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# Underground Built Heritage Valorisation A Handbook

Proceedings of the First Underground4value  
Training School



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## **A Handbook**

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*Edited by*

Giuseppe Pace and Renata Salvarani



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## CHAPTER 23

# Green Karst Region Between Natural Caves and the Alpine Wall Military Fortifications

*Luisa Errichiello*

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### 23.1. Introduction<sup>1</sup>

The STSM's goal was to assist the COST Action through an in-depth understanding of the UBH re-use and heritage-led regeneration processes undertaken in the Green Karst Region (Slovenia). The focus of the analysis was identified with the support of the host institution (the Regional Development Agency) and consisted of two different kinds of UBH: the natural caves, and the Alpine Wall military fortifications built by the Italian Army between the I and II World War and spread throughout the region. Each of these UBHs differs in their state of valorisation, number of visitors and management type. The field research provided the ground for an in depth understanding of the UBH preservation and promotion experiences in Postojna Caves and Križna Caves, looking at strategic, organisation and management issues, mainly about sustainable tourism [1] [2].

The field research would also aim at identifying expected or undertaken environmental, social, and economic impacts produced by those valorisation processes, and especially local communities and public institutions' roles. As for military remnants, the STSM goal was a better comprehension of the current challenges put by the re-use and valorisation of these UBH and the identification of potential paths of development.

Through a bottom-up process based on the involvement of the Regional Development Agency (RDA) and a dialogue with local actors, the planning and implementation of re-use and valorisation strategies of these remains were selected as suitable terrain to sustain the goals of the Cost Action through the experimentation of a Living lab approach [3] [4] and a process of incremental involvement of stakeholders, including the local community. In this respect, the STSM also aimed at opening a networking trajectory, fostering partnerships with local management frameworks, as well as stimulating interaction and partnerships among different local stakeholders, both public and private, encouraging the co-development of innovative solutions and supporting processes of local community co-evolution and co-creation [5].

The chapter is structured as follows. In paragraph 2 it provides an overview of the context of analysis, the Green Karst Region. Paragraph 3 describes the methodology. Paragraph 4 reports on the key findings about the process of conservation, re-use, and valorisation of the different sites under investigation. It also reports the results of a multi-stakeholder meeting that was locally taken during the STSM as first implementation step of a Living Lab approach that the COST action aimed at sustaining for collaborative decision-making and innovation development. The last section provides conclusions and includes future valorisation opportunities.

### 23.2. The context: Green Karst Region

“Green Karst” is the recent name used to repackage and promote Primorsko-Notranjska region, a Slovenian region between the Alps and the Adriatic Sea. Karst landscapes feature caves, underground streams, and sinkholes on the surface. Where erosion has worn away the land above ground, steep rocky cliffs become visible.

“Green” is evocative of the unique natural resources of the Region, although Slovenia is also famous in the world for its culture, customs, charming villages, and local products. Karst is a scarcely habited region. Statistics provided by the Regional Development Agency (2019) report a population of around 52,000 people in 2018. As for their level of education, 80.69% of the active population have completed secondary school or achieved a higher degree. Of the overall population, about 14700 are employees and most of them work in the service sector. In this respect it is worth highlighting that, after Slovenia’s independence, the economic structure of the country dramatically changed: the previously dominant secondary sector (including manufacturing, mining and construction) fell down to one-third (29.5%) and now only 33% of employees work in the primary sector (agriculture, hunting, forestry and fishing) [6].

Since the region is rather small also at Slovenian scale, there are two secondary schools (gymnasium, carpentry, economy, forestry, nursing, toolmaking) in the Green Karst region and three higher education programs (engineering, forestry and hunting, business secretary). Therefore, there are no education programs on tourism and urban planning, being both accessible either on the coast or in Ljubljana.

As for tourism development, the Green Karst destination has joined the general trend of increasing tourism travel of Slovenia, which belongs to the EU countries that has witnessed the greatest increase in tourism arrivals and overnight stays [6]. In detail, tourist flows have been in a steep rise for the past 5 years in the region. Number of visitors and overnights stays have grown 305% between 2015 and 2019. Moreover, although a steady increase of new arrivals and overnight stays was expected in the next few years, the Coronavirus pandemic has dramatically disrupted initial forecasts. As for composition, the majority of visitors are foreign guests (92%), while Slovenian travellers represent 8% of all the visitors in the area. The area also experiences a development of new tourist offers. From 2015 to 2019, 1,000 new beds have enriched the accommodation services of the destination, registering an increase of 150% (RDA, 2019).

The RDA Green Karst was the host institution during the STSM. Established in 2000 as a private company, it acts as a non-profit organization and functions as the regional development agency in the Primorsko-Notranjska region. Its shareholders include six municipalities (Pivka, Postojna, Cerknica, Loška Dolina, Bloke and Logatec) and five other local, regional, and national support and development institutions.

### 23.3. Methods

The research has an explorative nature and was carried on adopting a case study approach [7]. Data, mainly of qualitative nature, has been gathered through:

1. in-depth semi-structured interviews with local stakeholders
2. field inspections of different sites of UBH of the Green Karst Region
3. documentary analysis
4. non-participant observation during a formal meeting involving local stakeholders.

Formal interviews have been conducted with specific stakeholders involved, directly and indirectly, in the planning, development and management of the UBH sector in the Green Karst Region. A general interview protocol was developed to investigate: the state of conservation and valorisation of each UBH; the governance model and the organization of key activities (e.g. monitoring, marketing) and involved resources (i.e. financial, technical, human); trade-offs in terms of conservation and valorisation; economic, social and environmental impacts; relationships with relevant stakeholders (e.g. public institutions and the local community). In the first stage, stakeholders were identified through a snowball mapping method [8], starting from the information initially provided by the RDA. The list of questions was adapted before each interview based on the specific role of the stakeholder within the governance of each UBH.

Although the interviews were limited to few key stakeholders due to time limit, the snowball mapping was extended to each of them to identify new stakeholder categories and create a more comprehensive stakeholder map that would be valuable for future investigation<sup>2</sup>. Specifically, interviews involved:

- two employees at the host institution
- a representative of the Park of military history that manages the Caverns on Primož (hill above Pivka town)
- a representative of the Tourist Information Centre of Ilirska Bistrica town
- a representative of a local association that manages tourist visits to the roofless cave of Unška Koliševska and remains of military tunnels
- the leader of the association that manages Križne Cave.

Field visits to inspect and study the UBH scheduled by the host institution covered:

1. Križne Cave
2. Postojna Cave

3. (Military) caverns on Primož Hill
4. Military caverns on Milanja
5. Roofless cave of Unška Koliševska and remains of military caverns partially accessible today (Postojna).

Documentary analysis included among others: a) frameworks and regulatory documents about the conservation and monitoring of UBH under-investigation; b) reports and documents about the activities of some key organizations; c) data about the historical, economic, social and cultural context of the region, including tourism-related statistics and promotional material.



Figure 23.1: Interview to Bostjan Kurent, manager at the Park of Military History

During the STSM, a formal meeting focused on the potential trajectories for the re-use and valorisation of remains of the Alpine Wall fortifications was organised by the host institution and held at the Park of Military History (in Pivka). Several local stakeholders participated to it, achieving strategic decisions on the above issue, and setting up an action plan for next year.

Qualitative data were analysed through relying on thematic analysis and were applied to document material and interview transcripts [10]. Data were examined closely to identify relevant themes, common topics, and patterns. Although preconceived themes guided the elaboration of the interview protocol, deduction was combined with an inductive approach, to remain opened to new themes emerging from data.

## 23.4. Findings

### 23.4.1. *The conservation and valorisation of Postojna and Križne caves*

Postojna Cave and Križne Caves are part of the 21 Slovenian “show caves”, that is, caves that have been developed for visits by the public, usually with payment of

a fee [11]. For all cave systems, the process of valorisation can be considered in an advanced stage and the search for the right balance between conservation and tourist exploitation is at the centre of the debate.

The Postojna Cave system is the second-longest (24,340 m long; 115 m deep) known cave in Slovenia [12]. Part of Postojna Cave Park it is controlled and managed by the private company 'Postojnska Jama'<sup>3</sup>. The organisation received a concession from the State (owner of the cave) for managing tours and events in the cave. Indeed, the cave is managed by a public limited company, which is owned by Postojnska Jama (74,9%) and Postojna Municipality (25,1 %). However, a small amount of revenues is also assigned by the State to the municipality of Pivka, since the underground river Pivka created Postojna Cave.

Postojna cave management was expected to be a "best practice" in term of governance and management. Indeed, it is undeniable that the private management of that celebrate cave was successful in the re-establishment of a declining profitability and was able to attract an increasing number of tourists every year mainly through an effective marketing strategy. Today, Postojna cave is the main tourist attraction of Slovenia. Indeed, the number of visitors increased over years to almost 780,000



Figure 23.2: Gothic Column (left) and Diamond (right)

visitors in 2017. Up to 2018, the Postojna Cave System was visited by a total of more than 38 million visitors. However, from various interviews to local stakeholders, it early emerged that the governance model is not virtuous at all from the perspective of other key actors, notably the local community. Indeed, the cave basically works as a self-sustaining economic system within the region and the cave management has been showing an almost exclusive interest in increasing profits, with scant commitment in sustaining the economic growth of the area and no interest in a sustainable

tourism development through community engagement and collaboration with local stakeholders.

The revitalisation of the area is also prevented by the current ownership of the company, which controlled most complementary tourism services in the surroundings, including the parking lot, hotel Jama and a number of restaurants and tourism

businesses in the Park and Postojna town. To monitor the impact of tourism on the cave environment and to respond with appropriate (sustainable) measures, the cave is the subject of intensive climatic and speleo-biologic monitoring [13].

Although the “Slovenian Cave Protection Act” aims at regulating the utilization of caves for tourism to ensure a balance between preservation and tourism exploitation, numerous traces of its use as a show cave have remained in the cave. The consequences of the cave's daily use are also evident and continue to accumulate, reducing the value of the cave as a natural phenomenon [14]. The huge number of tourists visiting Postojna Cave combined with low effectiveness of monitoring activities from State representatives and inappropriate assessments of the impact of tourism exploitation constitute urgencies that should be addressed for sustainable cave use and future management plans since also its value as a tourist attraction could be affected in the long-term.

A quite different situation for the tourist can be found in Križna cave. The cave is particularly attractive for its underground lakes and coloured water pools and really offers an authentic experience to the visitors. The cave also shows some remains, such as bear bones, and it is second in the world in terms of variety of sub-



*Figure 23.3: A tour inside Križna cave with the Dr. Gašper Modic (manager of the Association of Križna Jama Lovers) and Dr. Dejan Iskra (RDA, host institution)*

terranean biodiversity. It is currently managed by the Association of Križna Jama Lovers, an NGO established in 1998, which currently counts 39 members, some acting as volunteers, others as workers. Compared to Postojna cave, its intensive development as an attraction cave began relatively late in 1950s, and the annual

number of visitors (an average of 4600 per year) is significantly lower than the number of Postojna cave's visitors (over 500,000 a year). In this respect, the distance of the cave from main traffic and tourism routes is the main reason for the still relatively low numbers of visitors.

The scant strategic importance attributed by the municipality of Cerknica to the cave have turned to limited financial, technical, and political support provided for dealing with issues, such as tourist accessibility, cave protection, and its valorisation for tourism purposes. The association constantly strives for a balance between heritage preservation and valorisation in the pursuit of sustainable tourism development and is highly committed to increase local awareness about natural resources importance and underground eco-system vulnerability. Therefore, the current management can be considered as a virtuous model of sustainable management since it is very attentive to the vulnerability of the cave and its cleaning and protection [15].

As a result, since the number of tourists is close to the limit that the natural environment can allow without damage, they would diversify activities, possibly by adding other caves to redirect visitors there and take other measures to protect the natural environment and cultural heritage of the cave. In this respect, one of the main challenges is professional cave guides' training and availability as an answer to the concern within the caving community about poor guiding practices in caves, which include lack of policy about caves and caving, cave conservation principles demonstrated and taught to participants and inadequate risk management and tour planning. As representative of the local community, the Association is also devoted to the education of the public and presentation of different issues, which are common in the karst area to schools, other institutions and to individuals. According to the Association's leader, the level of knowledge and concern about environmental issues is still low among local people. Working with schools through educational programs is crucial to boost cultural changes in future generations and raise the level of awareness about the impact of human activities on the natural ecosystems and the value of karst phenomena like caves.

#### **23.4.2. *The conservation, re-use, and valorisation of military remnants of the Alpine Wall fortifications***

In five of the six municipalities of the Primorsko-Notranjska region there are remains of the so-called Alpine wall, the eastern remains of the "Vallo Alpino" – an Italian system of fortifications along the 1.851 km of Italy's northern frontier. It was built in the years leading up to World War II as a defensive line facing France, Switzerland, Austria, and Yugoslavia. It was defended by an Italian special troops and was built with the scope of defending Italy from a potential Nazi invasion. All these tunnels are currently under the ownership of the State of Slovenia and strategic decisions about them depend on the Ministry of Defence.

However, almost all of them are today in a state of abandon since huge investments would be required to restore and preserve them from further deterioration and acts of vandalism already reported in the past.

During the STSM the caverns on Primož hill (above Pivka town), Milanja (above Ilirska Bistrica) and Unška koliševka were visited. By interviewing main actors involved or interested in the process of re-use and valorisation of the Alpine

Wall ruins, it was possible to shed light on the main challenges, risks and opportunities of undertaking it. A vast underground artillery fort at Primož was the command post of a group of forts around Pivka.

Today, the whole system is part of the public-owned Park of Military History - a local institution which obtained the status of a museum - and in recent years has started revitalisation of the underground complex. The museum received an authorization from the Ministry of Defence for the conservation of the fort and the management of tour visits. Quite recently, Alpine wall fortifications at Primož have been made partially accessible, reopened, integrated into the local tourist offer, and turned into tourist interest for visiting the Fort.



*Figure 23.4: Outside the Fort at Primož hill (Park of Military History)*

The museum offers a valuable insight into the rich Slovenian military-historical heritage and the collection of tanks, cannons and aircraft is complemented by several exhibitions. Nowadays, the former barracks headquarter building is serving a similar function again, with office spaces, a multimedia room, a museum shop, and a canteen that offers an army-like ambient and the food to match. Since its foundation, the museum has been developing to become the largest museum complex in Slovenia and over time new additions and new content have contributed to making it one of the largest and most visited museums in Slovenia. Regular museum offer was upgraded with interactive experiential packages built on outdoor adventure.



Figure 23.5: Inside the Fort at Primož hill (Park of Military History)



Figure 23.6: Inside the tunnels in Milanja (above Ilirska Bistrica)

The footpath leading on the Primož Hill along the museum complex was redevel-

oped through an EU-funded project. By attracting an increasing number of tourists, the Park has been able to sustain the rise of new tourism-related economic activities in Pivka Basin and Pivka river valley, notably accommodation and restaurant services. Though functioning as a tourism information centre in the town of Pivka, it also showed commitment to sustaining eco-tourism in the area, by enhancing the surrounding forests and meadows, promoting hiking, horse-riding, biking and experiencing natural resources and local products offered by tourist farms. Finally, in the last years, it also played a key role to increase the level of awareness of the local community, which initially was against the European funds' investment of the Park project. The visit to the Fort is part of a four-hour hiking circular trail organized by the Park connecting it to the museum and two villages. The underground artillery Primož hill Fort reveals still-preserved battle positions, weapons storage areas and living areas. It was opened to the public in 2017, after basic activities of cleaning, verification of structural stability and access security. In 2018, the overall number of visitors increased from 360 to 627, with a demand peak registered when the Park organised four-hour hiking circular trails. People can walk along the trail also on their own and they find both big and small information boards about the natural, cultural, and historical sights of the Pivka Basin. However, if they want to explore the interior of the Fort a booking for a guided tour is still required.



*Figure 23.7: The landscape around the caverns on Milanja (above Ilirska Bistrica)*

The situation is quite different for the other two kind of tunnels, i.e. the tunnels in Milanja (above Ilirska Bistrica) and the remains of military tunnels that lead to the roofless cave of Unška koliševka (in Planina, a fraction of Postojna). Today,

these tunnels, also owned by the Ministry of Defence, lay in a state of abandonment, and are exposed to acts of vandalism and natural ruin. Both are only partially accessible, also in relation to the level of water that makes



*Figure 23.8: Inside the remains of military tunnels that lead to the roofless cave of Unška koliševka. Together with Dunja Mahne (RDA, host institution)*

some parts completely flooded. Currently, anyone could explore their interiors freely and autonomously, on their own responsibility for the risks deriving from the lack of any monitoring activities (e.g. about structural stability) and security measures. Information about the tunnels in Milanja are provided upon request by the Tourist Information Centre of Ilirska Bistrica, although no printed promotional material exists, and no guided tours are currently organized in the tunnels for potentially attracted tourists.

The municipality of Ilirska Bistrica pointed at the main challenges for the re-use and valorisation of the tunnels, such as: the scant accessibility of the area; stay transit of tourists (two nights on average) in the area; the rural nature of the area and the prevalent naturalistic forms of tourism based on hiking, biking and walking excursions. Indeed, military heritage attracts only a specific group of people and its increasing interest among a larger audience is challenged; local people are scarcely aware of the historic and military heritage values of the area, also because a low level of knowledge about history and stories related to these constructions.



*Figure 23.9: The view on the roofless cave of Unška koliševka*

With regard to the second group of tunnels, in addition to self-guided visits, there are also guided tours organized by the association Društvo Dolomtna lutka, currently made of 15 volunteers who have been active for some years in research activities, conservation and promotion of natural resources, cultural heritage and sustainable tourism in the area of Notranjske. Volunteers are experienced in different fields, such as hunting, chanting, tourism (e.g. cave guiding) and education.

The association is still in an early stage of development and networking through partnership with local but also international stakeholders. Currently, the association leader, Matej Kržič is authorized to work as a guide in the tunnel and provides people of all the necessary equipment (e.g. boots and helmets with lights) and insurance covering potential accidents. A primary goal of the association is to grow awareness in the audience, including local community, about the value of the region's natural and cultural resources and the importance to develop tourism-related activities by preserving environment and the value of the above resources. The association intensively works with schools and is committed to research and activities, involving direct dialogue with locals with the aim to collect, preserve and spread about cultural heritage, including military heritage. The leader also emphasized how the process of re-use and valorisation of the and remnants of military tunnels puts additional challenge compared to the other kind of cavities, since the combination of natural and human-made heritage require a more complex path, e.g. in terms of authorizations.

### 23.4.3. *The first Living Lab meeting*

On November 28th, the Regional Development Agency organised the first Living Lab meeting, which took place nearby the park of Military History in Pivka. At the meeting participated twelve people from different organizations, including the Regional Development Agency, the municipality of Pivka, representatives of the Park of Military History, two local associations, the former director of Notranjska regional park and the director of a local TIC, sharing their ideas and taking decisions about the process of re-use and valorisation of the remnants of the Alpine wall fortifications.



*Figure 23.10: The first Living Lab meeting at the Park of Military History (Pivka)*

The meeting focused on both urgent issues to address and long-term planning for the future years' development. During the meeting, each stakeholder presented the situation and the main challenges for the re-use and valorisation of the bunker

remnants visited during the previous days respectively in the localities of Primož in Pivka, Milanja and Unška koliševka. During the presentations and following round table, several concerns and constraints were identified, along with potential opportunities and solutions of re-use and valorisation. Finally, an action plan specifying next steps to realise was jointly defined. A primary issue is the ownership of all the military bunkers and tunnels that, at today, belong to the Slovenian State and are under the responsibility of the Ministry of Defence.

Therefore, any plan of re-use and revitalisation would require interacting with this stakeholder and sign an agreement/authorization act. Other concerns include the following:

- at national level, there is still scarce attention for the protection of both natural and cultural heritage
- the external and internal physical accessibility to some remains of military underground structures is impeded because of natural phenomena (e.g. flooding), geographical position and structural features
- some military structures have been damaged by state organisations' negligence during the maintenance
- currently, there is little knowledge about the history of these underground military structures by locals who show scant/no interest in starting any plan of cleaning or revitalization of these structures as well as to make investments
- there is little interest from private initiatives to develop products regarding this kind of heritage
- there is a lack of staff specialised in this kind of heritage among those working in the Institute for Protection of Cultural Heritage.

During the meeting, some opportunities for re-use and valorisation of this UBH were also identified, notably:

- the inclusion of remains of military fortifications of the Alpine Wall within the tourist offers of the Park of Military History can be a good starting point to think about a broader and integrated strategy including also other underground structured spread across the Green Karst Region
- a project proposal in Horizon 2020 focused on the re-use and valorisation of UBH can be a relevant opportunity to finance the implementation of a structured plan for these underground military structures. One possibility of valorisation could be the digitalization of the UBH, which could be used as a part of Virtual Reality (VR) and Augmented Reality (AR) applications for visitors' experience
- complementary smaller kind of military remnants beyond large bunkers and tunnels could be considered for building exploration tourism packages that include the visit in small groups also of water reservoirs, barracks, roads, observation posts, etc.;
- an opportunity to acquire knowledge about military structures would be to get documentation or research publications from the Italian State Archive, in Rome

- it would be important to consider that only after that someone interested in starting the re-use and investing in these UBH to make profits it would make sense start procedures to include these UBH in the list of cultural heritage so that the Institute for protection of cultural heritage could start to take care, protect or manage the UBH
- as for potential re-use, beyond accommodation options, these UBH could be used for farming or local production (e.g. of cheese) combined to degustation activities
- the management of these renovated structures would necessarily require a person, or institution of private company interested. Otherwise, the process would remain at the level of preparing the paperwork/documentation and carrying on research activities regarding the history and localization of these military structures
- foreign investors could be interested in investments in the re-use and valorisation of these structures.

Finally, as for future steps, all participants agreed to:

- create a map of all underground military heritage, through their geographical localization (for example using the LIDAR technology)
- create a cadastre or register for all the identified underground military heritage
- use data and knowledge got through steps 1) and 2) prepare documents to use for starting a conversation with State representatives as owners of these structures in order to agree about the legalization of the activities of re-use and valorisation of military remains
- focus on the area of Green Karst as a pilot research and include locals and local institutions in carrying on all the previous activities to get best results.

### 23.5. Conclusions

The STSM demonstrated to be a key instrument within the COST Action CA18110 Underground Built Heritage (UBH) to assist the process of Community Valorisation through the UBH re-use and heritage-led regeneration process undergone in the Green Karst Region. This process necessarily required an assessment made by the researcher of the case study under investigation to identify bottlenecks, challenges and opportunities for re-use and valorisation.

The mission was also the occasion to boost a process of cultural change and encourage local actors to recognise the value of collaboration and adopting innovative methodologies, notably the Living Lab, to involve multiple stakeholders and the local community in processes of culture-led revitalization and development. In next year, research in collaboration with the host institution and local stakeholders could contribute to: 1) acquiring a more in-depth knowledge about the decision-making processes enacted by these actors through relying on a longitudinal case study approach; 2) supporting the implementation of the Living Lab methodology based on participative processes of idea generation and innovation development e.g. helping local actors to optimise the use of new tools based on principles of transition

management and strategic stakeholder dialogue; 3) participating in joint research projects to fund Living Lab activities.

In this respect, it is worth reporting that ISMed-CNR, in partnership with the Regional Development of the Green Karst region and the Anton Melik Geographical Institute of Slovenia, applied to the H2020 call “Topic Transformations 04-2019-2020”: Innovative approaches to urban and regional development through cultural tourism. The partnership submitted the proposal “VIRtual Technologies for toUrisM Sustainability in European Rural Areas – VIRTUS ERA 4.0” aimed at elaborating a technology-based cross-border collaborative model (e.g. also through VR and AR applications) able to support sustainable cultural tourism as a driver for the development of a common and shared European identity among rural areas.

In detail, starting from a community-based cultural tourism perspective and through a process of stakeholder engagement, the project goal is to identify, validate, test and share innovative multilevel and replicable strategies, including multilevel governance arrangements, investment and financial schemes, business models, experience-based services, along with boosting collaborative and user-based innovation, stimulating local rural communities to develop multi-functional, cost-effective and technology-based solutions for cultural heritage valorisation.

For Slovenia, the selected pilot area is the Green Karst Region and includes the remains of the Alpine wall fortifications. With specific regard to the military remnants, the project offers unique valorisation opportunities by exploiting the potential of virtual technologies, notably augmented, mixed, and virtual reality. In this respect, it is worth highlighting that many cultural heritage objects are not easily accessible and are in remote areas of the region. In addition, the existing remains contain fortification walls, caverns and the outside casemates and bunkers, while the aboveground structures were mostly destroyed. This means that AR, VR and mixed reality applications would allow to virtualize the caverns in a good preservation state and video-map life and activities, which took place there in the early 1930s. AR offers unique opportunity to virtualize and experience not only the historical remains, but also equipment ranged and stored in the fortifications, weapons places and the everyday life objects the solders used at that time.

The project should provide funding opportunities for the preparatory work, which comprises of research and cadastre preparation, a base for the subsequent development of technology-mediated experiences. As a result, these activities will allow to obtain both the content and legislative foundations to work on the creation and dissemination of the virtual experiences regarding the underground heritage. In terms of expected impacts, the Regional Development Agency underlined the opportunity for the locals to acquire deeper knowledge about the underground military heritage spread throughout the area and the identification of potential business opportunities for sustainable tourism. At the same time, the new technology-based services and experiences will be a strong pull factor for visitors from foreign and domestic markets and will be a generator of promotional campaigns, strengthening the competitive position of the area as a cultural and historical destination.

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## NOTES

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<sup>1</sup> The chapter resumes the results of the Short Term Scientific Mission (STSM) carried out by the author between 16th and 29th November 2019 in the Green Karst Region (Slovenia), coherently to the goals stated by the COST Action 18110 - Underground Built Heritage as catalyser for Community Valorisation. Author's information: Luisa Errichiello, Via Guglielmo Sanfelice, n. 8, Naples, Italy. Email: [luisa.errichiello@ismed.cnr.it](mailto:luisa.errichiello@ismed.cnr.it)

<sup>2</sup> See [9], in this Handbook.

<sup>3</sup> For more information, visit the website of Postoja Cave Park at: <https://www.postojnska-jama.eu/en/>



## **HERITAGE AND COMMUNITY IDENTITY, 1**

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### **Underground Built Heritage Valorisation: A Handbook**

Why to publish a handbook focused on Underground Built Heritage valorisation? Why is important to transform tangible and intangible components of underground spaces into active values for local communities? Can researchers, professionals and decision-makers work together to devise a common perspective of innovation? These pages aim at providing a first set of answers, with backgrounds, research's results, and elements for an operative framework. All different contributions are results from the First Training School organised in the framework of the COST Action CA18110, Underground4Value.

The action aimed to put together experts, practitioners, and local officers, for experimenting shared approaches and making Underground Built Heritage sites as fulcrum of activities involving the whole society. To that scope, theoretical and methodological chapters deal with the issues of defining instruments for management, evaluation and decision making processes, and stimulating local communities engagement and empowerment.

Four case studies are presented, by general overviews and reports from scientific missions. Finally, trainees research groups described their views and ideas for the case studies' valorisation.

The authors come from several different European and neighbour countries and bring various disciplinary competences and professional experiences. The handbook will be updated annually with new case studies and new theoretical chapters.



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