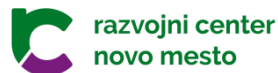


WPT2_D.T2.5.3

Report on environmental impact assessment
(testing of tool AT14)

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within the project CE1308 Healing Places - Enhancing environmental management capacities for sustainable use of the natural heritage of Central European spa towns and regions as the driver for local and regional development.

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1. Introduction

The project HealingPlaces – Enhancing environmental management capacities for sustainable use of the natural heritage of Central European SPA towns and regions as the driver for local and regional development is funded by the EU Interreg Central Europe program and running between April 2019 and March 2022. The project is coordinated by Central Mining Institute (Katowice, Poland) as a lead partner, together with 9 Central European partner institutions from Hungary, Austria, Croatia, Italy, Slovenia, and Czech Republic.

In this document, we are presenting the results of the tool, based on inputs for each SPA region (for Croatia, there are 6 SPAs included). Also, the interaction between the tool, developed under WP T1 and Pilot Action PA5 – *Eco-friendly SPA management in region and guidance for sustainable use of local thermal and mineral water groundwater sources*, will be determined. Under certain Pilot Action 5, PP6 need to develop two studies that are linked to development of the tool – Deliverable D.T2.5.4 – Environmental study “SPA center impact on local environment” and Deliverable D.T2.5.6 – Management plan of using mineral-thermal water resources in the City of Križevci in a sustainable and ecological way.

2. Description of PA5 pilot action

Pilot action for PP6 – City of Križevci together with AP Toplice Sveti Martin consists of several actions on both pilot sights – near geothermal source in the City of Križevci and also in Sveti Martin na Muri Municipality within Toplice (Terme) Sveti Martin Complex.

Križevci has an abandoned geothermal well close to the city center uphill nearby. The source has been explored throughout the years and has shown good balneological characteristics in 2009. by the Public Health Teaching Institute "Dr. Andrija Štampar“ Zagreb. For the Križevci pilot sight, a non-invasive research will be done by students of the respected Faculty with Geophysics subject so it could be a good opportunity for student’s practical work. It will be an assessment on Križevci thermal & mineral water in possibility of closing the loop of water flow in order to avoid depletion of resources. Guidance and information on this kind of resource protection will be provided & given to administration for better future planning and attraction of the investors. Another study and study visit will be done at second site – the AP Terme Sveti Martin SPA complex for its impact on the local environment. Study will determine if available techniques of research & monitoring are adequate in terms of protecting nature & groundwater flow in areas where boreholes are made.

Therefore, PP6’s key stakeholders and Regional working group consists not only of SPA and thermomineral waters experts, but also of SPA managers, governmental and administration officials, students of the respected Faculties – all important for the future sustainable



management of SPAs and thermomineral waters protection. Associated partner will also host an interesting conference regarding green business in SPA management and usage of the thermomineral sources in eco-friendly way.

Overall, three studies will be drafted within this Pilot Action and one ECO-SPA conference will be organized:

1. Documentation on the possibility to close the loop of water flow in Krizevci will be based on:
 - Geophysics research with non-invasive magnetotelluric method
 - Multidimensional study – circular way of using the existing geothermal water resource in order to avoid depletion of water
2. Environmental study „SPA center impact on local environment” in Terme Sveti Martin will be based on:
 - Study to determine if available techniques of research and monitoring used in Terme Sveti Martin are adequate in terms of protecting nature and groundwater flow in areas where boreholes are made
 - Study-visits and practical work for students
3. Management plan of using thermal-mineral water resources in City of Križevci in sustainable and ecological way will be based on:
 - Deliverable D.T2.5.1 (Documentation on the possibility to close the loop of water flow in Krizevci)
 - Environmental impact assessment (Deliverable D.T2.5.3)
4. Regional ECO-SPA conference will be based on:
 - Panel discussion
 - Presentations related to using resources of thermal and mineral water in ecological way and doing green business in SPA management.

2.1. Environmental impacts identified

Environmental protection, as an important parameter of the success of the spa and the associated municipality / city within the county, is presented in detail through Deliverable D.T1.1.2. and Deliverable D.T1.3.2

SPAs which environmental impact was identified were:

1. Sveti Martin Spa
2. Varaždinske toplice
3. Terme Jezerčica (Donja Stubica)
4. Stubičke toplice



5. Krapinske toplice and
6. Terme Tuhelj.

Identified environmental impact of 6 listed SPA were presented through SWOT analysis. Also, a detailed map of the protected areas in Croatia (especially Natura2000) and the location of each SPA were presented.

In most of the described communes, the existence of the spa along with the related infrastructure and rich resources of thermal and mineral waters is treated as one of the most important strengths of the commune. In addition, strengths include excellent geographic position, high air quality, rich cultural legacy, preserved landscape and biodiversity.

In the case of weaknesses of spa communes, in most cases there is underinvestment and poor condition of spa and tourist infrastructure, lack of funds for spa development as well as inadequate to the needs. Other weaknesses mentioned among spa municipalities are, among others: depopulation, poor condition of infrastructure (sewage system, electricity, natural gas, roads...).

The main development opportunities for the communes with health resorts included are further development of spa and tourist activities and an increase in investment outlays in this area, especially via EU funds. In some cases, the need to preserve the high quality of the natural environment is emphasized.

Among the most frequently mentioned threats related to spa activities in the described communes is competition from other domestic and foreign spas, as well as inadequate promotion of continental tourism over Adriatic coast. There is also concern about the possibility of loss of tourist potential, outflow of tourists, reduced interest in spa tourism or loss of spa status. There are also concerns related to the loss or threat to natural resources. Unfavourable legislative changes may also be a threat to spa municipalities.

3. Results of tool application

Based on tool developed under project activity A.T1.4, and after all inputs within the tool have been made, we were able to determine the risk every SPA has on the surrounding environment. One of the most important data for the calculation of the risk was depth to water table as well as the lithology of the ground above the water reservoir. Since there are 6 SPAs included in the HealingPlaces project in Croatia (as shown in the Figure 1), the table below shows the risk for individual SPA.

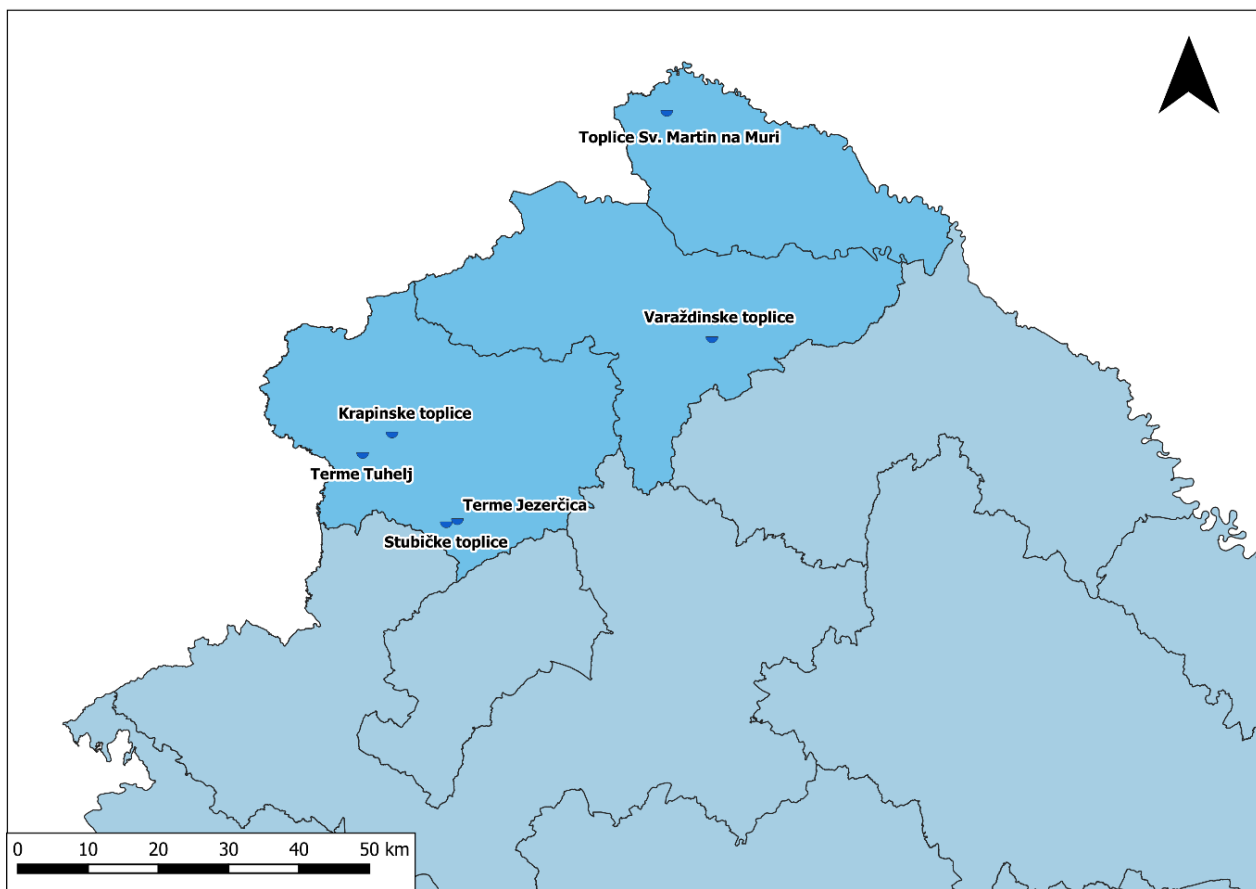


Figure 1 Location map of the SPAs covered by this project

Table 1 Risk of the SPAs in Croatia covered by this project

SPA	Risk
Donja Stubica	Low risk
Krapinske Toplice	Very high risk
Stubičke Toplice	High risk
Sveti Martin na Muri	High risk
Tuhelj	High risk
Varaždinske Toplice	Moderate risk



4. Sources:

- DT1.1.2. National report of comparison of the legal, environmental, socio-economic status of SPAs in Croatia
- DT1.4.1. Common methodology & ranking criteria for assessment of impact strength on natural resources in SPAs, Central Mining Institute, 2020
- DT1.5.3 National reports preparation regarding environmental & socio-economic impact of SPAs