and synchronization of successful programs for effective development of balneology and SPA procedures to local conditions.

CONCLUSION

Based on the conducted research, the territory of the Southwest Planning Region has a serious potential of mineral water resources, which in case of sustainable and effective use, would contribute significantly to the development of tourism in the region. It should be noted that during the last 3 decades, serious investments have been made in the field of balneo and spa tourism in the region, by the construction of numerous completely new hotels and spa centers that successfully meet and satisfy the needs of their customers. An example in this regard is the district Blagoevgrad, where in the municipalities of Bansko, Razlog, Petrich, Sandanski, etc., this type of tourism is well developed. There are also good examples in this sense in Kyustendil ditrict. Unfortunately, in other parts of the region, there is still much to be desired in terms of the development or preservation of this type of tourism and the traditions associated with it.

The lack of a consistent state policy during the decades of the transition from a planned to a market economy had a negative impact on the sustainable exploitation of mineral water resources. Despite the significant progress in the field of spa tourism and the procedures that are offered in the sector, many buildings and facilities related to mineral waters and balneology were left in disrepair for various reasons. Mainly due to lack of a clear concept of how to use them going forward and who should manage them. Significant number of facilities and spas, once state owned are abandoned or sit idle for years, thus wasting a valuable resource and revenue opportunity. The case with the Sofia Central Bath is typical example for missmanagment. The valuable spa facilitie which has not functioned as intended for more than 3 decades, and the building, an architectural and cultural monument, periodically undergoes only cosmetic repairs.

Similar was the fate of the large mineral bath in the town of Bankya, which for more than two decades did not function as intended - a circumstance that has changed over the past 2 years. Despite some circumstances related to the poor use of mineral waters in the South-West planning region, there is serious potential for development in the two balneo spa destinations under consideration. This circumstance, in combination with various other factors, for example,

natural environment, historical and cultural sites, and well-developed road infrastructure is a prerequisite for the successful development of balneological and Spa tourism in the field of tourist services.

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