# The analysis of resort and recreational potential of the region: natural, social and economic prospects of development

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**Abstract.** As a result of development of therapeutic resort activity and health-related tourism in the region risk of development of many diseases is decreasing, labour productivity is increasing at the same number of working hours. Therapeutic resort activity forms new workplaces, provides necessary social support that, eventually, ensures necessary stability and independence of the regional economy. The volume of the paid therapeutic resort services rendered to the population of the Perm region constitutes about 2.4 billion rubles per year. There is positive dynamics on increase in the income of therapeutic resort organizations of the region on the average for 3-5%. The Perm region was divided by authors of the research into 7 resort and recreational areas: Northern, Solikamsk and Berezniki, Central, Western, Mountain Urals, Southeast (Cis-Urals) and South. Each of them differs in availability of necessary mineral waters, medical climate and abundance of unique landscape complexes. The Central district surrounding the large industrial city of Perm leads by number of operative therapeutic resort organizations. [Oborin M.S., Plotnikov A.V., Vladimirskiy E.V., Kayachev A.P. **The analysis of resort and recreational potential of the region: natural, social and economic prospects of development.** *Life Sci J* 2014;12(12s):664-667] (ISSN:1097-8135). http://www.lifesciencesite.com. 145

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#### Introduction

Natural and geographical features of any territory determine development of resort and recreational activity. The qualitative characteristic of the district environment which determines specific features of development of resort and recreational territories will allow to identify necessary types of resort and recreational environmental management and to provide the further directions of social and economic functioning. Natural resort factors such as mineral waters, medical dirt, bio climate and landscape variety are especially valuable.

#### Materials and methods

The research is based on the materials of the following authors: Oborin M., Plotnikov A. and others [1, 2], Karakulova, Y., Vladimirskiy, E. V. and others [3, 4], Chaabna, Z., Forey, F. and others [5], Vespasiano, G., Apollaro, C. and others [6], Mahe, Y. F., Perez, M. J. and others[7].

The authors of this research used the following methods: studying of literary source, systematization of statistical information on a qualitative balneal (medical) significance of natural resources, supervision, deduction (a method of thinking where a specific conclusion is led out of a general one logically) and induction (a reasoning method from the special to the general).

#### **Results and discussion**

The Perm region is characterized by optimum conditions for development of a local balneal climate and landscape therapy. Duration of the warm period in the north of the region (Gaynsky, Krasnovishersky and Cherdynsky areas) is on the average about 175 days, and the frostless period does not exceed 80-90 days. In the south of the Perm region (Tchaikovsky) duration of the warm period constitutes 195-197 days, the frostless period is 100-130 days. Average annual temperatures change from 0.3-0.5 °C in the north to 3.0 °C in the south. [8-10].

Duration of daylight is on the average 1700-1800 h/year whereas in Sochi 2000 h/year, in Kislovodsk 2100 h/year, i.e. fits to a training mode. The microclimate is clinically optimum during the summer-autumn and winter periods, also is used for rehabilitation of patients with various diseases. Such conditions will be comfortable for locals, and for inhabitants of Western Siberia, the European part of Russia and neighboring countries. Bioclimatic conditions do not cause problems with adaptation of an organism [8].

Average temperature below freezing during the winter period is -16.8 0C in the north of the region (Cherdyn), and average positive temperature in warm summer days is equal 18.9 0C in the southwest of the Perm region (Tchaikovsky). Average heights of the flat part of the Perm Kama region (Cis-Urals) are about 200-400 m above sea level. In the mountain part it increases from 300-400 to 600-800 m. The highest point of the region is Tulymsky Kamen (1469 m). Such variations of absolute heights are favorable for tourism and rest development.

More than 30 thousand rivers originate in the Kama region, majority of them fall into the Kama river basin. Total length of all rivers of the region is over 90 thousand km. In the region there are more than 4 hundred ponds of different origin, it is possible to distinguish the large ones among them – Nytvensky, Ochersky, Pavlovsk, Lysvensky, etc.

In table 1you can see the characteristics of large perspective and operative resort and recreational territories of the Perm region that were identified in works of M.S. Oborin [8-10].

The Perm region was divided by authors of the research into 7 resort and recreational areas: Northern, Solikamsk and Berezniki, Central, Western, Mountain Urals, Southeast (Cis-Urals) and South. Each of them differs in availability of necessary mineral waters, medical climate and abundance of unique landscape complexes. The Central district surrounding the large industrial city of Perm leads by number of operative therapeutic resort organizations.

The hydromineral base means existence of fields and sites of the subsoil containing ground mineral waters where prospecting works with an assessment of water deposits were carried out. The hydromineral base is one of the major natural medical factors which serves as a base for health resorts and resort and recreational zones.

Nowadays the register of the hydromineral base of the Perm region numbers 31 fields and a site of the subsoil with mineral waters, 20 from which are in the distributed reserves and are used by subsoil users and 11 are in undistributed reserves [9, 10].

The modern hydromineral base of the Perm region has three main types of mineral waters: medical drinking (medical drinking and medical-table), medical hydrosulphuric and medical iodo-bromine. From total of the approved deposits of mineral waters - 2644,41 m3/d. waters, 1102,3 m3/d. are mineral medical and drinking, 1365,76 m3/d. are medical hydrosulphuric and 178,35 m3/d. are iodo-bromine waters.

#### Table 1. Short characteristic of some resort and recreational territories of the Perm region

Natural, medical and recreational resources	Centers and regions of development
The most climatic severe, sparsely populated territory in the basin of Vishera	Nothern (Komi-Permyak and Norther
and Kolva. Landscape complexes: mountain taiga, tundra with the favorable	Urals)
ecological situation (primitive landscapes, pure water, wild nature). Open	Occupancy 200 places.
fields of radon waters and chloride and sodium brines.	Health and recreation resorts (HRR
The highest mountain tops of the Perm region in the Northern Urals:	«Zhemchuzhina Vishery»
Tulymsky Kamen (1469 m), Isherim (1331 m), etc. In the far northeast of the	Recreation camps: «Severny Ural)
region the lowest air temperatures and the largest amount of precipitation are registered. In the Northern area there is the largest cove of the Ural – Divya, the biggest lake in the Perm region – Chusovskoye, River rafting is widespread: Vishera, Berezovaya, Kolva. The national park "Vishera". The most aged city of Ural – Cherdyn was founded in 1462 (the loanno- Bogoslovsky monastery). In the Northern area the traditional culture of the Russian North remained– folklore, ceremonies, and the material culture. The former Korni-Permak Autonomous Area represents the woody territories	«Cherdyn" Tur»
where Komi-Permyak neonle live who have kent customs from the ancestors	
(traditional culture, ceremonies, holidays, ethnic cuisine) live. Therefore trade and ethnographic tourism is developed. The center – the city of Kudymkar where cultural, entertaining organizations, museums are concentrated.	
The world's largest field of salts. Historical and cultural heritage (stone	Solikamsk-Berezniki
temples - Trinity Cathedral and Church of the Epiphany, the Cathedral bell	Occupancy 368 places.
tower, the House of the Voivode, the salt museum). Natural ionization mineral salts (speleotherapy), healing mineral waters (of chloride and sodium structure) and dirt.	HRR «Chaika», HRR «Azot», HR «Uralkaliy», HRR «Rosinka», HR «Solikamskiy magnieviy zavod», HR
Zone or transmons: muade inga is replaced by southern lang, torest landscapes by intustrial centers, Kama passes into the Kama Reservoir. They have reclaimed the territory since XV century, from salt production in the largest in Russia field of salts – the Verkhnekamsky basin. They founded the	«Urai», rikk «Lesnaya skazka». Recreation camps: «Sed'moye nebo»
most aged cities of the area – sonkamsk and Usorye, and also settlements Orei and Pyskor. There are several dozens of caves in the river basin Yayva, the most known – Chanvinskaya cave, nowdays scientists are finding here traces of humans a paleolith period. In the large cities, Berezniki and Solikamsk,	
business tourism is developed. Usolye is famous for temples and	
Siroganovský chambers.	Genteel
Optimum microclimatic conditions for training people. A large number of water objects, the main waterway – the Kama River. Existence of attractive	Central Occupancy over 3423 place
combination of several mineral waters of external (hydrosulphuric and iodo-	resort «Ust'-Kachka», health reso
bromine) and internal application, unused dirf. Developed transport network, high level of development of infrastructure and rest services.	«Ural'skaya Veneciya», HRR «Vita
main transport knot of region. The southern taiga with the intensive	HRR «Volna», HRR «Ural'skiy», HR
Kama (KAMGES divides Kamsky and Votkinsk reservoirs). The main resort of the Perm region – "Ust-Kachka". The architectural and ethnographic	«Kamkabel'», HRR «Sosnoviy bor HRR PSTU, HRR PSU, HRR «Sosnov
memorial estate "Hokhlovka" with monuments of wooden architecture also is a venue of national holidays Shrovetide, Malic Savior, Ivan Kupala, the	bor» (trust No 17), HRR «Garmoniya HRR «Energetik», HRR «Galogen
international ethno futuristic KAMWA festival. Large number of temples and churches: Sacred Trinity Church, Church of the Transfiguration, Alexander	HRR «Lesnaya polyana», HR «Permskiy», HRR «Lesnaya skazka
Nevsky Church, Sretenskaya Church, etc. On the bank of Sylva there is the Vasily Kamensky's house museum. Archaeological monuments: Churdwarehouse head (an efficial aleas) astured housday.	HRR «Lesnaya dacha», HR «Zakamskiy», HRR «ApiSpa», HR «Paramete URP «Vites URP • 4 date
than 40 ancient dwellings, burial grounds of different historical eras). Large number of health pseuds, pseuds and the second second second and	Recreation camps: «Politekhnik
historical, business tourism, excursions to enterprises.	tekhnika», «Russkaya usad'ba
	«Zarechnoyec», «Zhebrei», «Allur «Polazna», «Bobrovo», «Nizhniy Lukh «Sukhoy Log», «Chaika», «Obva «Tupichok», «Mezhdurechye «Elshadw.

Fields and sites of the subsoil of mineral waters are used for balneotherapy in resorts of CJSC "Ust-Kachka resort", CJSC "Klyuchi resort", in "Krasniy Yar" health resort LLC, "Demidkovo" health resort LLC, "Apitsentr Tentorium" LLC, JSC "GaloPolimerPerm", CJSC "Visheraneft", JSC "Permskiy svinocomplex", for bottling – in JSC "Klyuchi resort", "Apitsentr Tentorium" LLC, CJSC "Mineralnye vody", PCC "Uralochka" LLC, JSC "Lysva Metallurgical Plant", "Firma Akwa LTD" LLC [10].

From total of the approved deposits -2646.41 m3/d. waters, 2230,65 m3/d. are in the distributed reserves of subsoil users and 415,76 m3/d. are in undistributed reserves (the perspective hydromineral base). It should be noted that reclamation of fields of mineral waters in the region is very low. Due to low demand of mineral waters their production on water abstractions constitutes less than a percent. The most demanded mineral waters are waters of large regional health resorts - CJSC "Ust-Kachka resort", CJSC "Klyuchi resort", "Krasniy Yar" health resort LLC, "Demidkovo" health resort LLC. It is also possible to refer hydromineral resources which are widely spread in the territory of the Perm region to the perspective hydromineral base of the Perm region. Among them there are the revealed and tested sites of availability of mineral waters of different chemical composition and balneal properties which did not come yet to a stage of prospecting works.

Nowadays only few experts are engaged in studying of the perspective hydromineral base on the territory of the Perm region. There is no unified register of the revealed and tested salt waters. Trial steps towards creating of the register of the revealed mineral waters and cartographic materials in the form of schemes of distribution of different types of mineral waters have been carried out at JSC "KAMNIIKIGS". Three main types of mineral waters are identified on territories of the Perm region on balneal significance: medical drinking (medical drinking and medicaltable), medical hydrosulphuric and medical iodobromine. Classification is based on the hydrochemical principle of water segregation – on a dominance of the main ions and components having a medical balneal significance in ground mineral waters. These are sulphatic, chloride anions and cations of calcium, sodium and magnesium.

The first type. Medical drinking (medical drinking and medical-table). In the Perm region these waters lie within a zone of active water exchange and are widespread in Volga-Kama, Preural hydrogeological areas at the depth of 50-200 m and in regions of infolded Ural at the depth of more than 300 m. Nature of distribution of these waters depends on litologic structure of water containing solids,

paleohydrogeological conditions of sedimentation and recent hydrogeological conditions of bedding of water containing solids.

Sulphatic calcium, sodium and calcium, calcium and sodium, magnesium-calcium and calcium and magnesium waters with a mineralization to 2-5 (to 15) g/dm3 are confined to the Kazan, Ufa and Kungur water bearing complexes of the Perm deposits. Chloride and sulfate and sulfate-chloride sodium, sodium and calcium calcium and sodium, magnesium-calcium and calcium and magnesium waters with a mineralization 2–10 (to 15) g/dm3 are confined to the Kazan and Ufa water bearing complexes of the Perm deposits.

The second type. Medical hydrogen-sulfide waters. Hydrogen-sulfide waters in connection with a volatility of their basic balneal active component – the water dissolved hydrogen sulfide can be used for treatment only at stationary health resorts. The low-mineralized sulfate-chloride and chloride and sulfate waters with a mineralization of 3-35 g/dm3 and hydrogen sulfide status of 30-300 mg/dm3 are confined to plaster and anhydrite deposits of the Ufa plateau, the Sylvinsky hollow, a southwest slope of Timan Ridge and front folds of Ural [9,10].

The third type. Medical iodo-bromine waters. Highly mineralized chloride and sodium brines with a mineralization of 260-280 g/dm3 have ubiquitous regional distribution on the platform part of the Perm region and lie at a depth of 1000-2000 m in a zone of a congestive water regime. In a vertical section of sedimentary solids it is possible to identify some levels of iodo-bromine waters. Balneal active components of waters are: iodine in number of 7-20 mg/dm3, bromine – 700-800 mg/dm3, ion-salt composition in solution.

The medical dirt included in balneal resources of the Perm region, along with mineral waters, also has very wide spread occurrence, but their study in comparison with mineral waters is even lower. Currently in the territory of the Perm region only one Suksunsky field is explored and operated, which fresh-water organic dirt is used for the medical purposes in CJSC "Klyuchi resort" and on sale to other regional health resorts [10]. The northern site of the first stage with the approved deposits of 33 thousand tons (cat. A+B+C1) is being developed, there are deposits of the Suksunsky pond in number of 2845 thousand tons (cat. A+B+C1) remain in undistributed reserves. There is dirt also in ponds and lakes of other territories of the region; however their structure and medical properties are not explored.

### Conclusions

Nowadays studying of existing hydromineral base of the region is carried out within

hydrogeological works on water abstractions of the distributed reserves. Studying of the perspective hydromineral base and other medical factors requires allocation of perspective resort and recreational zones attractive to investors for further development of the resort, therapeutic and medical balneal base. For this purpose it is necessary to combine efforts of all interested departments and private investors for medical dirt and mineral waters of the region to expand existing hydromineral base of the Perm region.

The Perm region has considerable natural and health-related potential which demands high-quality and quantitative studying for the purpose of further development of separate resort and recreational clusters for a specialized professional service of vacationers occupied with different types of recreation and tourism and increase of investment appeal of the region at large. Now the need of consideration of the program for development of resort and recreational activity in the Perm region has taken shape at regional level.

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