

Directions of the development of tourism mining on the example of mines in Poland

PAWEŁ ROZYCKI and DIANA DRYGLAS

*Department of General Geology and Geotourism, AGH University of Science and Technology, al. Mickiewicza 30, 30-059 Krakow, Poland
(E-mail: rozycki@agh.edu.pl, ddryglas@agh.edu.pl)*

ABSTRACT

Mining tourism is a phenomenon, which can be described as visiting mining sites, which are open to the public, operating or decommissioned both underground and overground, and mining infrastructure. The value and quality of mining tourism are affected not only by the particular sites, but whole mining centers, towns with residential areas, architecture, customs and traditions characteristic of a given region. In Poland and other countries of Central and Eastern Europe, growing awareness of utilizing industrial sites was born in the period of social and economic transformation. Therefore, trends in e.g. revitalization of old industrial sites in Poland are completely new. The examples are set by Western Europe, experienced in this matter.

Keywords: mining tourism, industrial tourism, types of tourism, mines, economic transformation

INTRODUCTION

The beginning of the twenty-first century was groundbreaking in many ways, both in politics and economy as well as in tourism. Tourism, from the fifties of the last century, continues to increase and it seems that this will continue.

However, so far traditional forms of tourism were cultivated. Tourists are becoming increasingly demanding, they are also looking for new experiences and sensations. Dynamically developing is particularly active and cultural tourism. In this framework, they are formed new types of tourism ever. Particular attention should be paid to industrial tourism within which there is also situated mining tourism.

The restructuring of industry, including mining, causes problems with the management of the objects that were the workplace and the great objects of industrial architecture. In the era of rapid development of tourism, there was noticed

a great opportunity for inactive mines (Kršák et al., 2015). It was quickly correlated to the interests of tourists who look for new experiences and new impressions.

Easiness of traveling, especially among the citizens of Europe led to an increase in the number of trips to other countries. Therefore, every region, every country has to offer to foreign tourists often unique offer. Examples of such may be mining companies for a variety of ores and deposits. One of the most interesting offers possesses Slovenia with former mercury mine in Idrija. In Central Europe, including Poland are also available for visitors diverse in their bids mines. Each of them has something unique, something that makes it special. Such is the way of mining tourism development of Poland; the main concern is to prepare a unique, distinctive offer and often positively surprising tourist. Increasingly, there are implemented the elements of multimedia, which are also

characteristic for museums in various fields of art. Almost every mine open to the public has several routes to choose from, including children. The creativity of designers and organizers of underground tourist routes constitutes the attractiveness of mines and attracts more and more new tourists. The article presents a number of interesting examples of the development of tourism offer of mining in Poland. Some of them have already worked out, known the worldwide brand, while others are only new tourist products. However, thanks to good promotion and marketing treatments often become leaders of the tourism industry in the regions.

Although there are centers with a relatively longer period of development of mining tourism, mining and industrial tourism in Tarnowskie Góry still has a relatively long history. Wieliczka, Bochnia, Krzemionki Opatowskie and Tarnowskie Góry all have their own history. A good utilization of industrial and technological "monuments" can make the already existing tourist offer more attractive but also create and a whole new one. It often happens that industrial sites are the only worth-noting sites in a given town. Recently, it has been observed that adapting post-industrial buildings particularly mining-related is in fashion. Interesting examples are coal mines in Nowa Ruda and Zabrze, a gold mine in Złoty Stok and a uranium mine in Kletno.

Additionally, relics of industry and technology have more and often become an object of interest not only of a narrow group of specialists, but also tourists who want to learn the cultural heritage of a given region. The offer of industrial tourism perfectly complements the traditional tourist offer based on anthropogenic qualities, mainly architectural sites.

Geotourism often goes hand in hand with mining tourism. It is about learning about the site and geological processes and deriving pleasure from the contact with them (Słomka & Kicińska-Świderska, 2004).

CHARACTERISTICS OF MINING TOURISM IN POLAND TARNOWSKIE GÓRY

According to geophysical division (Kondracki, 2000), the Tarnowskie Góry region lies on the border of two mesoregions. In the larger, southern part of the town, this is Tarnogórski hump, which is a part of the Silesia Upland. This is an element of the Middle Triassic Verge, which, considering its development, is one of the most typical morphological edges in Poland. Tarnowicki Lowland is elevated compared to surrounding morphological elements and is cut off from them with mild hills, 10 to 70 m high. The contemporary landform of Tarnowskie Góry is the result of the operation of many natural factors in the past eras: tectonic movements, denudation and accumulation, and contemporary, anthropogenic factors. Glaciers and human activity played a particularly important role in creating the current landform.

The "Czarny Pstrąg" Adit is open to the public. It is a part of the Deep Adit "Fryderyk", hollowed-out in the dolomite rock in the years 1821-1834. It is the longest and deepest adit in the draining system of excavations in Tarnowskie Góry. Back then, hollowing-out the adit required miners to solve many problems, which was not an easy task, considering technological possibilities in the 19th century.

In the European mining, there is a tradition of changing the names of the mining sites when their function changes. Therefore, new names were given to adits and ventilation shafts. The "Czarny Pstrąg" (Black Trout) adit is named after trouts observed there. Even though they are of rainbow color, in the light of carbide lamps they seemed black. Opening the adit to tourists was conducted step-by-step. The first tourists visited the adit on September 15, 1957, during the "Days of Miners" ("Dni Gwarków") festival. At first, tourists

descended the "Ewa" shaft, covered 300 meters, turned around and left with the same shaft. This method was in use until stairs in the "Sylwester" shaft were built.

Zabrze

Zabrze is located in south-western part of Poland, in the western part of Silesia province and the Upper Silesia Industrial district, located in Katowice Upland, by the Kłodnica and Bytomka rivers, in the basin of the river Oder. It borders a few other big centers: Bytom, Gliwice, Ruda Śląska, and Gliwice and the Tarnowskie Góry county.

The most popular sites in the town are: The Guido Mine is unique in the world, as the excavation preserved has no counterpart in other museums in the world. It is also unique because it has the lowest (at 320 meters) gallery open to the public in Europe. The museum comprises corridors at the level of 170 and 320 meters and a complex of overground buildings with technical equipment. In the mine, one might see strata of geological rock formation with tectonic symptoms.

Level 320 - Excavations at this level are kept in the condition as close as possible to the original ones, when the miners finished their work and left the mine for the last time. Part of the chambers at this level is already used for shops and restaurants, there are concerts, meeting and theater plays. In other chambers, photos of the life of mine are shown. In one of the chambers, one might listen to a few-minute classical musical piece, accompanied by a couple of point lights. A mere fact of being in such an extreme environment is an unforgettable experience for tourists.

Tourists in the Guido mine - After the opening of level 320, the mine comprises two levels of an entirely different character. At level 170, the history of Silesia mining and the methods of extraction from the 19th and 20th century are shown. There is also a chapel here. Audio-visual effects (e.g. miners' talks, the creaking of the ceiling) resemble the climate of the era and the way of miners' work. Level 320 shows a more

contemporary side of the mining industry. The ticket price includes a professional tour guide.

Since 1933 the shaft and steam park have became features in the newly created Open-air Museum of Mining "Królowa Luiza", which is a branch of the Coal Mining Museum in Zabrze.

The revitalization in recent years has also included the Carnall shaft. In the shaft tower, there is a viewing platform, where visitors can admire the view of the town.

The Museum of Coal Mine was established in 1981 in Zabrze. It has a very wide selection of exhibits related to the history of mining and mining culture and technology. Without a doubt, this is one of the most interesting museums of mining in Europe.

The museum is divided into the following sections: Geology and paleobotany, Mining Technologies, A history of Mining, Coal processing, Mining culture, Library, and Archive.

Dąbrowa Górnica

The training mine Sztygarka is located in Dąbrowa Górnica, and since 2010 it has been open to the public, owing to 650 meters of underground tourist routes (it functions by the Sztygarka Municipal Museum). As the mine used to serve students of a mining school in Dąbrowa Górnica, where they could learn the techniques of the underground work, today it is possible to watch the teaching posts in the field of mechanics, electronics and securing mining posts, which remained there and served to students.

Kłodawa – Salt Mine

Although salt is still being extracted here (at present, deposits at 600 and 750 meters below the ground are excavated), it is also possible to see parts of the site taking a tour along a tourist route. It is possible to learn the history of deposits formation in Kłodawa, go down in mining cage to the 600 meters level, walk down the underground corridor to St. Kinga of

Poland chapel and the decommissioned salt chambers and see machines and tools used in mining.

Kłodawa S.A. Salt Mine – the largest operating salt mine in Poland, located in Kłodawa in the Greater Poland province. At present, there are ongoing works to open a health resort in the mine.

In the mine, only a chamber operation system is used, with shelves and inter-chamber pillars. Initially, excavation was conducted at the levels of 450 and 600 meters. At present, mining works are conducted at the level of 750 meters. Deposits at this level will make it possible for the company to operate for dozens of years to come.

The mine is also open to the public. The deepest underground tourist route (600 meters below the ground) operates here. At 600 meters, near the shaft station, in a salt cave, there is a chapel made of salt with Saint Kinga (patron of salt miners) figure. On the chapel wall, names of 20 miners who lost their lives underground are engraved on a memorial board. The oldest part of the chapel was included in the official list of monuments in 2007.

Wieliczka

The "Wieliczka" Salt Mine in Wieliczka is one of the most popular tourist sites in Poland and Europe. Sometimes it is a priority for tourists visiting Poland and Central Europe. The fact that it is located near Krakow also attracts visitors. Between the 13th century and 1772, along with the Bochnia salt mine, it was a part of Polish salt mining company "Żupy Krakowskie" (Krakow Mines). Salts excavated in the mine are from Miocene.

In 1976, the mine was included in the list of national monuments. Two years later, in 1978, it was included in the first UNESCO World Heritage List. In 1989, the Wieliczka Salt Mine was included in the list of World Heritage in Danger. It was taken off the list in 1998. Since 1994, it has been registered as a Polish relic of history. On June 30,

1996, salt extraction was stopped entirely. In 2007, in the "Rzeczpospolita" newspaper poll, the Wieliczka Salt mine was named one of the Polish wonders, with the highest number of votes. Every year the mine enjoys a growing number of visitors. Considering the fact it is a mine, over one million tourists a year is an impressive result.

The Wieliczka mine has nine levels, the first one – the Bono level – is 64 meters deep and the last one is 327 meters below the ground. The total length of the galleries combining 3000 excavations (drifts, slopes, operation chambers, lakes, shafts, and fore-shafts) exceeds 300 km.

The mine has unique micro-climate, which comprises – apart from high humidity and high content of sodium chloride – constant temperature (about 14–16°C), pressure, ionization and high concentration of potassium, magnesium, and calcium. This is why it is particularly popular to organize "health trips" at 135 meters in the Wessel Lake chamber for people with respiratory tract conditions.

Routes open to visitors - The world-famous underground tourist route in Wieliczka mine was built at the turn of the 19th century. Every year, around one million tourists, visit a 3-kilometer route, which comprises 20 chambers, located 64–135 meters below the ground (levels I to III). There are 800 steps in the route. A part of the route is wheelchair user-friendly. The mine is also visited by national leaders, scientists and artists. It takes 2 to 3 hours to visit the mine.

The Museum of Żupy Krakowskie (Kraków Mines) in Wieliczka - In the Wieliczka mine, apart from the tourist route it is also possible to see the underground exhibition of the Museum of Żupy Krakowskie located on level III, 135 meters deep. The collections, gathered in 14 chambers, present both the history of the mine, mining and transportation tools and equipment, and the history of the town itself.

Bochnia

The Bochnia salt mine (from the 13th century till 1772, a part of Żupy Krakowskie). The history of the mine dates back to 1248, when deposits of rock salt were discovered. The discovery is closely linked to the legend of St. Kinga. Much earlier though, from 3500 years B.C., the surroundings of Bochnia were famous for extracting salt by evaporating salt water (boiled salt). Salt water wells near Babica were the origin of two shafts, Gazaris and Sutoris, where people started mining salt. The Sutoris shaft is still operated nowadays. Among many historical devices in the mine, there is an efficient (and sometimes operated) driving mechanism of the shaft cab, powered by steam engine. This industrial monument is unique in Europe. On October 6, 2000, the site was included in the register of the Polish monuments of history. On June 23, 2013, the mine was included in the UNESCO World Heritage Site list.

Złotoryja - A Gold Mine

The Museum of Gold Mining and Metallurgy in Złoty Stok – a museum located in the former arsenic and gold mine in Złoty Stok, Silesia province, opened on May 28, 1996. The museum shows an exhibition of the history of gold mining, a tour to the "Czarna" (Black) adit, where one can see a 10-meter underground waterfall. It is also possible to pan for gold.

Złoty Stok is a picturesque town at the bottom of the Góry Złote (the Golden Mountains) in the northern part of the Kłodzko region. It is famous for its 10-century long history of gold excavation and processing.

At present, the gold mine is a tourist attraction in Złoty Stok. In 2008, the underground tourist route received a certificate of the best tourist product of the year from the Polish Tourism Organization. Very interesting adits are open to the public: The Gertruda adit, The Czarna Góra (Black Mountain) adit, with the only underground waterfall in Poland (8 m high),

and the newest part, the Czarna Dolna Adit. During the underground boat tour, a tourist guide gives away the secrets of this amazing place, where the history dates back 2000 years B.C and is present now. Then, the first excavation works took place near Złoty Stok. One can learn more about it in the Museum, where a vast selection of minerals is available. An ideal follow-up of the trip is a lesson of a dying craft – papermaking. The first traces of mining works in Złoty Stok were found in the previous century. In the beginning of the 16th century, a town called Reichenstein (which means "rich stone") by Germans, flourished, owing to gold mining and metallurgy. Seeking the precious mineral lasted until the mine was closed in the 1960s, although not everything had been excavated.

Złotoryja - The Aurelia Mine

Gold mining in Złotoryja developed mainly on the alluvium deposits. Extraction was also conducted in auriferous sands revealed on the hillside of Kaczawa valley. Gold was extracted from mining deposits containing gold in hard rock such as diabase, rhyolite, and slates. An example of such operation is the "Aurelia" gold mine, carved under St. Nicolas Mountain. Little is known about the history of the mine. We know that the adit was opened in 1660, while other drifts and shafts were hollowed-out in the 20th century as exploratory shafts.

There are a lot of mysteries hidden in the mine. The reason why some of the galleries were buried remains unknown. Maybe the reason was the German army withdrawing from these areas. That is why nowadays, many explorers have worked for free in the mine digging out and penetrating forgotten adits and shafts. In 1997, a buried shaft was discovered and it was named after the discoverer "Karol". It is 28 meters long and there are many lateral corridors there.

Tourists can see a 100-meter part of the route. The adit is carved in the hard rock diabase where one can see the accumulation

of iron ore. Off the main gallery, there are many lateral corridors and ventilation shaft, now inhabited by bats.

Kletno - A uranium mine

Kopaliny (Fossils) – a code name of a secret Soviet uranium mine, operating in Poland in the 1950s near Kletno in Lower Silesia, in Stronie Śląskie commune. Ores were explored near Kletno as early as the Middle Ages. Materials for e.g. melting iron, silver, and copper were excavated here. In 1948 by the virtue of an agreement made between the Polish and the USSR governments, exploratory works began in the whole country. The aim was to find uranium. These works were supposed to be conducted and funded by the USSR. After a preliminary research, only the Sudety mountains region turned out to be promising.

Radioactivity of these deposits affected the change of qualities of rocks in the area. Urininite is accompanied by a yellow variety of calcite, a smoky quartz and a fluorite, which is initially pale pink, but near uranium ores turns more and more violet until it turns black.

The tourist route - The route prepared goes along a small part of the highest levels of the mine, where basically only exploratory works were conducted. This is the so-called adit 18. Its entry is 773 meters above sea level, on the north-western side of the Żmijowiec hill. No uranium ores were found here, but it was possible to penetrate through the layers where there are numerous interesting minerals. Tour guides talk about geology, mining history of the region and explain how the underground corridors were built. In total, the route is 200-meter long.

Kowary - A uranium mine

The Kowary Adits – an underground tourist route, opened on April 24, 2000, 1200-meter long in a closed uranium mine in Kowary. On the route, there are 13 dosimetric points, constantly monitored by the Institute of Occupational Medicine in

Łódź. The mine was operated by Germans during the Second World War. After the war – by the USSR. Excavation works finished in 1973. Since then, Wrocław University of Technology has been researching the mine and organizing classes for students there.

Chełm

Chalk underground in Chełm – a historical chalk mine is a unique relic of the chalk mining in Europe. A multilevel complex of corridors and chambers inside was formed as a result of multigenerational operation of chalk, whose deposit lie under the town.

A historical outline - People started extracting chalk in the 13th century, after Chełm was rebuilt by a Galician duke, Daniel. The oldest tunnels are located near the castle hill. Tunnels also served as a shelter during wars and attacks.

Unlimited extraction lasted until the 19th century. Chalk extraction was first limited, and in the beginning of the 20th century, banned altogether. This decision was made by the local authorities, in order to provide safety to the residents of Chełm. Another incident took place in the 1970s. One of the corridors collapsed under the weight of a lorry. The accident was a stimulus to start excavation works. As a result, more corridors were discovered. The underground was then secured by miners from Silesia. Several corridors were buried. Others were reinforced and in the 1970s they were again opened to tourists. On January 25, 1995 by a decision of the regional conservator-restorer, a multilevel complex of mining excavations under the old town in Chełm was included in the monuments register.

The tourist route - Underground, there is a constant temperature (+9°C), not affected by weather conditions outside. The tourist route is about 2-km long and is located under the center of the old town. On the route, one can see an exhibition on the archeology, chalk mining and the history of the town, come across bats and meet the

ruler of underground, a ghost called "Bieluch" (loosely translated as "Chalky White"). There are also seasonal exhibitions in the entry pavilion. It is possible to leave the route through the 18th-century brick mining frame, straight to the restaurant.

Krzemionki Opatowskie

Krzemionki, also known as Krzemionki Opatowskie is an archeological reserve, which protects a set of neolithic mines of striped flint. Located between villages Sudół and Magonie in Ostrowiec county in Świętokrzyskie province, 5 km north-east from Ostrowiec Świętokrzyski. On September 16, 1994, by a decree of the Polish president, Krzemionki were included in the list of the monuments of history.

A historical outline - Stripped flint mines were operated in the years 3900-1600 B.C. This mine was one of the most important in Europe. In Neolithic, this mineral was extracted by the people of Funnelbearer and Globular Amphora cultures. In the Bronze age – by the people of Mierzanowicka culture. A part of the flint extracted here was processed in the neighboring villages and then transported, even as far as 660 km away. The most popular products were axes and chisels. Near the mine terrain, there are reconstructed households from the end of the Neolithic and the beginning of the Bronze Age

Nowa Ruda

The Coal Mine Nowa Ruda – a closed coal mine in Nowa Ruda, Lower Silesia province in the Kłodzko county. The mine was established in 1781. Since 1945, it has been called "Nowa Ruda". In 1946, two mines, "Przygórze" and "Jan" were joined to it. In 1954, the mining area of the former "Jan" mine was transformed into the "Słupiec" mine. Since 1971, the mines: "Nowa Ruda" and "Słupiec" were connected to form one mine, "Nowa Ruda" in Słupiec. In 1922 the mine was liquidated. In 1994 in the mining terrain Piast, a mining museum was established, later turned into the underground tourist route

Kopalnia Węgla Kamiennego (Coal Mine) in Nowa Ruda.

Bóbrka

The Bóbrka mine is the oldest operating crude oil mine. Various techniques, technologies and constructions, which gave foundations to develop many branches of the oil industry (geology, research, drilling, operation, refinery industry, distribution of oil) were born here. This is where the branch of industry, which brought to the world an enormous civilizational development, was born. In order to understand this global phenomenon better, one must look far into the past.

In 1895 Bóbrka mine became an ownership of the Galicia Carpathian Joint-Stock Oil Company, where MacGarvey was the main shareholder. In 1920, the Bóbrka mine was a part of the Lesser Poland petroleum syndicate – a Group of French Industrial and Commercial Associations in Poland.

CONCLUSIONS

Analysis of tourist attractiveness of available in Poland mines leads to the conclusion that the offer proposed by the different tourist products is extremely diverse, it can be also attempted to create a tourist route or a tourist track that would include several selected objects. Noteworthy above all deserve mines in Wieliczka, Bochnia, Zabrze, Tarnowskie Góry and in Złoty Stok, Kletno and Nowa Ruda. It could be a car route. In the future, it is worth to extend cooperation with neighboring countries, including Slovakia and the Czech Republic. Tourists' interests have a trans-boundary nature now. Therefore, they eagerly travel through thematic routes, wider area, and even through several countries. This offer is all the more noteworthy because it leads through the tourist centers far less known, and have excellent qualities properly developed and being an attraction for

tourists of all ages, with different shape and tourist experience. It is worth also considering the extension of the offer with other underground objects, mainly with military or historical nature. In Poland and in neighboring countries there are plenty of such places. While being in Lower Silesia (nearby mines Nowa Ruda and Złoty Stok) it is worth recommending tourists Riese underground complex, built during the Second World War in the Owl Mountains. This area was chosen because of the geological structure. The hollow in the mountain tunnels was supposed to be underground factories or cities. Therefore, the choice of location was not accidental. These and other factors are taken into account when choosing a place. Currently,

They are the major tourist attractions in the region. Examples of various nature is much more. All this allows to claim that mining tourism will enjoy growing interest and constantly will develop its offer.

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