

# The Possibilities of the Revitalisation of Post-Mining Areas – the Polish and Vietnamese Examples

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## Abstract

*Mining activity plays a significant role in the national economies of Poland and Vietnam. For centuries they have been determined by traditional industries, and now have to face restructuring processes after discontinuing mining operations. The exceptional cultural and natural values of Krakow (Poland) and Ha Long (Vietnam) have been recognized by inscribing them on the UNESCO World Heritage List. The global recognition of these places is associated with a steadily growing tourist traffic that threatens sustainable development. This article presents examples of post-mining sites in Poland and Vietnam, which require special revitalisation projects, because of their surroundings. The discussed examples show that post-mining areas have significant potential for redevelopment and can help in sustainable tourism in cities where there is a problem of excessive tourist traffic.*

*The discussed examples show that post-mining areas have the potential for developing tourism, recreation and nature functions. The article indicates that it is necessary to balance the interests of the beneficiaries of revitalisation processes and, therefore, to keep in mind the one of the basic principle of planning – sustainable development. Polish and Vietnamese experiences, supported by numerous examples, can provide both countries with inspiration for revitalisation projects while also serving as a warning against making similar mistakes in their implementation.*

*Keywords: degraded areas, revitalisation, sustainable tourism, overtourism, polish mining activity, Vietnamese mining activity*

## Introduction

Tourism plays an important role in the development of many regions around the world [1, 2]. The World Tourism Organization (UNWTO) has estimated that in 2020 revenues from tourism will reach the level of approximately 2 billion dollars. National and local-level sites and objects of exceptional (cultural and natural) value can be protected on the basis of internal regulations. The most valuable ones can receive a distinction by being inscribed on the UNESCO World Heritage List (hereinafter referred to as the UNESCO List). Moreover, such inclusion, in addition to the guarantee of global recognition and significant financial revenues from tourism, has also some negative consequences. The most often cited one is an increase in its popularity resulting in excessive tourist traffic [3, 4]. Mass tourism which is based on the objects of world heritage is heading towards a negative impact on the cultural environment and contributes to natural resource degradation [5, 6]. Furthermore, one can also observe an increase in the prices of services and properties, which leads to the depopulation of historic districts and changes in their function. Therefore, it emerges artificial enclaves, thus resulting in the area losing its historical character [5]. Such a situation can be observed, for example, in Venice, Florence, Barcelona, Rome, Prague and Kazimierz Dolny. The often results of aggressive commercialization are the local communities protests against the excessive development of tourist functions [7]. Decreasing tourist traffic involves the introduction of restrictions on visitor admission. Some cities have resources which allow them to apply alternative solutions, and thereby utilise areas previously regarded as unattractive. By utilising the potential of urban post-industrial areas, they are able to unload tourist traffic in cities (or parts of cities) included in the UNESCO list.

The aim of this paper is to present the possibilities for adapting (post)industrial areas in Kraków and Ha Long for tourism function. Both cities are party included on the UNESCO list and inextricably connected with mining activity. The paper indicates that the attractive redevelopment of post-mining areas may create an opportunity for reducing the intensity of tourist traffic by reorienting the direction of sightseeing from main attractions to the post-mining revitalised areas. Such an approach presents one of the possibilities of developing tourism in large agglomerations in a sustainable way. The methodology of the study relies on case studies from Poland and Vietnam. The Kraków and Ha Long cities were analyzed, respectively, where in addition to tourist sites included on the UNESCO World Heritage List, there are (post)mining sites with potential for development.

## 1. The Cities of Kraków and Ha Long as the beneficiaries of the UNESCO list

The Global Destination Cities Index (2018) shows that historic cities with valuable sites and a rich past are the most often visited cities in the world. They constitute the top destinations in terms of cultural tourism [8]. This is also the case with Kraków. In 1978, the Old Town, including Royal Castle Wawel, Kazimierz and Stradom districts, making a unique urban and architectural complex, was included on the UNESCO World Heritage List. Other things which attract great numbers of visitors are museums, galleries, celebrations, customs (Lajkonik, Wianki), cultural events (Jewish Culture Festival), etc. [9].

The Quang Ninh Province with the city of Ha Long is an area with many unique geomorphological features and sites of historical importance (mainly archaeological) [10]. In

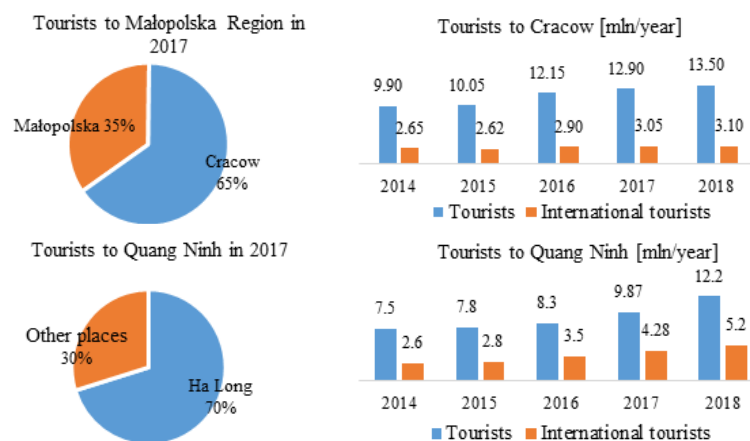


Fig. 1–4. Tourists in Quang Ninh Province, Małopolska Region and Kraków [11–12]  
Rys. 1–4. Liczba turystów w prowincji Quang Ninh, Małopolsce i Krakowie [11–12]

1994 and 2000 Ha Long Bay was included on the UNESCO list due to its exceptional landscape and geological values.

Tourist traffic intensifies every year in Kraków and Ha Long. In 2018, Kraków was visited by 13.5 million tourists [11], while the Quang Ninh Province by 12.2 million people (including 6.93 million visiting Ha Long in 2017) (Figures 1–4). The growing number of visitors poses a problem for the functioning of mention cities.

## 2. The potential of urban post-industrial sites to create tourist attractions

Kraków and Ha Long would benefit from a policy facilitating the control of tourist traffic and sustainable tourism management, i.e. one which minimises the negative impact of the attractions on the environment (natural and cultural values and local community). The necessity to develop tourism based on the principles of sustainable development is highlighted in the Strategy for Tourism Development in Kraków 2014–2020 [13] and the Environmental Report for the Quang Ninh Province [14]. Nowadays, it can observe more intense efforts to utilise post-industrial sites for tourist purposes on a global scale [15]. The study carried out by Kaczmarek et al. [16] has shown that industrial relics used for tourist purposes are enjoying the interest of visitors and tourists. Traditional tourist traffic is increasingly often being complemented by niche forms of tourism, which penetrate into all spheres and levels of landscape in a way that is difficult to control [17]. It is widely known that many cases of post-industrial sites enjoy such interest, for instance Kadzielnia in Kielce [18], Park Buttes Chaumont in Paris [19], etc. The literature highlights the importance of redeveloping post-industrial areas in city centers due to their location and transport accessibility [20, 21]. The use of former mining sites for new investments translates into a number of benefits, such as counteracting the excessive replacement of urban green areas with buildings, protecting animate and inanimate nature, protecting material goods (including cultural landscape) as heritage sites, creating jobs, etc. The authors would like to especially emphasise that undeveloped post-mining sites often cause accidents (falls, drowning, etc.) which forms another reason for their revitalisation.

Appropriate landscape management is one of the priorities of the spatial policy in the European Union. Goal 11 of

the Agenda for Sustainable Development refers to access to safe green areas which foster social integration in urban areas, strengthening efforts to protect and safeguard cultural and natural heritage, and sustainable urbanization conducive to social inclusion and participation [22]. The New Charter of Athens underlines the necessity to rehabilitate the degraded urban fabric [23]. The development of tourism has a crucial role in the processes of spatial planning and strategic development [17].

In view of the above, it appears justified to combine the two increasingly popular trends of managing closed mine pits for tourist purposes and balancing tourist traffic, as its excess has a negative impact on the (natural and human) environment. Kraków and Ha Long are facing the problem of intensified tourist traffic but have an opportunity to tap into the potential of post-mining sites to regulate this traffic. This issue will be discussed in more detail later in the article.

## 3. The history of the Liban Quarry in Kraków and the present situation at the post-industrial site

The Liban Quarry (localization on Figure 5), which is the subject of discussion, is part of the Krzemionki Podgórskie, fault-block hills located in the southern part of Kraków, mined from the 14 century for carbonate raw materials used for construction purposes (Ostręga, 2004 as cited in Kotevicz, 1981) [21, 24]. A total of 7 open pit mines has operated in the Krzemionki area. The Liban Quarry is located at a distance of 3 km to the Main Square, in the Podgórze district (which was previously a separate town).

The Liban limestone quarry (Figure 6) was established in 1873. During World War 2 (1942–1944) the Nazi-German Baudienst Camp operated the pit. Mining ended in 1986 due to the significant environmental burden associated with it (among other air pollution caused by lime burning). In 1987, the “Krzemionki” mining area was dissolved. Between 1988 and 2004, the quarry was used as a storage site for construction materials and housed offices of Public Services Companies [21]. At present (March 2019), the quarry is managed by the Zarząd Zieleni Miejskiej (city unit responsible for managing green areas) in Kraków, and is unavailable for unauthorised persons.

The quarry is characterized by an ecological landscape, where biological elements can function naturally as a result

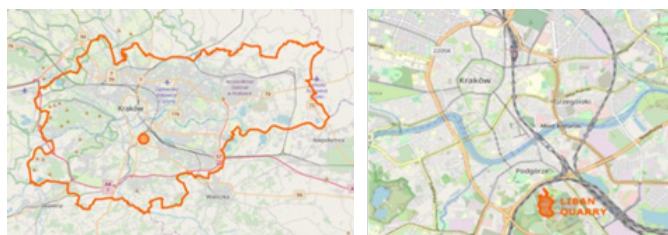


Fig. 5. Liban Quarry location in Poland and Kraków (Source: Own work based on OpenStreetMap)

Rys. 5. Lokalizacja Kamieniołomu Libana na tle Polski i Krakowa (Źródło: Opracowanie własne na podstawie OpenStreetMap)

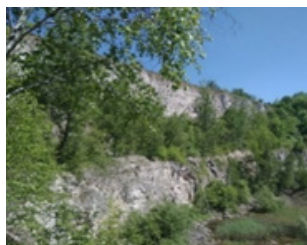


Fig. 6. The view of the interior of the Liban Quarry (Source: Z. Łacny)

Rys. 6. Widok na wnętrze Kamieniołomu Libana (Fot. Z. Łacny)



Fig. 7. Vertical lime furnaces in the pit (Source: Z. Łacny)

Rys. 7. Pionowe piece wapiennicze we wnętrzu wyrobiska (Fot. Z. Łacny)



Fig. 8. Quarry serving as a warehouse (Source: N. Kowalska)

Rys. 8. Kamieniołom służący jako magazyn (Fot. N. Kowalska)

of natural succession. The pit is a model example of leaving a post-industrial site to spontaneous succession, resulting in the emergence of uncommon plant communities. The authors would like to point out that this type of landscape is not very cost-intensive, with its management not involving high spending, and human activity being of secondary importance to its formation. In addition to its attractive cultural landscape, the quarry features valuable historical objects (including the “Szczęść Boże” mine foreman room, vertical furnaces (Figure 7), as well as silos, a field hospital, and a smithy. Although these facilities according to the local land use plan [31] have the characteristics of the monument and are indicated for protection, they are deteriorating due to the lack of appropriate maintenance. The pit has also been observed to serve as a storage (for instance toys) (Figure 8) and a car dealer.

The Strategy for Tourism Development in Kraków 2014–2020 recognises the resources of Podgórze as having untapped potential for the development of new tourism products and creating opportunities for action for the spatial deglomeration of tourist traffic. Despite its historical and natural value, the quarry (March 2019) has yet to be managed properly. The authorities of Kraków are aware of the problem of excessive tourist traffic in the city. On 5 April 2019, at the UNWTO Mayors Forum for Sustainable Urban Tourism – “Cities for all: building cities for citizens and visitors,” Kraków signed

the Lisbon Declaration. By doing so, it agreed to adjust its tourist development in a sustainable way, which can help distribute tourist traffic through appropriate planning. This declaration is consistent with the work on a strategic document “The Sustainable Tourism Policy of Kraków” which will be implemented starting from 2021 [25].

#### 4. The history of Ha Long and the current situation at the mining site

Ha Long Bay has unique geomorphological features, ecosystems and biological diversity. As the site has been included two times<sup>1</sup> on the UNESCO list, the Bay also made it to the list of New 7 Wonders of Nature. Ha Long is an important economic and cultural centre in Vietnam and a key destination for foreign tourists. Despite its many benefits, tourism in Ha Long is associated with excessive property prices, high costs of goods and services, congestion, waste generation, pollution of water, air and soil, increased noise and reduced availability of natural landscapes. Ha Long is undergoing extensive development as part of the northern development triangle in Vietnam, driven by the mining industry, tourism

<sup>1</sup> In 1994 according to criterion VII (superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance) and in 2000 according to criterion VIII (outstanding examples representing major stages of earth’s history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features) [32]

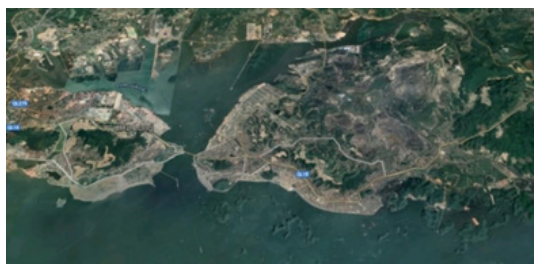


Fig. 9. The locations of mining plants near Ha Long Bay (Source: Own work based on Google maps)  
 Rys. 9. Kopalnie w pobliżu Ha Long Bay (Źródło: Opracowanie własne na podstawie Google maps)

and shipping. The literature highlights the necessity for people holding positions of authority to minimise the negative impact of tourism on the natural environment [26, 27].

The Quang Ninh Province is characterised by the largest number of hard coal mines in Vietnam (Figure 9). Hard coal has been continuously mined there for 160 years (now underground and opencast methods) [28]. It is estimated that this province holds mineral resources amounting to 3.5 trillion tonnes. One of the largest mines, the Nui Beo mine (owned by the Vinacomin concern), borders directly on Ha Long Bay coast. In 2012, the Nui Beo Mine started the transition from open-pit to underground mining due to geological conditions, environmental standards, and increased tourist traffic in its immediate vicinity. The project cost VND 5.3 billion (approximately PLN 0.9 million), facilitating an output of 2 million tonnes of coal and extending the viability of the plant by 34 years.

In the Hon Gai mining region in Quang Ninh Province, the situation is typical of Vietnamese hard coal mining industry, with mining sites being located in the immediate vicinity of residential areas [28]. Therefore, the appropriate development of this land, after discontinuing the mining activity, is of crucial importance given the quality of life of its residents.

Ha Long Bay started to gain popularity in the early 20th century. This was, among other things, due to presence of French colonizers, who carried out mining activities, but also promoted Ha Long's unique phenomena in Europe. After being included on the UNESCO list in 1994, the number of tourists in Ha Long saw a significant increase (from 236,000 in 1996 to 2.64 million in 2008), and the city became a destination enjoying the fastest growing tourist interest in Vietnam. Despite the apparently clashing tourist and mining activities in Ha Long, actions are being taken to unite these two seemingly contradictory development trends. In 2006, the Quang Ninh Department of Tourism organised pilot tours of mining plants intended to familiarise the visitors with the part and parcel of miners' work and mining technology. Today, there are visitor facilities, where tourists can be introduced to history of the mines, machinery and exhibitions. However, these buildings are open only to pre-arranged tours (i.e. schools) [29].

### 5. The possibilities of revitalising the post-mining areas in Kraków and Ha Long as a way of unloading tourist traffic

In Kraków, except to quarries in Krzemionki, there are also other mine pits, redeveloped to serve recreational functions. However, they are intended for other audiences than, for example, the Old Town. The Liban Quarry, on the other hand, with its historical and natural values, meets the expec-

tations related to cultural tourism. Ostreĝa [21] in her doctoral dissertation, proposes a concept of quarry redevelopment with cultural and educational aims in mind (preserving valuable historical infrastructure, organizing thematic routes e.g. promoting industrial heritage), supplemented with natural and recreational functions (preserving animate and inanimate nature, creating cycling and walking paths, and a climbing wall). Currently (April 2019), the municipal unit obtained funding for the revitalisation of the quarry, which is to include the establishment of a city park with an area of nearly 20 ha, which will feature a cinema, a climbing wall, suspended paths, a museum, and a gallery. Historical (industry heritage and martyrdom sites) and natural values are going to be preserved and used for tourism purposes.

Galla [30] points to the tourism carrying capacity of Ha Long being at its limit. Most visitors stay for a short time (often just for one day), maximising the use of resources while making a minimum economic contribution to the local economy. There is a need for creating tourism products which would attract some tourists to Ha Long Bay and encourage to stay in the city for longer. This will make it possible to preserve natural heritage while promoting industrial, economic, and tourism development. Galla mentions an Ecomuseum – project (under UNESCO patronage), which was developed during 2000-2001. The Ecomuseum concept views the entire Ha Long Bay area as a living museum, which is holistically managed. By intensive research and monitoring, managers and stakeholders interpret what is happening in the UNESCO site and make carefully planned interventions to keep sustainability (reduce negative impact from mining and tourism). One of the project findings was that current and planned urban and industrial development near Ha Long Bay is a threat to the natural environment and heritage. Unfortunately, residents, visitors and local industries are making not enough effort to prevent further damage [30].

Bearing in mind the Galla's observations, it seems reasonable to revitalize post-mining areas and ensure, that new functions of the area will be attractive for tourists. This action will have two positive effects:

1. Significantly reduce negative mining impact on the environment.
2. Create a new capacity for tourists.

Visiting both the bay and the revitalized mine would take a few days and bring more profits for the economy of the city. The solution of limiting tourist traffic is used in Venice. In the case of Ha Long, there is a possibility to redirect the tourists traffic to revitalized mines to avoid complete entrance restrictions. Because of that, new functions of the post-mining area should be as attractive as possible to make a desirable tourist destination.

The RAME – Mining and Environment in Vietnam program was implemented from 2007 to 2010. Its objective was to develop an integrated planning concept and methodology in terms of developing the post-mining area. Under that project, several planning criteria were determined to make decisions about the future functions of post-mining sites. A concept for development was devised on the basis of the defined criteria. It was proposed to introduce recreational and sports functions and to create a public park in place of the present Chinh Bac Nui Beo waste rock storage facility [28]. For now, on post-mining areas are being reclaimed to reduce major problems such as dust, waste and water issues [33]. In Kraków, the main problem with excessive tourism is focused around Old Town district. By introducing changes today, problem of overtourism can be avoided in the future. For example, city authorities could:

1. Redevelop and promote post-mining areas as a complement to main tourist attractions (which will encourage visitors to stay in the city for longer period of time).
2. Ensure that post-industrial areas will be attractive, offering various tourist functions (with catering and sanitary facilities).
3. Propose and promote tourist routes around Kraków, which would bypass the most popular attractions during periods of greatest crowds (e.g. weekends) and redirect visitors to revitalized post-mining areas.

However, revitalization of Liban Quarry is implemented not only for tourists. Quarry might become a desirable place for Kraków citizens, who would like to spend their free time outside, but not in most popular, crowded places (like Main Square, Kazimierz, Zakrzówek or Kryspinów).

## Conclusions

Public green areas are desirable elements in the urban fabric of large cities, such as Kraków. These include areas with recreational as well as cultural and educational functions – such as the Liban Quarry. On the other hand, in the case of Ha Long Bay, which struggles with the rapidly growing number of tourists, the appropriate redevelopment of the nearby post-mining sites can contribute to minimising the negative impact of excessive tourist traffic on valuable natural areas and to engaging local communities in the development of the city. Taking into account the solutions proposed in the literature and presented in this paper, it appears reasonable to use urban, revitalized post-mining sites as remedy for overtourism. Redirecting or dividing tourist traffic to post-mining areas will undoubtedly contribute to:

- putting into use unused but valuable urban areas (location and historical value);
- protecting UNESCO sites against excessive tourist traffic;

- promoting other, attractive parts of the cities;
- involving local communities in the planning processes;
- improving safety on post-mining sites;
- improving the image of the mining industry (completed revitalisation projects);
- minimising the negative impact of tourism on the natural environment, local resources and society – sustainable tourism;

Kraków and Ha Long are characterized by various socio-economic, cultural, and natural conditions but both cities face similar problems with tourist traffic. Ha Long bay's natural values are threatened by permanent overtourism and Kraków's increasing popularity could become a problem in near future. The authors would like to point out that the mining facilities in the Quang Ninh Province, as in the case of the Kraków quarry, should take into account, already at the planning stage, the history of mining. It forms the basis for the creation of a cultural tourism based on industrial heritage. Furthermore, it is crucial to intentionally use the potential of nature in reclamation processes by providing natural functions and opportunities for the enclaves of wildlife to develop. Already at the planning and subsequent stages of Liban Quarry redevelopment, local communities should become involved in the decision-making processes, as it was proposed in Ha Long. This will have a positive impact on the building of relationships and social identity. In turn, residents' will care more about their surroundings, and consequently, will help to protect natural and cultural heritage.

The exchange of experience will make it possible to avoid mistakes connected with tourist traffic management and to jointly develop model solutions for the implementation of sustainable tourism in post-industrial sites.. It is also necessary to take into consideration environmental and socio-economic conditions which guarantee the long-term success of such projects. It is estimated that the revitalisation of the Liban Quarry will take place in the near future (probably in 2021). Therefore, it is important to pursue a policy which is aimed at redirecting tourist traffic and utilising mining heritage when planning further tourism development. It is also crucial to monitor traffic and determine the tourism absorptive and carrying capacity of the newly created attractions (products), to protect their value. These measures will make it possible to continuously learn from experience and to identify and avoid potential mistakes.

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### *Rewitalizacja terenów pogórnicych – przykłady rozwiązań w Polsce i Wietnamie*

*Polska oraz Wietnam to kraje, w których działalność górnicy odgrywa znaczącą rolę w gospodarce. Przez wieki zdeterminowane przez tradycyjne branże przemysłu, muszą sprostać bolesnym procesom restrukturyzacji oraz procesom naprawczym po działalności wydobywczej. Szczególne walory kulturowe i przyrodnicze Krakowa (Polska) i Ha Long (Wietnam) zostały docenione poprzez wpisanie ich na listę Światowego Dziedzictwa UNESCO. Rozpoznawalność tych miejsc na poziomie światowym wiąże się z systematycznie rosnącym ruchem turystycznym, który zagraża zrównoważonemu rozwojowi. W pracy przedstawiono przykłady terenów (po)górnicych z Polski i Wietnamu, które będą wymagać szczególnych projektów rewitalizacyjnych, ze względu na specyfikę otoczenia. Omówione przykłady wskazują iż tereny poeksploatacyjne posiadają znaczny potencjał do ponownego zagospodarowania i mogą stanowić potencjał dla prowadzenia turystyki zrównoważonej w miastach, w których istnieje problem nadmiernego ruchu turystycznego. W artykule wskazano konieczność równoważenia interesów beneficjentów procesów rewitalizacyjnych, a zatem zachowania nadrzędnej zasady planowania – zrównoważonego rozwoju. Doświadczenia polskie oraz wietnamskie, po parte licznymi przykładami, mogą stać się wzajemną inspiracją do wykorzystania w projektach rewitalizacyjnych, ale również przestroga, przed popełnieniem podobnych błędów przy ich realizacji.*

*Słowa kluczowe: tereny zdegradowane, rewitalizacja, turystyka zrównoważona, nadmierny ruch turystyczny, polska działalność wydobywcza, wietnamska działalność wydobywcza*