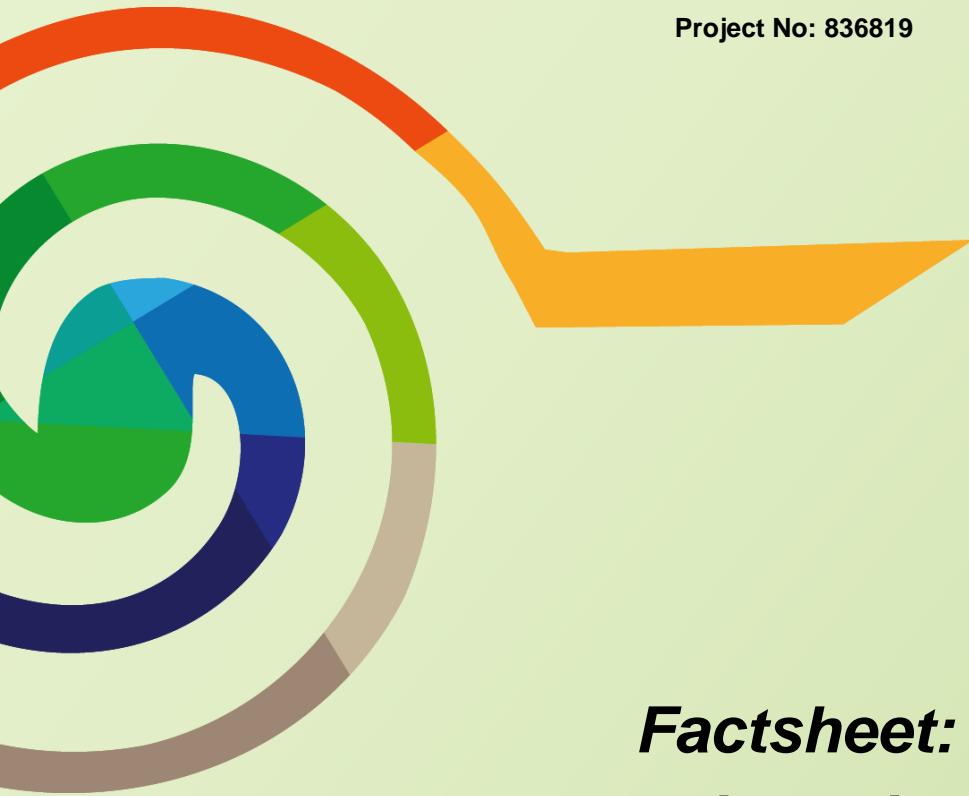


Smart strategies for the transition in coal intensive regions

Project No: 836819



***Factsheet:  
Health and leisure in salt mines,  
Romania***

SEPTEMBER 2019



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## Description

The therapeutic properties of saline have been known since ancient times. Treatment strains in saline air environment are beneficial for most respiratory diseases (asthma, bronchitis, sinusitis, etc.). The temperature in a saline is constant, usually falling between 11-16 degrees Celsius, with high humidity, over 70%. The possibility of activating the allergies is small, because in the saline pathogens and pathogenic germs are rare. In most salt mines in Romania, whether closed or active, special areas are set up for patients, areas which are provided with different recreational infrastructures.

In Europe, many salt mines are transformed, partially or totally, into treatment, leisure and tourist areas. One of the most visited saline is “Wieliczka” Salt Mine, one of the most valuable material and spiritual monuments in Poland entered on the UNESCO World List of Cultural and Natural Heritage<sup>1</sup>.

Among salt mines in Romania open to the public for therapeutic and recreational purposes include: Praid, Turda, Cacica, Ocnele Mari, Slanic Prahova, Targu Ocna etc., but the most spectacular of these is Turda salt mine<sup>2</sup>. In order to set up the salt mines for this purpose, several steps are required, including:

- establishing the future destination of the mining structures;
- ensuring the security conditions for future activities;
- promotion in interested areas.



**Figure 1: Turda salt mine, Romania**  
(source: <https://salinaturda.eu/>)

1. **Location:** Turda/Romania
2. **Type of action:** Conversion of industrial site
3. **Actors:** Bergakademie Freiberg, education environment, researchers, local community, tourists

<sup>1</sup>[https://www.wieliczka-saltmine.com/visiting/make-time-for-your-adventure?gclid=CjwKCAjw7anqBRALeIwAgvGgm1dyDtKocwT3pr5T-PXZIE5y8Zk54dorohsEbl9LPzcJgbpzHeXmVxoCKaMQAvD\\_BwE](https://www.wieliczka-saltmine.com/visiting/make-time-for-your-adventure?gclid=CjwKCAjw7anqBRALeIwAgvGgm1dyDtKocwT3pr5T-PXZIE5y8Zk54dorohsEbl9LPzcJgbpzHeXmVxoCKaMQAvD_BwE)

<sup>2</sup> <http://www.salrom.ro/>

**4. Financing conditions:** Public investment, state subsidy

**5. Fund(s):** European funds (PHARE Program), state co-financing, local and regional budget (Turda Local Council and Cluj County Council)

The Turda Salt Mine which was from its very beginning one of the most important in Transylvania, started to decline after 1840 because of the ever bigger competition from the salt mine in Ocna Mures, gradually coming to be a reserve to the latter. Up to 1862 salt mine was extracted in Turda from the three old wells of "Joseph", "Theresa" and "Anthony". During this year the salt exploitation in the "Anthony" well, where extraction had reached the depth of 108 metres, was stopped because of a high infiltration of clay in the deposit.

The biggest problem which the Salt Customhouse in the Turda was confronted with during this time consisted in the transportation of salt from the "mouth" of the wells in Valea Sarata (Salty Valley) to the storehouses in New Turda. To make transportation easier and to cut the expenses, in 1853 was decided to build a conveyance gallery which was to start from New Turda. This gallery, called Franz Joseph, reached the length of 780 m in 1870, being furthered to 137 m till the end of century. Along with the diggings for the conveyance gallery, "Terezia" well also modernized, it being provided with two more side compartments "Rudolph" and "Ghizela", extraction being concentrated in "Rudolph" mine though<sup>3</sup>.

## Achievements

Following PHARE 2005 project of 5.8 million euros, of which 63% were European funds and co-financing from the national budget, Turda Local Council and Cluj County Council, having as main objective the site modernization to increase tourist attraction, Salina Turda became one of the important sights of Transylvania.

Modernization goals were:

- Rudolph Mine: with a panoramic lift, a mini golf track, two tracks mini-bowling, a sports field, 180-seat amphitheatre, a carousel and a playground for children;
- Theresa Mine: opened to the public, with access through the mine's hearth circulation compartment, with stairs or a lift; the underground lake was arranged for a romantic boat ride to 112 m deep in the mountain of salt;
- Gisela-Mine (stationary room): adapted and transformed to serve exclusively for health treatment facility;
- Entry-Pavilion: is the second entry into the mine - Durgau Salt Valley.

## HEALTH<sup>4</sup>

Turda salt mine offers microclimate conditions for therapeutic and preventive approach for several types of illnesses. A special place is for respiratory prophylaxis and treatment, and ENT. Allergic respiratory diseases or chronic evolving infectious and allergic (asthma, chronic bronchitis, COPD) may improve the course of gradual and increasing exposure combined with respiratory physiotherapy sessions (gym equipment). Exposure to salt mine microclimate has beneficial effects on the airways in people with occupational risk factors, or environmental (emissions, gas, tobacco, etc.), thereby reducing morbidity. Children, youth and adolescents benefit from improved respiratory function by promoting growth and development of a better use of oxygen. Physical exercise also takes place in optimal conditions, and could be individual or collective sports.

## RECREATION<sup>5</sup>

- The big wheel – height is 20 m, 6 gondolas, each eight seats, a full rotation takes approx. 8 minutes / shift;

<sup>3</sup> [https://salinaturda.eu/?page\\_id=670&lang=en](https://salinaturda.eu/?page_id=670&lang=en)

<sup>4</sup> [https://salinaturda.eu/?page\\_id=749&lang=en](https://salinaturda.eu/?page_id=749&lang=en)

<sup>5</sup> [https://salinaturda.eu/?page\\_id=763&lang=en](https://salinaturda.eu/?page_id=763&lang=en)

- Ground mini-golf – 6 different tracks, clubs for adults and children;
- Track bowling – 2 tracks mini-bowling, allowed persons aged 10 years minimum;
- Sports Ground – allow practice's handball, football fields, badminton;
- Billiard tables;
- Table Tennis – 4 tables with accessories fitted;
- Amphitheatre -180 seats with heated seats, allows conferences, concerts;
- Children's play area – slides, turntable baskets;
- Terezia Mine – Recreational Facilities: Large flower, Small Flower, Hedgehog, Arca;
- Wharf – boat rental is possible on underground lake.

## TOURISM<sup>6</sup>

### **Franz Josef gallery**

Build between 1853-1870, it is a horizontal gallery made to cut the costs of salt conveyance to the surface. When it was finished it was 780 meters long, but until the end of the 19th century it was furthered by 137 meters reaching the length of 917 meters. The sterile area (dug in the earth) is 526 meters long and it is strengthened with a 40 cm thick stonewall. On the left side of the wall is marked the length of it. The electrical system was installed in 1910. Between 1948-1992 it was used as a cheese storage room. During this time the water and waste pipes were installed. On the left wall of the gallery are placed pickets with equidistance of 10 fathoms. As tourist enter the in the mine the underworld reveal its wonders.

### **Iosif Mine**

The Josef Mine can be visited through the balconies carved in salt and it is located next to the Franz Josef Gallery. This mine is a conical chamber of 112 meters deep with 67 meters at the base. Because its shape and lack of communications with the other major mining points this mine has a powerful sound echo reason why it is also called "Echoes Room".



**Figure 2: Turda salt mine, Romania**  
(source: <https://salinaturda.eu/>)

<sup>6</sup> [https://salinaturda.eu/?page\\_id=743&lang=en](https://salinaturda.eu/?page_id=743&lang=en)



## The Crivac Room

The octagonal room hosts a winch called “crivac” or “gepel”. The “Crivac” was exploited by horse power and served for the vertical transport of the salt from the Rudolf mine. On the crivac the date is marked that it was built in 1881. This machine replaced another, smaller size crivac, what was installed in 1864. It is the only machine of its kind in Romania and probably Europe. It is unique because it is in its original shape and location.

## The Extraction Shaft Room

This chamber contains the shaft through which the salt blocks were brought from Rudolf mine up to the gallery’s level. The pulley system was installed in 1864 at the top end of the shaft. With each pulley measuring a diameter of 3 m, the system is considered to be still in functioning condition. In addition, this chamber hosts a functioning replica of the extraction machinery on a 1:20 scale. The reconstruction re-enacts the whole procedure of salt extraction and it was built with the purpose of offering the tourists a clearer depiction of the way the extraction machinery used to function. The construction ensemble and mining equipment consisting of the extraction machinery, extraction shafts, the rope directing channels and the different galleries used to condition the salt transportation between Rudolf mine and Franz Joseph gallery’s level. The main element is the horse powered extraction machinery. Reconstruction on a 1:20 scale.

## Rudolf Mine

The Rudolf Mine is 42 meters deep, 50 meters wide and 80 meters long. The Rudolf Mine is the last mine from Turda where salt was exploited from. 172 steps lead to the heart of this magnificent Mine. Heading to the heart of the mine, on the walls is carved the year in which the salt was exploited. On the N-W side of the sealing salt stalactites can be admired that formed through the years. They grow about 2 cm/year and when they reach the length of about 3 meters, due to their own weight, they break. The panoramic lift offers tourists a whole picture of the Rudolf Mine.

## Terezia Mine

It is a cone shaped mine (mini bell). The exploitation of salt from this type of chamber leaves the underworld with an impressive view. This mine is 120 meters deep. The salt cascade, the underground lake and a bloom of salt stalactites help in the decoration of this huge underground bell. The underground lake is between 0.5 and 8 m deep. In the centre of the lake there is a 5 m high island, what is composed of salt waste dumped in here since 1880, date when mining was stopped in this room.

## Gizela Mine

The Gizela Mine and the technical rooms, adjacent to her, are similar to the Rudolf Mine, but much smaller because the salt exploration stopped shortly after the opening of this mine. Currently this mine is equipped as a spa treatment room with natural aerosols.

## Challenges

For the safe operation of the new objectives and infrastructures of the Turda salt mines, it is necessary to have in attention and solve the following technical aspects:

- changes of the microclimatic parameters such as temperature, humidity, particulate matter concentration and presence of chemical compounds in indoor air composition because the high number of visitors ;
- ensuring an adequate ventilation system, depending on the number of visitors<sup>7</sup>;
- proper management of groundwater, given the high degree of salt solubilisation;
- monitoring the stability of the mine in general and of the infrastructures in particular.

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<sup>7</sup> Pop, Nicoleta & Brisan, Nicoleta & Beldean-Galea, Mihail & Mera, Ovidiu & Schiopu, Irina. (2010). Changes of the Turda Salt Mine Underground Microclimate Induced by its Rehabilitation and Touristic Exploitation. Proenvironment Promediu. 3.

## Enabling conditions

The number of tourists who visit the Turda salt mine annually is constantly increasing (about 690,000 in 2018). More than a third of the number of tourists comes from abroad, from countries such as Hungary, Poland, Israel, Germany. That shows that this project has benefited from an extremely efficient promotion.

The saline management team intends to advance with the financing for the tourist development by including in the circuit of the Joseph mine, known as the Hall of the Echo. The project requires a financing of 20 million euros, the feasibility study is completed and the sources of financing must be identified together with the Turda City Hall. Opening the Joseph mine means doubling the visitors in Salina Turda.<sup>8</sup>

## References and further links

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<sup>8</sup> [https://www.monitorulcj.ro/actualitate/68144-numar-record-de-turisti-la-salina-turda\\_-aproape-cat-populatia-judetului-cluj](https://www.monitorulcj.ro/actualitate/68144-numar-record-de-turisti-la-salina-turda_-aproape-cat-populatia-judetului-cluj)



[www.tracer-h2020.eu](http://www.tracer-h2020.eu)

## Author

Maria Lazar, Asociația Institutul Social Valea Jiului (AISVJ), Romania

## Editors

Rita Mergner, WIP Renewable Energies, Germany  
Rainer Janssen, WIP Renewable Energies, Germany  
Christian Doczekal, Güssing Energy Technologies, Austria

## Contact

Asociația Institutul Social Valea Jiului (AISVJ)  
Sabina Irimie  
Email: [sabina.irimie@gmail.com](mailto:sabina.irimie@gmail.com), Tel: +40 723718829  
Str. Universității, no.20,  
332006, Petroșani Județul Hunedoara, Romania  
<http://www.institutulsocialvj.ro>



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 836819. The sole responsibility for the content of this report lies with the authors.