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OPPORTUNITIES AND CHALLENGES WITH THE PROTECTION OF ANCIENT MINING SITES IN MOUNTAIN LANDSCAPES: A CASE STUDY OF THE KOPAONIK

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Abstract

The remains of ancient mining activities represent a significant part of Serbia's archaeological sites in the mountain landscapes, which are not yet officially treated as cultural heritage. This type of assets poses a significant challenge for cultural heritage protection services, as it requires co-operation between experts for the protection of natural and cultural values and other stakeholders, which is not yet established. In addition, the concept of mining landscapes is not recognized in current legislation, which further complicates the legal protection of the remains of ancient mines, which are recognized by scholars as an essential segment in the interpretation of historical processes of significance, such as Roman imperialism in the Balkans. Against this background, the paper presents the decades of archaeological research at Kopaonik, which has led, among other aspects, to an attempt to establish a uniform practice of treating ancient mines, together with settlements and associated infrastructure, as an integral part of the mountain landscape, despite the absence of any legal regulation. The study examines the challenges associated with the formal-legal preservation of sites with historic mining, taking into account the possibility of permanent destruction. Finally, an outlook is given on the future of the protection of (pre)historic mines in Serbia as an important element of the country's geocultural resources.

Key words: *Kopaonik, antiquity, mining, geocultural heritage, legal regulations*.

1. Introduction

Archaeological sites with remains of ancient mining activities represent challenging heritage because they typically occupy large areas, are often located in remote and difficult-to-access locations, and almost always require extensive work for research, presentation, and maintenance [1]. The early twentieth century was notable as the beginning of the initial promotion of sites with mining and metallurgical heritage as a novelty in cultural heritage protection practices of developed European countries. That was mainly contributed to the development of industrial archaeology in the second half of the 20th century, which brought this type of site into focus for research and presentation. Such a situation is most prevalent among countries rich in ancient mining and metallurgical sites, such as Spain, Portugal, France, and others. The preservation of this type of site focuses primarily on recognizing mines as industrial complexes that document technical and technological advances during a given period or continuum. The presentation often focuses on touring parts of mining facilities that are supposed to depict aspects of ore extraction and mineral processing. In this approach, there is a complete abstraction from the social and physical involvement of the people who lived and worked in these mines [1]. That often happens because archaeologists interpret elements of mining as part of technological progress and development, either in a specific community, region, country, or even humanity. A socially focused interpretation can counteract such a positivist approach by depicting mining and metallurgical relics as part of a specific mining community's experience. However, these initiatives are often dismissed as problematic and ineffective [1, 2]. Consistent with that, archaeological studies of mining sites primarily track technological processes [1], both internationally and locally. However, how study results are understood and communicated to the general public is critical to safeguarding the mining legacy. Indeed, this type of heritage cannot be attributed solely to historical and architectural values; it may also reflect the political

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or ideological background of the historical period in which it originated [3]. The mine workings also contribute to the constitution of a broad complex of cultural landscape characteristics significantly transformed by human activities [4], known as a *mining landscape* [5]. The extraction of mineral resources at a particular place is also associated with a certain lifestyle and the emergence of a particular social and cultural environment [6]. After the cessation of mining activities, the question arises of how to deal with the remaining sites with their various characteristics and phenomena, which at this point become part of the natural and cultural heritage. Furthermore, mining and metallurgy continue to be vital sectors of the modern economy. On the other hand, the material remains of older mining activities (such as shafts, underground tunnels, adits, spoil heaps, open pits, and others) are considered unsightly landscape features, and there have been attempts in the past to remove these traces. However, in recent decades, the attitude towards these material remains (that have persisted to this day and preserved cultural values) has changed, leading to their candidacy for protection as a geocultural heritage. The low attractiveness of mining objects resulting from different standards of aesthetics is another factor one must not neglect [7]. Additionally, the relationship between heritage protection services established by the government, modern geologists and miners, local communities, and other stakeholders in the heritage safeguarding process is an important issue deserving separate consideration.

Since the founding of Serbia's Cultural Heritage Protection Offices, the remains of ancient mining operations are yet to be dealt with as cultural heritage. Although the scientific interpretation of past societies, from prehistory to the present, has recognized the importance of ancient mining, systematic archaeological investigations of mines, which would follow the achievements of historiographers, have yet to be undertaken. Nonetheless, an isolated example of systematic research at the archaeological site of Rudna Glava near Majdanpek, done between 1968 and 1989, discovered the world's earliest dated copper mine to date [8]. This sensational discovery followed the excavation of artefacts of early copper metallurgy from the Neolithic period, i.e. the Vinča culture dated between c. 5400 and 4400 BC. In addition to the first known processing of copper metal from the Vinča culture site of Belovode [9, 10] the metalsmiths at the time also produced the earliest known tin bronze and lead [11, 12]. The mine of Rudna Glava appeared to have been used infrequently in the Late Eneolithic and during the Late Roman period (4th-5th centuries AD) [8, 13]. Despite the scientific interpretation of the first mining and metallurgy, it undoubtedly affected a complete shift in the understanding of the Neolithic period and, by extension, the history of civilization; the physical and legal protection and exhibit of these sites were never implemented [8]. After almost twenty years since its great discovery, Rudna Glava was placed under state protection in 1981 as an immovable cultural property - an archaeological site ("The Official Gazette of the municipalities of Boljevac, Bor, Zaječar, Kladovo, Knjaževac, Majdanpek, Negotin, and Sokobanja" No. 10 dated July 25, 1981) of outstanding importance to the Republic of Serbia ("The Official Gazette of the Socialist Republic of Serbia" No. 28/83).

Despite the comprehensive legal protection, stakeholders have yet to make additional efforts to showcase Rudna Glava as an integral part of our cultural heritage. Even though Serbian archaeology produced evidence of the earliest prehistory mining, further archaeological excavation of mining sites began at the beginning of the last decade. During this period, the Prljuša-Mali Šturac mines on Rudnik Mountain and Jarmovac near Priboj, dated in later phases of prehistory, started to be excavated.

Archaeological research represents the sole source of information for prehistoric studies. For antiquity and the Middle Ages, a dozen written sources convey significant data regarding the mining activities in our regions. Although historical mines have never been directly examined, the outcomes of mining settlements and associated infrastructure excavations have validated and indirectly enriched our understanding of the subject.

In the past decade, there have been thematic archaeological investigations of ancient mines, and there has also been a slight shift in their protection and presentation. The subsequent text presents the author's decade-long engagement in studying and attempting to protect the geoarchaeological remains, exemplified by the mountain of Kopaonik.

It is accompanied by an introduction of the broader context of the Roman organization of provincial mining in the Central Balkans, aiming to provide a comprehensive understanding of the significance of this heritage for the interpretation of ancient history related to the Roman province of Upper Moesia, or the Central Balkans region.

2. Roman Mining at Kopaonik

When examining the ancient topography of the Central Balkans, it is clear that mining sites have concentrated in mountainous areas such as Mount Kopaonik, Avala, Kosmaj, Stara Planina, and other mountains. The accompanying urban and rural structures developed around these areas, forming the imperial mining domains (Figure 1). Detailed information about the administrative organization and functioning of such territories can be obtained from the text of the mining law Lex metallis dicta, inscribed on a bronze tablet during the reign of Hadrian, found in the imperial silver and copper mine of Vipasca (Aljustrel, Portugal) [14]. Numerous archaeological excavations have been conducted in the Republic of Serbia since the mid-20th century, uncovering material remains of this process throughout the province of Upper Moesia. As a result, a meaningful number of sites where mining and metallurgical activities took place during the Roman period are known to archaeologists. Some sites have been partly preserved and presented to the general public, such as Timacum Minus, Ulpiana, Remesiana, Municipium DD, Kraku Lu Jordan, and others. These sites have been recognized as urban, defensive, or administrative features in the mountainous landscape, containing functional structures related to mining and metallurgical activities. However, the remains of ancient shafts, open pits, underground galleries and tunnels, other mining structures, as well as numerous smelting sites with furnaces and slags have received no cultural heritage protection, either as part of the landscape surrounding the ancient mining settlements or as separate cultural assets. The only exception refers to Mount Kopaonik and the Zaječak site, where the remains of metallurgy from the 3rd and 4th centuries have been discovered (Figure 2). The site has been recognized as a bearer of cultural values and is protected as an immovable cultural property - an archaeological site ("The Official Gazette of the Republic of Serbia" No. 2/2003). While legally protected, this property has never been preserved nor presented to the general public.

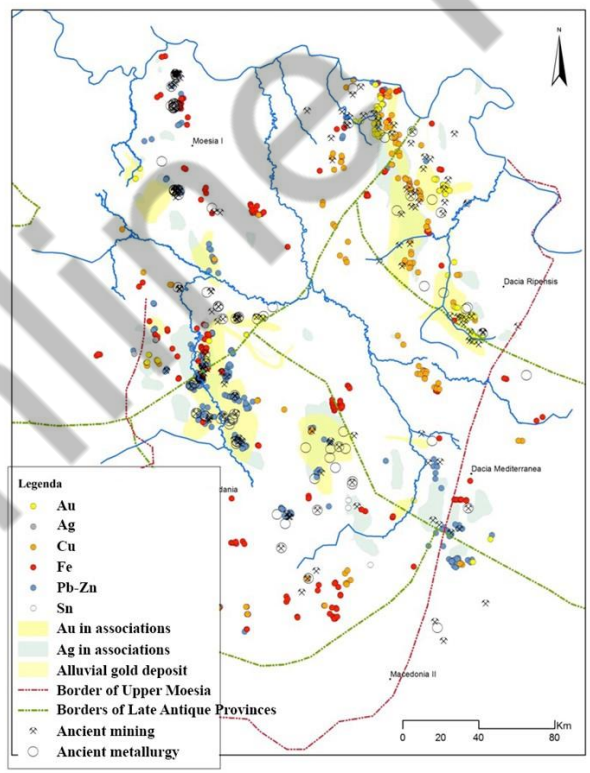

Figure 1 The mineral potential of the Central Balkans with mining and metallurgical sites of the antique period [15]

Figure 2 The remains of metallurgical furnaces at the Zaječak site in Kremići, Kopaonik (Archive of the National Museum in Kraljevo)

The existing archaeological research on ancient sites in Kopaonik undoubtedly testifies to the inseparable connection between cultural heritage and the mineral wealth of this mountain. As ore partly dictated the political strategy of the Roman Empire, Kopaonik (as a significant Dardanian mining district) became part of the imperial domain Metalla Dardanica within Upper Moesia province. The products from these provincial mines (lead ingots) were encountered throughout the whole Empire, from the Tiber in the west [16, 17] to Caesarea Maritima in the east [18]. In addition to the discovery of lead ingots with inscriptions about the metal's origin, lead isotope analyses have recently been conducted, confirming the use of metals from the Kopaonik region, primarily from the area of Novo Brdo, for the construction of the fort and, lately, the town of Novae in the province of Moesia Inferior (Northern Bulgaria) in the 2nd-3rd centuries [19]. Although mining was extensive across the mountains of Kopaonik during Roman times, the following evidence will focus on the area of the Suvo Rudište mine with remains of metallurgy at Metodje, Trsove Bare, and Zajačak, as well as the archaeological site of Nebeske Stolice.

The geoarchaeological complex of Suvo rudište, located in the flat part of Kopaonik below the Pančić Peak, is the largest area containing the remains of mining on the territory (Figure 3). This location is part of the Belo Brdo mine, situated on the administrative boundary between the Autonomous Province of Kosovo with Metohija and Serbia. The recent mine's main shaft lies near Leposavić, and ore was mined underground in the municipalities of Raška and Brus. In this mine, magnetite was actively exploited until the 20th century, leading to the destruction of older remains of iron and copper ore exploitation. However, archaeologists have discovered traces of earlier mine workings across the entire mining zone. To the east and southeast of Suvo rudište lies a broad ore-rich area covered with several ancient workings (mainly small pits), grouped around Caričina Strana, Vojetina, Kamenica, Belo Brdo, Marušići, and Zaplanina. On Caričina Strana, a series of pits continue northeast for several hundred meters, while in Marušići, they occupy few hectares. At a slightly lower elevation, in the area of the National Park, within the territory of the village of Šipačina, lies the metallurgical site of Trsove bare.

Figure 3 The remains of former mining activities at the Suvo rudište site at Kopaonik

During a recent field survey, we found several smelting furnaces and some artefacts from the 3rd and 4th centuries. We have identified this site as an archaeometallurgical complex similar to Zajačak. Further, a part of a well-known hiking trail that leads to the sanctuary in the rock dedicated to St. Methodius is an archaeological site of Metodje (Figure 4).

Figure 4 The ancient mining shaft (after archaeological excavation) in the hiking trail at the Metodje site at Kopaonik

In August 2022, the first thematic archaeological excavation was conducted at Metodje under the leadership of the author of the paper on behalf of the Institute for the Protection of Cultural Heritage in Kraljevo, financed by the Ministry of Culture of the Republic of Serbia. The research has shown the existence of mining shafts and roads with preserved wooden structures, a metallurgical furnace, and areas for the purification and smelting of ore. Unfortunately, temporally sensitive archaeological material was not found, so the site is dated approximately to antiquity or the Middle Ages.

This brief overview of historic mining and metallurgical activity at Kopaonik was provided to illustrate the geocultural space, where all accompanied ancient settlements are located on flattened river terraces at the foot of the mountain (Figure 5).

The only architectural structure found within the Suvo rudište area is the remains of an Early Christian church at Nebeske Stolice, which represents the most recognizable part of the cultural heritage of the mountain (Figures 5. and 6). St. Procopius is remembered not just as a great martyr who suffered under the reign of Diocletian but also as a protector of miners, even though the buildings were buried centuries ago. The Institute for the Protection of Cultural Heritage in Kraljevo conducted a detailed exploration of this site during several campaigns from 1998 to 2010. The results of these investigations have confirmed the belief that the church preserves the remains of a sacred building from the 5th-6th century and a late Roman (military?) structure from the 3rd-4th century period. The fragments of frescoes that were discovered in the debris layer and polychrome mosaics on the floor testify to the past representativeness of the Early Christian church preserved only in the foundational zone and the lower level of the walls (Figure 7). The mosaic was crafted using the opus tessellatum technique and composed of panels depicting geometric and zoomorphic motifs. Fragments of window glass were discovered on the mosaic floor, indicating that light formerly reached the building's interiority, playing a specific role in the entire experience of the sacred in Christianity. At Nebeske Stolice, every liturgical detail was meticulously attended to, as evidenced by the perforated cross once belonging to the polyeleos. Archaeological excavations at this site have also uncovered an earlier phase of life, manifested in a late antique structure where coins of Roman emperors from the 3rd and 4th centuries were found, along with fragments of ceramic and military equipment, glass vessels, jewelry, tools, slags, and other artefacts [20]. According to the archaeological findings, the older architectural structure operated as a small military point within the mining district. The site is surrounded by many small mining pits, concentrating in significant numbers southeast of the site [15], which spread further into the whole area of Suvo Rudište.

This topographic representation of ancient Kopaonik (Figure 6) is a chronologically unique, functioning microcell within the mountain landscape. Skipping any element threatens the interpretation of Roman provincial history, affecting the imperial domain *Metalla Dardanica* and the entire province of Upper Moesia. To identify places with legacy value, we examine them against specific criteria to discover potential heritage assets. The valorization of material remains must enhance the understanding of cultural properties to secure formal legal protection for specific places within the historic mining landscape. Furthermore, it is necessary to create presentation models with long-term contexts to ensure this property's preservation and maintenance.

3. The Current Practice in Protecting the Mining Heritage and New Challenges

The realm of cultural heritage protection, with established services within a state, constitutes, both technically and symbolically, an entity responsible for preserving all material and immaterial traces of the past, indirectly safeguarding the uniqueness of tradition and the recognisability of the cultural identity of peoples and spaces across every segment of history. The outcomes of the valorization process, the establishment of formal legal protection, and the presentation of cultural heritage should depict the past in its diverse spectrum and highlight each of its segments. This process largely depends on the degree of academic focus on specific archaeological phenomena and interpretations of historical currents, often resulting in an unrealistic depiction. The value of Serbia's antique cultural legacy reflects this situation thoroughly.

The importance of the Central Balkans *Res Metallica* for the economy of the Roman Empire, as well as the fact that mining constituted the backbone of the Upper Moesia economy, was first emphasized by S. Dušanić in numerous works dedicated to this topic [21]. However, archaeological research has not adequately followed the findings of historians on this topic. The materialization of the remains of these processes has remained untreated by the heritage protection services.

In addition to the lack of archaeological research on sites with mining content, there is also a lack of valorization regarding natural and cultural values [22]. These are essential material remains with multiple values that are not listed as immovable cultural or natural heritage. The reason for this lies in the fact that mining sites are attributed to geoheritage by their nature, and in terms of protection, the fact that a mine becomes cultural heritage at the time of ore exploitation is neglected, leading to an intertwining of two approaches to security - nature and culture.

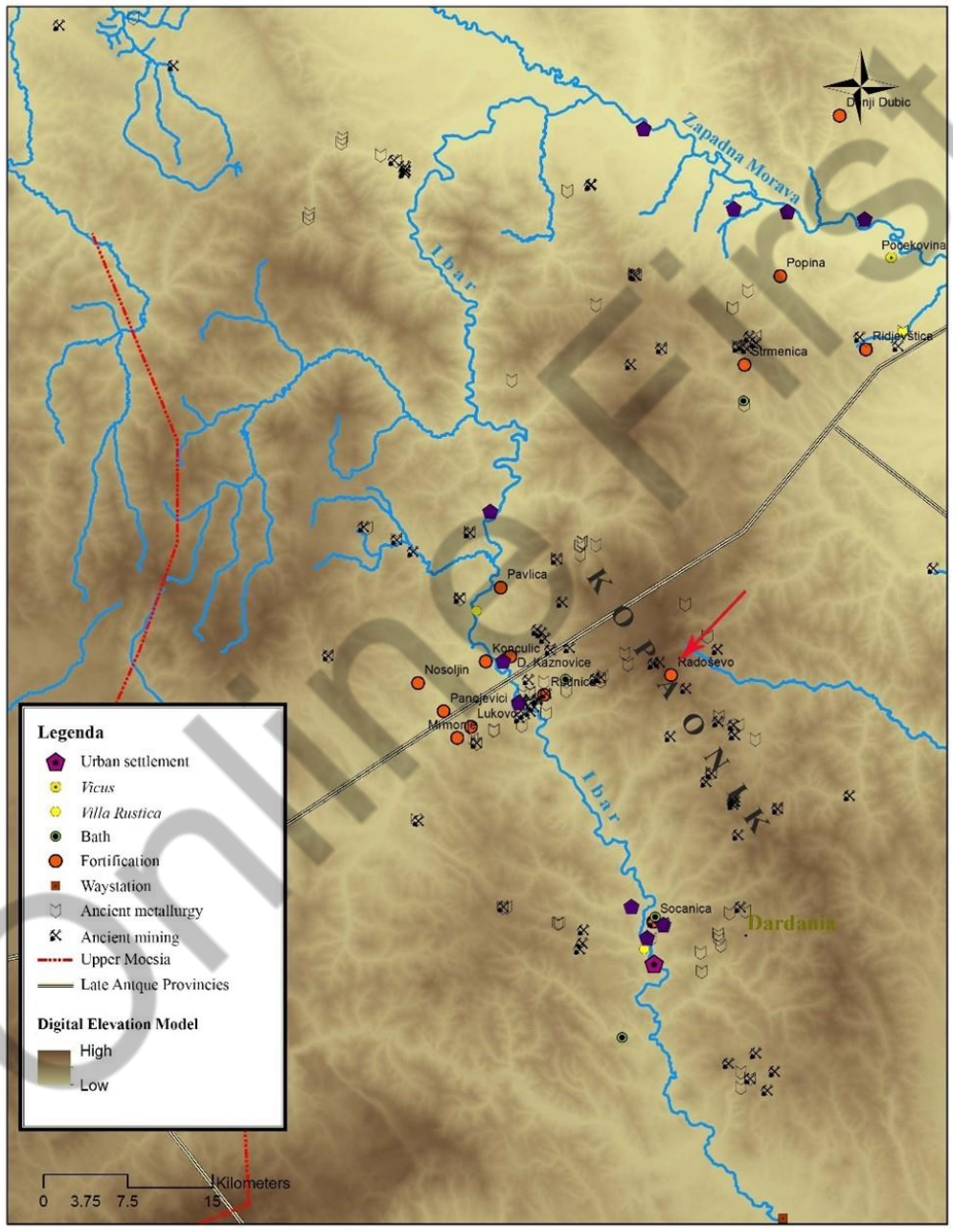

Figure 5 The Roman period sites across the broader area of Kopaonik and the position of the Nebeske Stolice

Figure 6 The location of the Nebeske Stolice site at Kopaonik (Photo by D. Anđelković)

Figure 7 The remains of the floor mosaic of the early Christian church at the Nebeske Stolice site at Kopaonik (Archive of the Institute for the Protection of Cultural Heritage in Kraljevo)

The recognition of the significance of mining and metallurgical remains in cultural heritage protection begins with the UNESCO *Recommendation concerning the Preservation of Cultural Heritage* of 1976. Article 3 of this recommendation states that *the cultural or natural heritage should be considered in its entirety as a homogeneous whole, comprising not only works of great intrinsic value but also more modest items that have, with the passage of time, acquired cultural or natural value* [23]. This is followed by the *European Landscape Convention* adopted in Florence in 2000, and ratified by Serbia in 2011. After establishing the acts mentioned above, there is a gradual shift in the treatment of sites with remains of mining activities as they are first incorporated into spatial planning documents. However, they never acquire the status of cultural assets. That is due to a need for more support within the domestic legal framework, namely, a lack of harmonization among legal acts. In December 2017, the Ministry of Environmental Protection adopted the *Regulation on Criteria for the Identification of Landscapes and the Assessment of their Significant and Characteristic Features* ("The Official Gazette of RS", No. 119, dated December 29, 2017). As the main criteria for identifying landscapes, Article 3 of this Regulation defines *Cultural characteristics* as the spatial representation of cultural heritage, which includes changes in the environment caused by human interaction with space over time, forming a unity with the works created and traditions inherited from past values, and including immovable, movable, and intangible cultural heritage. At the same time, the Law on Cultural Properties ("The Official Gazette of RS", No. 71/49, 52/2011 – other laws, 99/2011 – other laws, and 6/2020 – other laws) does not recognize the concept of cultural landscape. Furthermore, the absence of archaeological research on ancient mines also diminishes the possibility of valorizing material remains, leaving these sites still under the protection afforded by existing legislation.

The issues addressed in this work stem directly from the conservation service's everyday practices. While preparing the documentation for the designation of the site of Nebeske Stolice on Mount Kopaonik, a series of technical and administrative obstacles have arisen related to establishing a protected area around the site and acquiring official documentation for that area. As mentioned earlier in the text, the architectural remains of an early Christian church from the 5th to 6th century and the military facility from the 3rd to 4th century are located high in the mountainous landscape of Kopaonik within the Suvo Rudište mining area (Figure 6). It is a unique mountainous mining landscape that cannot be treated as a landscape in legal protection because the current Law on Cultural Properties does not recognize that category. Instead, the site is defined as an archaeological site with protected surroundings. Therefore, the site of Nebeske Stolice is located directly below the Pančić Peak, at an altitude of 1800 meters.

It is the only example of a systematically researched site on Kopaonik and possesses complete, legally prescribed archaeological documentation. All immovable architectural remains are located on a single parcel within the cadastral municipality of Ravnište (the city of Brus), adjacent to the administrative border with the Autonomous Province of Kosovo and Metohija. The landscape to which the site belongs spatially and functionally is the mountainous mining district of Suvo Rudište. Within this district, numerous remains of ancient mining activities from various periods are evident in the terrain (Figure 8.).

Figure 8 The remains of ancient mine workings near the site of the Nebeske Stolice at Kopaonik

However, an archaeological investigation is yet to be conducted, which makes it problematic to attribute a chronological structure to these remains. In any case, they all belong to the same landscape, spanning two modern administrative units. This situation represents a specificity of this site due to the current political reality, which has resulted in a dual administrative arrangement of the authorities in Kosovo and Metohija.

The official stance of the Republic of Serbia is that Kosovo and Metohija remain an integral part of the state; thus, from that perspective, the site does not have a cross-border character. On the other hand, the relevant Institute for the Protection of Cultural Heritage in Priština, currently situated in Leposavić has recently not been engaged in preparing immediate surroundings to be declared a cultural asset due to the province's unstable political situation.

Preparing a proposal to designate only the area belonging to the municipality of Brus territory as a cultural property, for which cadastral data are available (Figure 9), appears to be an inadequately defined situation. After considering the site's immediate surroundings, we have concluded that it is necessary to include at least the entire plateau where the architectural structures are and nearby remains of small pits preliminarily identified as antique.

The part of the plateau and the whole mining site are spatially/cadastrally located within the province's territory and belong to a vast parcel for which, due to technical reasons, a cadastral plan cannot be obtained from the cadaster office in Leposavić. So, the case has reached a dead end, even without considering the further issues of other mining and metallurgical locations at Kopaonik that deserve to be declared as cultural heritage, which also occupy their place in the same landscape.

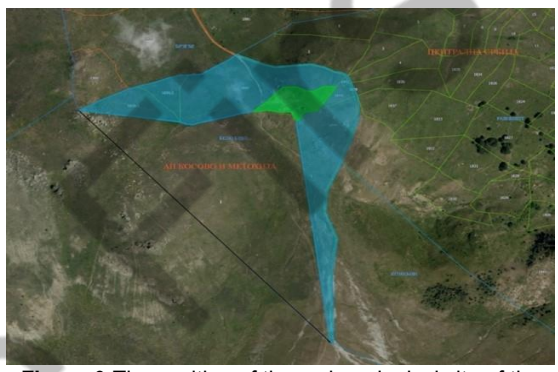

Figure 9 The position of the archaeological site of the Nebeske Stolice with protected surroundings (source https://a3.geosrbija.rs/)

The epilogue of the Nebeske Stolice case is the completed documentation ready for declaration, thanks to the proposers' perseverance in their intention to obtain the status of immovable cultural assets for this site, along with its mining landscape. The proposal for declaration has been submitted to the relevant Ministry of Culture of the Republic of Serbia, which will conduct further procedures and submit it to the Government of the Republic of Serbia for decision-making.

4. Discussion

Kopaonik, the most famous tourist center in the Republic of Serbia, presents an intriguing destination for potential investors who want to develop tourist complexes and associated amenities. Furthermore, the Suvo Rudište mine, despite being exploited for centuries, still possesses a significant ore deposit, an essential resource for the state's economic development. Therefore, the state's economic interests and potential activities conducted in that regard, focused

on the area of Kopaonik, pose a potential threat to the destruction of the cultural landscape of Kopaonik, including significant traces of ancient and medieval history [24]. The fact that this mountain has a long history of ore exploitation has resulted in locally diverse mining heritage, both chronologically and typologically. What becomes apparent from this is the importance of researching and analyzing the material remains of mining in the context of the time it originated. Proclaiming the site as an immovable cultural property is only the first step in its protection and prevention from potential devastation. However, it is essential to continue the conversion of assets to other purposes (e.g. tourism), where discussing the methods of identification, management, and interpretation of local mining heritage is crucial. This way, cultural heritage becomes an economic resource, and the tourist offer gains new value.

On the other hand, the situation becomes complicated due to the potential resumption of mining activities at Suvo Rudište. Reopening the mine and organizing sustainable development of the geocultural heritage in the same area pose a significant challenge to conservation services in devising their functional synergy (if possible at all). In that regard, in addition to archaeological investigations of the remains of ancient workings, it is necessary for companies conducting geological surveys to provide relevant Institutes with data on those remains. These companies are obliged to document these works to create a study on the protection of geohistorical heritage (Articles 18 and 19 of the Law on Mining and Geological Research "The Official Gazette of RS", No. 101/2015, 95/2018 – other laws 40/2021). Given that the law above does not stipulate that these studies be submitted to relevant cultural heritage protection institutions, this must be formulated through legally binding Conditions issued by the Institutes to investors to obtain permits for research. In this way, the heritage protection service's database will be augmented, providing a better understanding of the type, quantity, and extent of ancient mining works. The existence of such a database would facilitate the creation of an integrated strategy for the protection of geocultural heritage, namely cultural heritage that constitutes an integral part of ancient mine workings, as exemplified by the situation presented on Kopaonik and known on other mountains in Serbia where mining exploitation in (pre)historical periods was confirmed.

Furthermore, it is essential to emphasize that a shift has been made in the Republic of Serbia regarding the protection and presentation of ancient mine workings by declaring the prehistoric copper mine Prljuša at the Rudnik site an immovable cultural property - an archaeological site ("The Official Gazette of the Republic of Serbia" No. 13 dated February 24, 2017). The results of archaeological excavations at the Prljuša site until 2017 and their interpretation provided solid arguments for valorization, thereby confirming its significance. The size of the mine and the extent of the documented ancient works designate it as the largest known prehistoric copper mine in Southeastern Europe. The findings of metal from the Dolnoslav site in southern Bulgaria testify that the raw material for toolmaking originated precisely from Rudnik [25], indicating a complex network of routes and an advanced exchange and trade system during prehistoric times. The scientific, expert, and heritage significance of this site paved the way for legal protection despite being located within the active mining landscape of Mount Rudnik. The on-site presentation and adequate media outreach have contributed significantly to the site's accessibility to the broader public (Figure 10). Consequently, it is now the sole example of conserving prehistoric mines in Southeastern Europe.

Figure 10 The archaeological site of Prljuša on Rudnik as it appears today (Archive of the Archaeological Institute in Belgrade)

The study presents a continuation of good practice in systematically treating ancient mines as part of Serbia's geocultural heritage. It focuses on the ancient mining landscape of Suvo Rudište with Nebeske stolice on Mount Kopaonik. Despite the current political challenges, it has been proposed that the site be declared an immovable cultural property - an archaeological site. After submitting the proposal for the declaration of the site as a cultural asset to the Ministry of Culture, the legal regulations changed. In 2023, the

new Law on Cultural Heritage of the Republic of Serbia ("The Official Gazette of the RS", No. 129, dated December 28, 2021) came into force, introducing a new category of immovable property: **cultural landscape**. This term refers to *an area resulting from the interaction between culture and nature or humans and their natural environment. A cultural landscape reflects the evolution of human society and settlements over time, sustainable land use practices conditioned by the constraints and characteristics of the natural environment, as well as successive social, economic, and cultural influences, and a specific spiritual relationship with nature*. Indeed, the cultural landscape category encompasses the mining landscape discussed in the previous text, significantly facilitating cultural heritage protection services' systematic treatment of the remains of (pre)historic mining, along with associated settlements and infrastructure. The new law has also introduced a Program for the Protection and Preservation of Cultural Heritage in the Republic of Serbia, which, among many elements, emphasizes priorities for interdepartmental cooperation (scientific research, education, balanced regional development, and international collaboration). This priority fosters interdisciplinary approaches and dialogue among all stakeholders, including miners, cultural and natural heritage experts, local communities, touristic organizations, the state, local authorities, and others. Although this system will take time to be fully established, it is crucial to begin by raising awareness of the significance of the remains of ancient mine workings as part of the Republic of Serbia's cultural heritage.

5. Conclusion

Although Serbia still lacks a formally established procedure for treating ancient mining sites in the sense of valorization and protection as cultural heritage, the example of Kopaonik transcends into a pioneering challenge. If we set aside administrative and legislative challenges, it is essential to open a reflective and philosophical narrative about protecting this ancient heritage.

This approach aims to ensure that numerous mining sites within the Roman imperial domains rightfully bear witness to their significance and function during Roman domination in these regions. Such a practice would follow new scientific achievements that have demonstrated the importance of Balkan mines for the economy of the Empire, placing them on par with renowned mines in Spain, Portugal, Sardinia, and other parts of the Empire. In doing so, Serbia would secure a new resource for heritage exploitation.

Western European countries have established a sustainable principle of preserving geodiversity by founding and networking geoparks. To declare a specific area a geopark, it must have a geological heritage of international significance, established responsible management involving all stakeholders, organized promotional activities aimed at boosting the local economy, and access to the network of other geoparks. Considering that human interventions on geological structures (mines and quarries) are included under geodiversity, this concept would be enhanced by incorporating cultural heritage alongside a well-designed presentation. Although geoparks seem like an ideal solution for preserving this type of heritage, the question remains whether the geological heritage of all mountains in Serbia meets the requirements for establishing geoparks. The answer to this question will be obtained through systematic research and valorization of natural and cultural values in each case. Suppose the study results and valorization of geodiversity show the impossibility of meeting the criteria for establishing geoparks. In that case, there is always the possibility of protecting this type of heritage through the existing legal regulations of the Republic of Serbia. From all the points above, it is clear that the current legal regulations still need to be revised to improve the work of cultural heritage protection services. In many cases, even the signed and ratified international conventions are either not implemented at all or need to be sufficiently incorporated into laws that deal with cultural heritage. Ultimately, it is vital to preserve the physical integrity of archaeological heritage alongside formal legal protection, even for future generations and regulations. By protecting and conserving geoarchaeological heritage, we are safeguarding the material remains in situ and preserving information as a source of knowledge that has no expiration date.

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MOGUĆNOSTI I OGRANIČENJA ZAŠTITE ANTIČKIH RUDNIKA U PLANINSKOM PEJZAŽU: STUDIJA SLUČAJA PLANINE KOPAONIK

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Izvod

Ostaci antičkih rudarskih aktivnosti iako čine značajan deo arheoloških lokaliteta u planinskim pejzažima Srbije, još uvek se u formalnom smislu ne tretiraju kao deo kulturne baštine. Ova vrsta lokaliteta predstavlja izazov za službu zaštite kulturnog nasleđa jer zahteva saradnju stručnjaka za očuvanje prirodnih i kulturnih vrednosti i svih drugih zainteresovanih strana, što do sada nije uspostavljeno. Pored toga, važeća pravna regulativa ne prepoznaje koncept rudarskog pejzaža, što značajno otežava pravnu zaštitu ostataka starih rudnika, koje je nauka odavno prepoznala kao ključni element u tumačenju rimskog imperijalizma na Balkanu. U tom svetlu, rad predstavlja višedecenijsko arheološko istraživanje Kopaonika, koje je pored ostalog, rezultiralo pokušajem uspostavljanja jedinstvene prakse tretiranja antičkih rudnika, zajedno sa naseljima i pratećom infrastrukturom, kao integralnog dela planinskog pejzaža, uprkos nedostacima zakonske regulative. Studija ispituje izazove u formalno-pravnom očuvanju istorijskih rudnika, uz razmatranje potencijalnih opasnosti koji mogu dovesti do njihovog trajnog uništenja. Na kraju, otvoren je narativ o budućnost zaštite (pra)istorijskih rudnika u Srbiji kao važnog geokulturnog resursa države.

Ključne reči: *Kopaonik, antičko rudarstvo, geokulturno nasleđe, zakonska regulativa.*