

**„RAILWAYS AND FORESTS OF HEALTH“ IN THE FUNCTION
OF THE DEVELOPMENT OF HEALTHCARE TOURISM IN
SERBIA**

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Abstract

The subject of research in this paper is the application of the hybrid model railways and forests of health (RFH) as a new healthcare and tourism offering by Serbia. The model is a combination of the Finnish health forests project and the U.S.A. project from railways to trails for recreation. The goal of the paper is to prove the initial hypothesis according to which this hybrid model could be successfully applied as a new attractive element of the healthcare and tourism offerings. Comparative method, case study method, and document content analysis method were used in the work. The research results showed that the RFH model is suitable to support development of healthcare tourism in Serbia: first, to activate unused resources; then, to contribute to the preservation of the environment, that is, to add to the sustainable development; finally, to prevent chronic diseases in the population and contribute to the rehabilitation of those already ill.

Key Words: healthcare tourism, economy, development, rails to trails, sport, environment

JEL classification: I15, O44, Q26

Introduction

The urban way of life has become so prevalent that it is increasingly separating man from nature, thus alienating us from our own biological being. On the other hand, the results of numerous scientific works consolidate the available evidence on the observed substantial connections between nature and man. At least three quarters of the human

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body is made up of water and minerals. Rivers and lakes live in us, and mountains lend us part of their essence. The similarity between the chemical composition of the Earth and man is striking. There is no doubt that modern society, through the cultivation of anthropocentrism and the glorification of materialism, has lost its balance with nature, and at times their relationship has been damaged to the extreme (poverty, wars, hunger, and others). Even today, one of the most important roles of sports - that it unites people and contributes to their health - is questioned. One of the ways to increase human well-being is to strengthen the connection between man and nature, which is generally important for modern society, for its politics, for its culture and its economy that preserves the natural environment. The „Railways and Forests of Health“ (RFH) model emerged during the recent research not only as a model for re-harmonizing the relationship between man and nature, but also as a good way of social integration and a more even economic development of the Republic of Serbia. This has a special significance for undeveloped, but very attractive areas of the country in terms of natural beauty. Among others, these are the wider belts of Užice and Čačak with an outstanding prospect for the expansion of already existing and the development of new attractive health and tourism capacities. The area also abounds with special accompanying contents, which certainly include the numerous monasteries of the Ovčar-Kablar gorge. Then, there is Ivanjica with Mount Golija, which was declared an ecological zone by UNESCO in 2001 as the first biosphere reserve in Serbia. If the mountains Javor and Mučanj are added - we get three connected mountain units for health trails, with the proximity of the Special Rehabilitation Hospital „Ivanjica“, which already has 270 beds. Other parts of Serbia are no less attractive.

„*Medicus curat, natura sanat*“. The healing power of nature has always been used by man: indigenous peoples of Latin America, Tibetan monks (meditation in nature) and many others. Also, modern medicine increasingly refers to nature as a source of concrete benefits for human health. Precisely from the perspective of the relationship between man and nature, this paper singles out the following as practical benefits of applying the „Railways and Forests of Health“ hybrid model: generally better physical and mental health of the population, preservation of the ecosystem and development of the economy through the development of recreational and health tourism facilities throughout Serbia. The model conceived in this way is a combination of positive experiences in other countries (primarily - Finland and the USA) with the possibilities of

application in Serbia. The health-tourism hybrid RFH model proposed in the paper, primarily for the territory of the Republic of Serbia, consists of two components: 1) the forest of health and 2) the railway of health, i.e. the concept of rails to trails. The offer of a hybrid model conceived in this way, as a segment of recreational and health tourism in Serbia, is based both on the existing infrastructure and on the new specialized centers for prevention and rehabilitation, which should supplement the existing offer.

The pedagogical dimension of the RFH model should be especially emphasized. Through the health-tourism activity that this model promotes highly moral human values are recognized (erasing artificial borders between people, respect for rules, peace, dialogue, solidarity, empathy, justice, friendship, preservation of the environment). In a time of general alienation, the model offers - a return to the harmonious relationship between man and nature, where both man and the environment would be in balance. If the so-called art of dialogue between people is extended to the art of dialogue between man and nature, the perspective of the Earth would be much more certain. Sociologist and philosopher Đuro Šušnjić (1997) emphasizes: „Dialogue is the return of people to themselves, to God, to nature, culture, and history: the only way to abolish the relationship of power and supremacy and the only way to the common life of all living beings” (p.62).

Physical activities and sports vs people's health

The deep crisis of morality and spirituality that the world has fallen into in the 21st century certainly has a negative impact on the health of the world's population, including Serbia. There is no doubt that physical activity improves people's health, but it is largely selective depending on their financial capabilities. In this sense, paths and health forests are an opportunity available to a wide range of people for the simplest physical activities and recreational sports. Graham Scambler, British professor of sociology, gave a typology of physical activities and sports classified according to the risk of injury, and on that scale, as expected, physical activity (jogging) is at the lowest risk of injury (Scambler, 2007). The collective values that sport promotes are obvious, as participation in recreation or sport is often sufficient to prevent disease.

His Holiness Russian Patriarch Kirill said at the session of the High Church Council on November 7, 2023: „For many, work activity is concentrated in front of the computer screen - I mean those who deal with

the modern means of production, science, education and so on. Our contemporaries, who move a little, in most cases, of course, are not lazy, but the lack of physical exercise also has psychological consequences, because the physical condition also affects spiritual elevation“ (SPC, 2023). There are numerous examples in the world that confirm that the neglect of movement, recreation, lack of physical exercise that lead to the closing of existing sports and recreational facilities, have long-term negative consequences on people's health. One of the examples that shows the very negative impact of reducing physical exercise on people's health is an unprecedented sale of school playgrounds that took place in Great Britain in the 1980s, because of purely business interests. This caused a drastic reduction in sports activities in schools. This whole process included the mandates of three different British prime ministers, first M. Thatcher (since 1982, about six thousand school playgrounds were sold). Additionally, obesity tripled in England in the period 1980-1998, mainly due to the reduction of 70% of physical activity in schools in the last generation (Sclamber, 2007). In Serbia, obesity is also becoming more and more pronounced, which entails not only health but also socio-economic consequences. The Serbian Association for the Study of Obesity (SASO) presents data that in Serbia in the last decade there has been a noticeable trend of increasing obesity as 54.7% of the population is overweight, and that every fifth resident is obese, which entails the risk of many diseases (SASO, 2020).

The importance of forests in health tourism

There is no doubt that by respecting biodiversity (algae, trees, all plant, and animal species) we contribute to our own health and survival on Earth. On the other hand, anthropocentrism and destructive political legacies are a reality all over the world. For example, the Amazon rainforest has been exposed to devastating deforestation for years, and this threatens many species that live in it, as well as the world's climate. It's also important to realize that 68% of the Amazon belongs to Brazil (Luković Jablanović, 2022, p. 221). The administration period of President Jair Bolsonaro 2019-2022 was disastrous for Amazon, when an extremely high level of deforestation was recorded. Experts specifically accuse him of „a 212% increase in land grabbing of indigenous peoples and protected areas, and a 125% increase in illegal mines in the Amazon” in the middle of the territory of the *Yanomami* Indigenous communities, which soon manifested itself in their health crisis (News Mongabay Com, 2023). Since 2023, the administration of President Lula da Silva has taken

an opposite position to the previous one regarding the Amazon, and of particular importance is the cancellation of the license issued during the Bolsonaro era for the BR-319 highway through the Amazon rainforest. The experts claim that the construction of it would have massively deforested Amazon (News Mongabay Com, 2023).

Forest therapy is an innovative branch of a holistic approach to health. The authors of the American research study „Key Characteristics of Forest Therapy Trails: A Guided, Integrative Approach” compare the experiences of expert guides through health trails with the literature on their design and construction, with the aim of finding the most peaceful, accessible, and well-constructed trail in the most beautiful natural environment (Gobster et al., 2023). They hope that this research will build a conceptual base for the identification of existing as well as the construction of future trails that will be able to satisfy all interested parties: landscape architecture engineers, tourism managers, guides, as well as participants themselves in the growing international trend of forest therapy. Already one decade in the US exist the Association of Nature and Forests Therapy, in frame of which forest therapy guides take training. Two criteria for assessing the quality of health forest trails are emphasized in the study: 1) Characteristics of nature in a given locality should emotionally bind the trail user: diversity of nature with some exceptional natural, cultural, or historical details; interaction with nature (identification and collection of medicinal plants for example) and environmental education of users; comfort, peace and security; availability of a larger settlement (transportation, clinic, food), parking, toilet and more. 2) Design and construction: suitability of the trail for walking only or more diverse use (cycling) and leveling according to the amount of walking effort (easy trail, medium, strenuous) or elevation (difference in altitude from the lowest to the highest point); safe access to nature (water, cliff, rainforest, flora, and fauna); trail marking (signs, symbols, maps). However, the study has no data on health effects. The same authors' analysis „Forest Therapy Trails: A Conceptual Framework and Scoping Review of Research” also draws a broader range of conclusions regarding human-forest interactions (Gobster et al., 2022). The first official forest therapy in practice began in the early 1980s, while 70% of the empirical literature became available almost two decades later. Today, the international practice of forest therapy is increasingly intensifying and improving. Additionally, in favor of the use of the RFH model is the research paper „How nature nurtures: Amygdala activity decreases as the result of a one-hour walk in nature”. The fact that city

life, as compared to the rural one, increases risk for a variety of mental disorders is well documented. The brain stress areas have been known to neurobiologists for a long time, but the precise fMRI measuring coupled by the stress tests have never been conducted before the Max Planck Institute research in 2022. The research question in his article was if there is a causal effect of natural and urban environments on amygdala as a major stress-related brain response. These findings show a significant decrease in amygdala activation after the walk in nature compared to the walk in an urban setting. This suggests an increase in well-being (salutogenic effect) and may be used as a preventive measure against mental strain in city-dwellers (Sudimac et al., 2022). There is no doubt that the very intensive use of forest and bicycle paths occurred during the Covid 19, because people were looking for what is a healthy and possible alternative to physical activity in such an emergency. The overall moral and spiritual crisis in which the world of the 21st century finds itself gives reason to suspect that similar situations of searching for „healthy exits“ will probably exist in the future, and that the importance of „health paths“ in the context of health tourism will gain importance.

Regarding data on the health effects of forest path therapy, in the mentioned American study none were to be found. Unlike the American study, in the study „Physical Activity in Forest and Psychological Health Benefits: A Field Experiment with Young Polish Adults“ by a group of Polish scientists, results (health benefit of forest) of a one-day field experiment are listed (Janeczko, et al., 2023). Specifically, 40 students were divided into 3 groups (cyclists, walkers, and forest observers) who first passed a pre-test of their health and were re-tested after individual activities in the forest to which the group members were exposed. The following results were obtained: members of all 3 groups had positive health consequences expressed through „an increase in positive and a decrease in negative feelings“ (Janeczko et al., 2023). Cyclists increased their physical vigor and decreased their level of depression. Passive observers reduced fatigue and increased concentration, while walkers had the most cumulative benefits manifested through reductions in fatigue, tension, anger, and depression, while their concentration and vigor increased. None of these groups of young people, however, showed the restorative effects of interacting with nature.² We believe this is because the experiment was

² Within the concept of the so-called „restorative effects“, scientists examine the influence of the natural environment (especially nature parks, forests, paths, etc.) on the improvement of human health (physical, psychological) and well-being.

lasting one day after all. However, overall, the between-group results showed no statistically significant differences between the restorative effects of walking, cycling, and viewing the forest landscape. Each analyzed form of contact with the forest has a regenerating effect and contributes to the increase in vitality (Janeczko et al., 2023).

Finland is a leader in implementing forest therapy. In 2021, for example, the Lahti region has hired a Planetary Health Physician to execute their Nature Step program by bringing together various medical, public health, and urban planning specialists. The hope is that this program will make a meaningful connection between the human health and natural environment around us (Revolve Media, 2022). An especially challenging initiative in Lahti was to preserve its natural surroundings and even dedicate a label of „untouchable“ to some forests which were departing very fast from their natural state. In the long run, this initiative hopes to determine the level of influence that a genuine nature has on the well-being of people. In 2021 Lahti won the European Green Capital Award. Its new health forest funded by the European Union will be a part of the GoGreenRoutes project. Although this forest is located within a local hospital, it will be open to all residents seeking health benefits by immersing themselves in nature. The essence of Nature Step program is that *„all population in Lahti can benefit from each other's knowledge and expertise to achieve better results in mitigating health issues, ecological problems and economic costs that originated from poor health. Currently, 95% of healthcare costs are spent managing diseases, but only 5% goes to disease prevention. We need to change that logic. It is there that nature comes into the picture“* - said Finland's first 'Planetary Health Physician', Dr. Hanna Haveri (Revolve Media, 2022). According to the report of the International Union of Forest Research Organizations since 2023, forests have immense potential to contribute to the all components of health and wellbeing of humans. This report consolidates available scientific fact on the connection between human health and forests (Konijnendijk, et al. eds., 2023).

From railways to paths of health

Railway traffic in Serbia began in 1884. Today, Serbia has a total length of 3,735 kilometers of normal gauge railways, with noticeable dilapidation of the infrastructure and obsolescence of wagons. On the

other hand, the concept of „green paths” is not recent, Europe and the world have been applying it for decades. It was created by repurposing former railways, but also railway station buildings (small hostels, restaurants, information booths) for tourist and recreational purposes. Among other things, they are used as paths for pedestrians, cyclists, horse trails, skiing and the like. Certain sections of the old railway lines have been restored for tourist trains. We should emulate the American Rails-to-Trails Conservancy (RTC) or so-called the „Great American“ project of 2019. It is an imposing undertaking, and great support to the use structure of former rail trails for healthcare tourism, sport and recreative activities. The trail going across 12 states, and its length is about 6,000 km. „RTC is the nation's largest trails organization - with a grassroots community more than 1 million strong - dedicated to connecting people and communities through a nationwide network of public trails, many from former rail lines” (Rails to Trails Org., 2023).

Figure 1: *The Economic Potential of Great American Rail to Trail in 2023*

THE ECONOMIC POTENTIAL:



Source: A Trail That Connects the Country, <https://www.railstotrails.org/site/greatamericanrailtrail>

The idea of the Green Path of Serbia was presented by the *Jugocycling campaign* at the Rivers and Industrial Heritage conference back in 2007 in Belgrade. In 2015, the association of cycling enthusiasts Jugocycling Campaign from Belgrade launched a traffic, environmental and tourism project - the possibility of transforming abandoned railways in Serbia into green paths (with the support of the Ministry of Construction, Transport, and Infrastructure). The idea of turning the well-preserved but abandoned railway route from Ruma to Vrdnik into a pedestrian and bicycle path was put forward. In the same year, in 2015, an expert conference was held at the University of Transportation in Belgrade, where the possibilities of transforming abandoned railway lines in Serbia into green bicycle and pedestrian paths and railway facilities (station buildings) into tourism, catering and cultural centers were discussed.

In February 2020, the Government of the Republic of Serbia made the Decision on the confiscation of the property in general use of part of the railway infrastructure - a track with a total length of 409.8 km with all associated facilities, plants, devices and the like in the function of railway traffic („Official Gazette of RS“, no. 9/2020). In March 2022, the dismantling of the Senta - Kanjiža railway (17 km) began, which had not functioned for almost half a century, since 1978 to be precise; also, the removal of the Petrovaradin - Beočin railway line (14.3 km) inactive since 2007 (a route along the banks of the Danube). In the previous decades, there were several unsuccessful attempts to solve the problem of old railways in Serbia. After the public sale procedure, the company „Railway Infrastructure of Serbia“ signed a contract with the company ZGOP from Novi Sad on the sale of rails, switches, switch parts and track accessories that would be obtained during the dismantling of 15 railways in Serbia as secondary raw materials. It was about 25,000 tons of secondary raw materials, from the sale of which „Infrastructure of Railways of Serbia“ generated income of about 302 million dinars (Ekapija, 2022).

It is a fact that the process of rail dismantling is controversial. On one hand, the company „Railroad infrastructure of Serbia“ stresses that *demolition and removal of the outdated railroad infrastructure will free about 590 hectares of the land in 26 municipalities across Serbia, which those municipalities could use as they see fit.* On the other hand, the views vary. Professor Gordan Stojić, for example, from the Department of transportation at the University for Technology, Novi Sad, holds that, *Serbia, which is just building its fast railroads will need a solid local railroads to support this new system (...) He is referring to only regional railroads which are aside of the main corridors, but still need to provide a key service to the economy and to the local citizens. He also claims that the high-quality analysis would prove their vital role and the importance for regional development.* (Euronews Serbia, 2022). The revitalization of abandoned railway corridors with acceptable financial investments turns them into green roads for different kinds of non-motorized traffic and activities. After the renovation, the station buildings „serve as catering, service and tourist points“ (Western Balkans Greenways Com., 2024). Rural and underdeveloped areas could be revitalized by the repurposing of the railway corridors. The model initially developed most in the countries of the European Mediterranean, Canada, and Israel, but it was also adopted by the Balkan countries, which are increasingly attractive destinations for active tourism (Jugo Cycling campaign, 2024).

It is necessary to emphasize that the planned bicycle paths and similar tourist projects on the routes of the former railways carry the risk of a „miracle effect“ on the projects of other countries without considering the specifics of the Serbian economy and the context in which it is currently located.

The question arises - why are abandoned old railway lines not restored in Serbia and returned to their original purpose? One of the main reasons is of an economic nature, i.e. unprofitability, because the need for this type of transport has drastically decreased compared to the previous century. The Šargan Eight is an exception because it is used as contemporary line since 2003. Only 15.5 km of the old railway that has been revitalized for tourist purposes. The other railway routes in Serbia (totaling about 1,300 kilometers) are mostly abandoned and unused. Serbia activated two greenways (Užice – Stapar approx. 9 km, and Priboj – Uvac approx. 5,5 km). The former railway line in the river Djetinja canyon (Užice district) took in 2017 the European Greenways Award „in the category of excellence, which positioned it in catalogs and maps of European greenways“ (Western Balkans Greenways Com., 2024).

In May 2022, the project *Promoting the network of green paths of the Western Balkans* was launched in Mostar, which transforms abandoned railway tracks into so-called „green paths“, intended for cyclists and pedestrians. Some of the main goals of forming a network of green paths are: defining sections that can be turned into paths for environmentally justified means of movement, preservation of the natural and historical values of the landscape, to preserve abandoned railway stations and railway infrastructure by putting them into different functions (tourist, catering), as valuable artefacts of architectural and industrial heritage, as well as to develop a local economy that would support the needs of sports-recreational and health tourism (Beta, 2023). The project holder is the Association of Cycling Enthusiasts from Belgrade - Jugo Cycling Campaign, and the partners are the Mountain Cycling Association - MTBA from Mostar and Nature Lovers from Nikšić.³ In 2023, the association of cycling enthusiasts - Jugocycling Campaign from Belgrade

³ The Western Europe and North America are places of mass usage of linear infrastructure of green roads, and a big part of them were originally abandoned railways. „Greenways (vias verde, greenways) are routes intended for non-motorized movements: pedestrians, cyclists, people with limited mobility, horse riders, skiers, rollerbladers“ (Daily European service, 2022).

received the award from the European Green Path Association (EGWA) in Rome for the conceptual solution of the transformation of the abandoned railway line from Belgrade to the Adriatic Sea. In this way, a 1,000 km pedestrian-cycling green path named „Điro di Ćiro“ would be created, which would pass through four states of the region, connecting dozens of cities (from Belgrade via UŹice, ViŹegrad, Sarajevo, Mostar, Dubrovnik to Herceg Novi and Zelenika), national parks, landscapes of exceptional characteristics, monuments under the protection of the UNESCO and passing through areas where several million people live. The project was financed by the EU and the Western Balkans Fund (Forbes, 2023).

Conclusion

The „railways and health forests“ project, in addition to the benefits for health tourism in Serbia, would generally contribute to better control over forest resources and forest conservation through the supporting infrastructure and logistics of the project itself. This project would, on the other hand, preserve and develop the natural environment, primarily forests, and also develop health tourism. When it comes to this segment, much more investment in disease prevention is implied, while at the same time health care costs that go to disease treatment would be reduced. Also, the formation of high-quality health-tourism institutions, is recognizable in content both in Serbia and abroad (such as, for example, the Special Hospital „Ćigota“ Zlatibor, which presents itself as a reference institution for diseases of the thyroid gland and metabolism in the wider region).

Wider application of the hybrid model of the RFH in the Serbian health tourism would generally have a positive effect on public health (additional mass involvement of the population in physical activities and recreation, disease prevention and treatment of those already ill). In addition to the expectation of positive economic results, health tourism in Serbia would improve its reputation in the country and in the world. On the other hand, the structure of the RFH model supports environmental protection, its projects are environmentally friendly. In addition to serving as recreation areas, forests and green areas contribute to mitigating climate change, purifying water, and air. At the same time, there is a great chance to strengthen policies, programs and activities that would establish more comprehensive conservation (including uncontrolled cutting of forests) and management of forests, then the control of zoonoses (the

causative agents which can become dangerous biological weapons), forest fires and others. The previous practice regarding the preservation and management of forests in Serbia has shown a lot of deficiencies. Then, the RFH model promotes the development of underdeveloped rural areas. Finally, it has a significant capacity to influence the strengthening of social and cultural ties between people. In short, the improvement of public health with the help of nature and the development of health tourism in Serbia.

The future of the „railway and forest of health” model as a specific tourist solution within what Serbia has to offer, would certainly benefit from the fact that in 2011, the Special Hospital „Merkur“ from Vrnjačka Banja founded the Cluster of medical and health tourism of Serbia (CMHT). One of the key topics of the Cluster's work is the accelerated introduction of modern health and tourism solutions in Serbia, through regional cooperation and European projects. Then, to make health tourism products in Serbia recognizable and competitive, tradition, the use of professional medical staff, the natural factor, and the specificity of the destination should be connected (CMHT, 2024). There is no doubt that nature, especially forests and green spaces, can contribute to people's mental, physical, and social health as shown in the results of the above listed Max Planck Institute research. Anthropocentrism certainly reflects man's relationship to forest. „Human health does not exist without forest health” - it is stated in the report titled „Forests and Trees for Human Health: Pathways, Impacts, Challenges and Response Options“, which summarized the results of the eighth Global scientific assessment undertaken within of Global Forest Expert Panels – GFEP (Konijnendijk, et al. eds., 2023). Finally, returning to nature and the forgotten dialogue between man and nature can help us arrive to better communication between people in the 21st century.

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