REPORT ON STUDY VISIT

IN BZOVÍK CASTLE, SLOVAKIA

Version 1
01/2018

REPORT ON STUDY VISIT IN BZOVÍK MONASTERY

COMPILED BY:

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AGENDA OF STUDY VISIT TO RUINED MONASTERY IN BZOVÍK, 14/06/2017

Matej Bel University (UMB), Banská Bystrica, Slovakia

and

Institute of Theoretical and Applied Mechanics of the Czech Academy of Sciences (ITAM CAS), Telč, Czech Republic

realised the fourth STUDY VISIT of the RUINS project.

1st DAY

December 18th 2017

08.00-08.30

MEETING OF PARTICIPANTS / Meeting room 1

- Registration and signing in of the Project Partners' participants – Rektorát Univerzity Mateja Bela, Národná 12, Banská Bystrica (**48.733312552, 19.145742059 -** 48° 43' 59.9251881" N, 19° 8' 44.6714115" E), Meeting room 1

08.30-09.00

INITIAL GREETINGS

- Mr. Ivan Murin, Slovak coordinator of RUINS project
- Mr. Vladimír Hiadlovský, rector // Mrs. Alexandra Bitušíková, vice-rector for research
- Mr. Miloš Drdácky, ITAM CAS Telč
- Mr. Bogusław Szmygin, project coordinator

09.00-09.20

HISTORY OF BZOVÍK MONASTERY

- Mrs. Dagmara Majerová, Faculty of Arts, Department of Social Studies and Etnology

09.20-9.50

INTRODUCTION TO RESTORATION PROBLEMS OF RUINS IN SLOVAKIA

- Mrs. Zuzana Klasová, head office of The monuments Board of the Slovak Republic

9.50–10.00

COFFEE BREAK

- Meeting room 1

10.15–11.30

STUDY VISIT BZOVÍK

- Transport by bus for all participants from Banská Bystrica to BZOVÍK Monastery with a short stop (bus view) at Ostrá Lúka – Pustý hrad ("Desert Castle") and Podzámčok ("Fortified signal system")

11.30 – 12.00

WELCOME NOTE

- Mr. Boris Sedmák, mayor of the village BZOVÍK

12.00–13.00

TIME FOR LUNCH

13.00–14.30

TRAINING OF TECHNICAL ASPECTS OF RUINS PRESERVATION

WORKSHOP 1: TECHNOLOGICAL WORKSHOP (place: BZOVÍK MONASTERY)

Historical wooden constructions including analysis of historical technologies

Analysis of wooden building elements

- Mr. Jiří Bláha, ITAM CAS, CZ
- Mr. Michal Kloiber, ITAM CAS, CZ
- Mr. Jaroslav Hrivnák, ITAM CAS, CZ

WORKSHOP 2: BIOLOGICAL AND GEOLOGICAL ANALYSIS (place: BZOVÍK MONASTERY)

Analysis of stone building elements and engagement of greenery, workshop with practical stonemasons

- Mr. Ján Spišiak, Faculty of Natural Sciences, Department of geography and geology
- Mr. Peter Andráš, Faculty of Natural Sciences, Department of environmental management
- Mrs. Ingrid Turisová, Faculty of Natural Sciences, Department of biology and ecology

DIGITIZATION AND VISUALIZATION OF RUINS FOR APPLIED RESEARCH, DOCUMENTATION AND MARKETING

- Mr. Michal Filadelfi, IT support, Matej Bel University, University Center for International Projects
- Mr. Pavol Midula, Faculty of Natural Sciences, Department of Biology and Ecology
- Mr. Ivan Murin, Faculty of Arts, Department of Social Studies and Ethnology
- Mr. Ivan Souček, Faculty of Arts, Department of Social Studies and Ethnology
- Mrs. Kamila Borseková, Matej Bel University, Research and Development Center

KNOWLEDGE EXCHANGE SEMINAR

15.00–17.00

WORKSHOP 3: MANAGEMENT AND MARKETING TOOLS FOR THE USE OF RUINS (place: Municipal Office)

Discussions and workshop with stakeholders of Monastery BZOVÍK

- Mrs. Anna Vaňová, Faculty of Economics, Department of Public Economics and Regional Development
- Mrs. Kamila Borseková, Matej Bel University, Research and Development Center

WORKSHOP 4: LOCAL POPULATION AND CONNECTING PEOPLE WITH CULTURAL HERITAGE (place: Municipal Office)

Contact of the local population with the cultural heritage and the prevention of risks

- Mrs. Dagmara Majerová, Faculty of Arts, Department of Social Studies and Ethnology
- Mr. Ivan Murin, Faculty of Arts, Department of Social Studies and Ethnology
- Mr. Ivan Souček, Faculty of Arts, Department of Social Studies and Ethnology
- Mrs. Jana Jaďuďová, Faculty of Natural Sciences, Department of environmental management
- Mrs. Iveta Marková, Faculty of Natural Sciences, Department of environmental management

18.00-19.00

TIME FOR DINNER

Hontianske Nemce

19.00-19.30

STARÁ HORA / SEBECHLEBY – MONUMENTAL AREA OF FOLK ARCHITECTURE

- Transport by bus from Hontianske Nemce to Stará Hora / Sebechleby

19.30-21.00

DISCUSSIONS OF PARTICIPANTS AND LOCAL STAKEHOLDERS

- importance of technical, scientific and cultural inventories of ruins and cultural heritage
- ruins as a tourism product
- linking ruin objects with folk architecture sites and intangible cultural heritage
- management of ruins in small municipalities

21.00 – 22.00

RETURN TO BANSKÁ BYSTRICA (by bus)

2nd DAY

December 19th 2017

08.30-09.00

MEETING OF PARTICIPANTS / Meeting room 1

- Registration and signing in of the Project Partners' participants – Rektorát Univerzity Mateja Bela, Národná 12, Banská Bystrica (**48.733312552, 19.145742059 -** 48° 43' 59.9251881" N, 19° 8' 44.6714115" E), Meeting room 1

09.00-12.00

STEERING COMMITTEE

- Presentation of Deliverables:
  - Report on the current state-of-the-art on protection, conservation and preservation of medieval ruins - Mr. Bogusław Szmygin, project coordinator
  - Report on the current state-of-the-art on contemporary use and re-use of medieval ruins - Mrs. Silvia Soldano, SiTI
  - Report on the current state-of-the-art on management of medieval ruins and best practice of risk assessment - Mr. Maurizio Male, VHC
- Summary of implemented activities and deliverables. Assessment of project progress and quality
- Discussion and approval of the work plan for the following months
- Discussion of formal issues related to the implementation and progress of the Project
- Presentation of initial financial reports and discussion of the financial progress of the project
- Other issues; Attendees remarks

12.00-13.00

GUIDED TOUR OF THE BANSKÁ BYSTRICA HISTORICAL CITY

13.00-14.00

TIME FOR LUNCH

14.00-15.00

INCLUSION OF UNEMPLOYED PEOPLE INTO THE RESTORATION OF RUINS

- The Monuments Board of the Slovak Republic

15.00-16.00

INDIVIDUAL DISCUSSIONS OF THE PARTICIPANTS / PARTICIPANTS´ DEPARTURE

VENUE

Rektorát Univerzity Mateja Bela v Banskej Bystrici,
Národná 12

Banská Bystrica, SLOVAKIA

(48.733312552,19.145742059), Meeting room 1

Obecný úrad Bzovík

Ceremonial room, Meeting room

(48.320312, 19.088667)

Bzovík ruins

Tall bastion

(N48°19'0'' E19°6'0'')

Sebechleby – Stará hora

Monumental area of folk architecture

(N48°16´53.61´´ E18°54´46.43´´)

1 HISTORY OF BZOVÍK MONASTERY

Bzovík monastery is located on south west side of Banska Bystrica region, which is a property of the village Bzovík, a part of Krupina city. Bzovík Monastery is one of the oldest church institutions in Slovakia. It is a Gothic-Renaissance anti-Turkish fortress and it was created by the reconstruction of a former monastery. Before 1135 Bzovík monastery was founded by Lampert from family Hunt-Poznanyi together with his son Nikolas and wife Zofia, witch was a sister of Hungarian King Ladislav. The Benedictines was originally settled here. a few years later, the premonstratensian abbey was established and became the most important feudal estate on the Hont region. The oldest written mention dates back to the year 1285. One of the conditions for the foundation of the premonstratensian convent was to build these concret rooms inside the monastery: prayer room, prefectorium (dinning room), dormitory (slipping room), domus hospitalis (accomodations for travelers), infirmaria (rooms for sick monks), gate and accomodation for the doorman. There was also a livestock and monks prodducted butter, cheese, and eggs, which used to sell in the villige market. We also have a charter, which mentions craftsmen and reapers. Everyday life was taken care by the laic priests.

Bzovík monastery was probably affected by Tartars (in the year 1244), and Bzovík was damaged. However, direct informations about it was not retained. During the fights between the followers of Polish Ladislav Jagelovský and Hungarian Elizabeth, local area was devastated by the soldiers of Jan Jiskra (former husits commander) that were stationed in near by Krupina. During this time the monastery was rebuilt in Gothic Style. They added a chapel to the old Romanesque single nave church with two towers in 1444-1446. They also built a new monastery wing and paradise garden. In east wing was sakristy, monks cells, and big hall, kitchen, dinning room and cupborards. In West wing were three rooms. Monastery had 4 wings alltogether. In south wing was built a port. In the year 1471 were damaged and burned down some parts of monastery by angry citizens from Krupina. The farm yard and farmhouse were destroyed in these times.

The impulse for the second Gothic reconstruction was a violent ingess into the castle by Juraj from Dvorniky, a castleman from Čabraď, which in 1486, destroyed the buildings and robbed it. In that time the ambit vaults were decorated with a frescoes. reconstructions was completed in the year1515.

Figure 1 Current state of Bzovík Monastery

In 1530 the monastery was attacked by Zigmund Balassa. He evicted the monks which settled in the nearest monastery in Hronsky Beňadik, where they were Benedictines. He began with the rebuilding of the monastery to an anti-Turkish fortress. in 1540, King Ferdinand I gave Zygmund BAlassa the law of patronage with the premise that he would carry the masses at the castle. After 350 years of monastery living premonstrates lived the monastery and did not come back there any more. In the years 1530 - 46 rebuilt the entire castle. He took down the damaged church and south tower, built a large court, rebuilt the old southern Roman tower, and made an observatory in there. Other parts of the monastery were restored to residential areas. The sacristy served as a chapel. The entire former monastery was surrounded by a thick wall with 4 corner bastions. At the walls were built accomodation for the army. A waterditch was built around the fort. He built a new entrance on the Northwest side next to the bastion, and built a Renaissance portal and a drawbridge.

Figure 2

a) Ruins of Balassa´s Chapel b) Interior preview

After Balassa's death in 1559, his wife, Barbora from the dynasty of Fanchy, got his castle, and this family owned the castle until the middle of the 17th century. 1620 the fortress burned down. 1687 Fortress occupied rebels from Imrich Tokoly army, after their departure, the fortress became the property of the Jesuits and little bit later the property of the seminary in Estergom. The castle's function ceased to exist when the property returned to the church institution. After 1687, the fortress was repaired and rebuilt in Baroque style by the bishop of Estergom Juraj Selepcsenyi. These holdings were managed by Estergom's Chapter up to 1908 when they were sold.

Figure 3 Sunset over the Bzovík Monastery

After the First World War, the object ceased to be occupied and building started to destruct. In the Second World War the central part of the castle was completely destroyed. Parts of the inner walls were broken down by villige people from Bzovík. In 1969, the Ministry of culture of the Slovak Republic started to do a research, project documentation and reconstructions in Bzovík monastry. Nowadays Only ruins have been preserved from the monastery's area, but the fact that some parts were built in the 12th century includes a monastery among the important medieval monuments of Slovakia.

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HNILICA, Ján. Kláštor v Bzovíku. In: ŠIMONČIČ, Jozef (Ed.). Dejiny a kultúra rehoľných komunít na Slovensku. Trnava: Trnavská univerzita, 1994, s. 155-173.

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PISOŇ, Štefan. Hrady, zámky a kaštiele na Slovensku. 1. vyd. Martin : Osveta, 1973.

ZREBENÝ, Alexander. Z dejín Bzovíka. In: Vlastivedný časopis. Roč. 21., 1972, č. 3, s. 97 - 104.

2 INTRODUCTION TO RESTORE PROBLEMS OF BZOVÍK MONASTERY

MOTTO :

The diversity of the cultural manifestations of the "Old continent" is our common wealth.

National cultural heritage (both tangible and intangible) is a manifestation of the :

- spiritual level,
- economic and technical development,
- building and the craft skills,

conditioned by the environment in which the nation evolved.

Protection of cultural monuments in Slovakia

Development :

- conditions and paradoxes :

Slovakia - the territory through which many business trips were crossed, which significantly influenced the lives of the former inhabitants and also their architectural expressions.

- a great diversity of existing architectural heritage and archaeological finds from the earliest times.
- the functions and
- the dimensions of many buildings varied, what were influencing their architectural design and appearance.

period after II. world - changed its regime and disrupted the continuity of ownership relations

- the intensive development of a new scientific discipline aimed at protecting monuments.

- legislative and institutional framework :
  - in the 50s of the 20th century - was formed protection system and creation of a specialized institution for methodology
- experience and practice

- Many times was not respecting original materials, climatic conditions and natural environments, and intervenes that negatively influenced the authenticity and originality of the object and caused the irreversible loss of monumental values (concrete, cement for masonry)

- ownership and restitution claims
    - 1989 - political regime changed
    - From the early 90s of the 20th century - an enormous frequency of ownership changes

Responsibility (According to the Act on the Protection of the Monument Fund**) :**

- The Monuments Board of the Slovak Republic and its regional centers
- self – goverment (municipality)
- owner

Restoration and presentation :

- **Construction and technical condition** - static report
- **Knowledge of monumental values**

- for an appropriate methodical guidance and the maximum knowledge of existing individual values oh the monument. It is acquired through archival documents and specifically focused monumental research :

Monumental researches (type) :

- urban-historical
- architectural-historical
- art-historical
- archeological

Bzovík, monastery (historical stages, ownership, realization of research, recovery method, functional use)

Č. ÚZPF : 1084/1 (No. of The Central list of Monumental found of the Slovak Republic)
monastery of premonstrates (castle Bzovik):

- Characteristics: One of the oldest monasteries in Slovakia (Jasov, Kláštor pod Znievom, Bíňa, Šahy), located along the main communication axis through Hont county; linking the central time of Hungary with the mining towns (and via Liptov and Orava with Poland)
- Ownership : frequent changes (village Bzovík - about 8 -9 years old)

- Condition : after the First World War, the whole object ceased to be occupied and progressive destruction took place.

From the whole building is preserved until today only the Gothic sacristy, which served as the castle chapel, and the bases covered by debris and the remains of the perimeter walls.

- Preparation for the restoration of the monument: realization of previous researches
- Recovery method: stabilization, preservation + accent of activities and building interventions, respecting the spatial perception of the site, its characteristic silhouette, i. not the construction of new domination

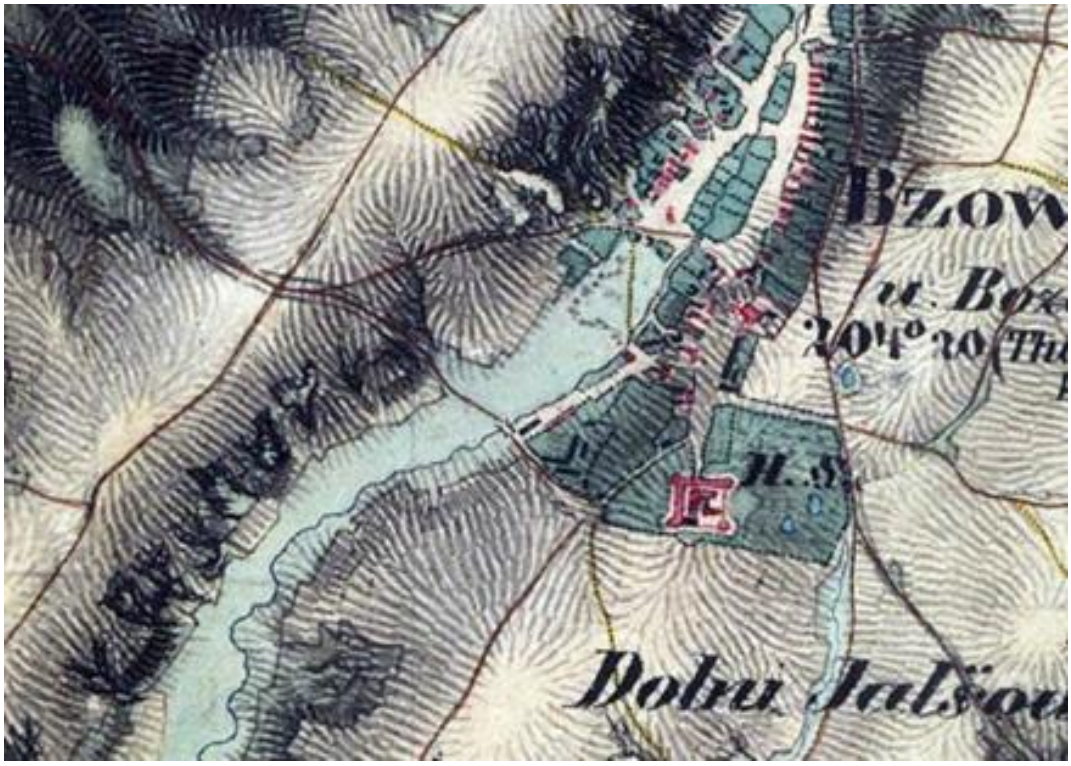


Figure 4 Cut out of the map - II. military mapping (1806 – 1869)

Floor plan of a fortified monastery with numbering of the room (1932) monastery.

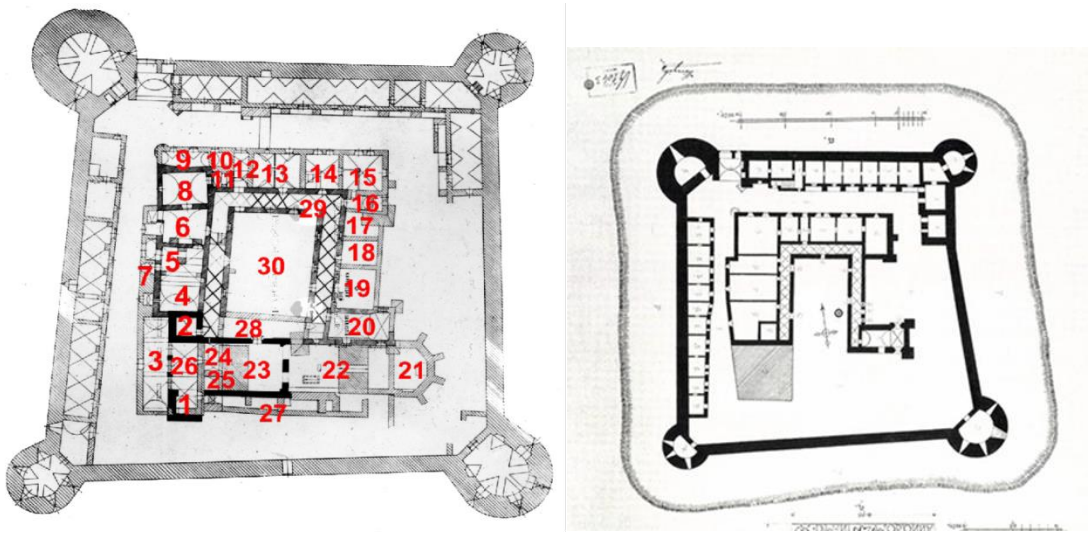


Figure 5 *Planned monastery with numbering of the room (V.Mencl, 1932. Ground plan of Bzovik, author: J. Könyöki end of the 19th century). Source: Foster Kozpont, Budapešť*

View from southeast bastion to the north

beginning of the 20th century research, (2015)

Romanesque tower in the western wing of the monastery

- *beginning of the 20th century & research, (2015)*

Source:, AÚ SAV, Nitra

Building at the north wall - view east

- *beginning of the 20th century & research, (2015)*

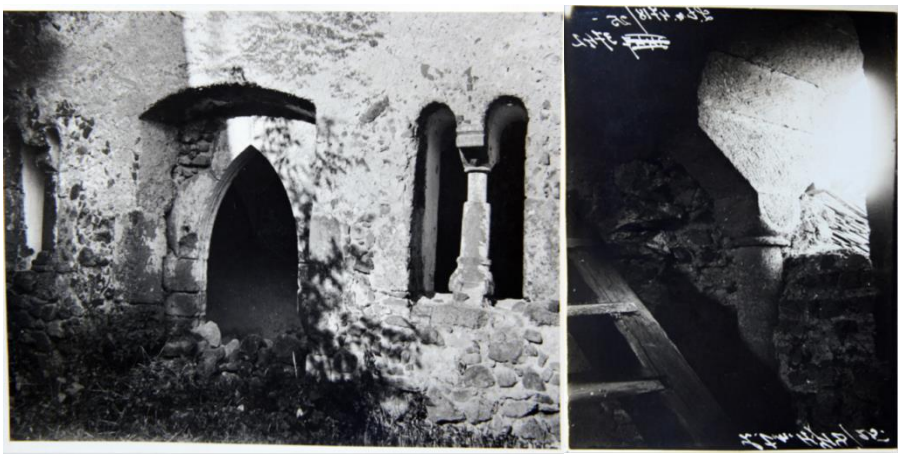
Source:, AÚ SAV, Nitra

Northwest corner of the monastery with arkier

- *beginning of the 20th century & research, (2015)*

Source:, AÚ SAV, Nitra

Romanesque window in the monastery building



- *beginning of the 20th century & research, (2015)*

Source:, AÚ SAV, Nitra

- **Preservation and appropriate presentation of the cultural heritage has an irreplaceable role in society**:
- to raise awareness of the population
- strongly supports national pride and local patriotism
- is an opportunity to create jobs
- is an attribute of economic development

3 INTRODUCTION TO RESTORATION PROBLEMS OF RUINS IN SLOVAKIA

RESTORE YOUR HOME - Funding Program, Subprogram 1.4: Conservation of Historic Parks and Architectural Areas in Critical Stance AKA "Conservation of the Castles by the Unemployed"

Background for Invention of the Program

after 1989 (end of communism period)

- many ruins were left in bad condition or in unfinished conservation process
- ownership becomes an issue as restitution to pre-communism owners was in progress
- volunteer work comes to importance, as many new owners (municipalities, government ran institutions) have no means of funding any restoration

90s

- Uncared ruins are here and there treated by members of touristic or environmental clubs and civic associations like Slovak Club of Tourists, Tree Of Life etc.
- -The work is mainly targeted on sustaining the access to the ruins for the public by establishing hiking trails and cleaning of brush growth

Figure 6 *Ruins of Castle Šášov – situation after stopped restoration process, where the ruins were cleaned of the rubble and total archeological excavation was finished. Then the ruin was left to the elements.*

Late 90s and early 2000s

- founding of volunteer groups dedicated to the restoration of single ruins –evolution of specialized groups of people out of former clubs
- fundraising is an issue

  > dependence on benefactions, corporate grants

  > since 2001 – possibility to apply for 1% of income tax share later risen to 2%
- manpower is an issue – unstable volunteer capacities → hard to plan and finish larger projects

Figure 7 *Gate no. II of Castle Čabraď - restoration done by local civic association Rondel.*

Establishing the program

- 2011 - pilot project – combining the issue of unemployment and cultural heritage
- Launched on two objects in different social areas
- Castle Saris – eastern Slovakia – high unemployment rate
- Castle Uhrovec –western Slovakia - low unemployment rate
- 2012 – first year the project was opened for all objects meeting the criteria
- the project becomes effective and survives turbulent political change
-

Figure 8 *Secretary of Culture Daniel Krajcer supervising the pilot program at Castle Šariš in person.*

Aim of the Program

- financial back up for conservation mainly of large areas of architectural heritage in critical stance
- activation of long term unemployed people for the work market

Most Important Criteria -Preparedness

- finished projects (statics, architecture…) and research (archeology, history of building and art…)
- documentation approved by regional office of Monument Board

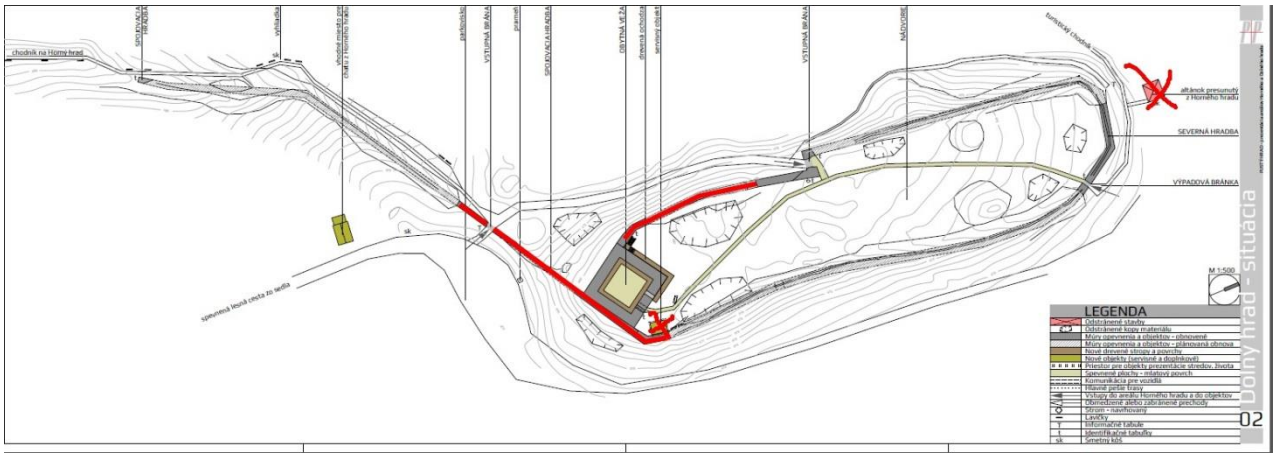


Figure 9 Ground plan from architectural study of restoration of the lower part of the Castle Pustý Hrad in Zvolen by Ing. arch. Miloš Pivko. Grey – already finished work, red outlined – planned work, x – denied building activities.

Program Priorities

To apply for the program the monument must meet the criteria:

- object in critical stance
- object located in importat tourist destination
- object located in district listed in the government list of less developed districts

Principle of the Program

The principle of funding this subvention program is based on participation of two government institutions:

- Department of Culture providing funds for material and know how

- Central Office of Labor, Social Affairs and Family – providing funding for Human Recourses – via European Social Fund

Human Resources

The manpower provided by the project can be divided into 2 main categories:

- non-qualified works – „The Hands“ – used for jobs as digging, transport of materials, cutting of greenery, preparing mortar…,
- qualified works – masons, carpenters, research assistants etc.

Special category is paid project coordinator, who is responsible for accounting, work management, HR, project repot… A coordinator is allowed only if at least 8 workers or volunteers are under his charge.

Figure 11 Non-qualified hands transporting material for roofing at manor of house Coburg in Jelšava.

Figure 10 Building-historian Ing. Martin Bóna, PhD. is pointing to a minor mistake in presentation of Romanesque battlements on the tower of Castle Revište.

Material and Know How

Through the program can be acquired:

- research – archaeology, art- and building- history, restoration, statics...
- licensed restoration work
- licensed building work
- material purchase and transportation (timber, stone, chalk, sand, bricks...)
- rent or purchase of scaffoldage (purchase limited to 1.699€)

- presentation of the monument
- transportation and accommodation for the project coordinator
- rent of building machinery
- purchase of tangible property up to 1.699€

Implementation of the Program

Usually the program is implemented by municipality which is the owner of the property. In case of small municipalities it is often done with the help of a civic association. Sometimes the civic associations take over all the responsibilities (in case the municipality has no means or will to take part in the project, or of the owner is a institution which is not allowed to take part in project like this due to its internal regulations – e.g. government operated forestry company).

Examples of Best Practice

Figure 12 Restoration of the main tower of Castle Pustý Hrad

Figure 13 Restoration of the ramparts of Castle Pustý Hrad

Figure 14 Restoration of captain's residence at Castle Muráň

Figure 15 Restoration of the main tower of Castle Muráň

Figure 16 Restoration of the gate no. 1 and clean-up of rubble coming from a massive wall collapse into outer courtyard at Castle Revište

Figure 17 Restoration of greater part of the upper part of Castle Divín

Figure 18 Restoration of the main tower of Castle Revište

4 RUINS OF THE BZOVÍK FORTIFIED CLOISTER - GEOLOGICAL STUDY OF THE BUILDING MATERIAL

The building complex was built in two steps:

a) at first was built the Cistercian Abbey founded around 1130. Several decades later the Premonstratesian provostship moved here and became the largest feudal estate of the Hont county.

b) The second structural step was the building of the fortification (Fig. 19).

Figure 19 In forefront the ruins of the cloister; in background the fortification

In 1530 it ended up in hands of Sigismund Balassa who drove out the monks and had the Romanesque monastery reconstructed to the castle with strong outer fortifications including four corner bastions and the dike. The complex was built from local geological material (rocks) but there are some differencies in the rate of the used rock types during the realization of the two mentioned building periods. The predominant rock material both in the ruins of cloister, as well as in the preserved parts of the fortification consists of: andesites, dacites and pyroclastic material (Fig. 20).

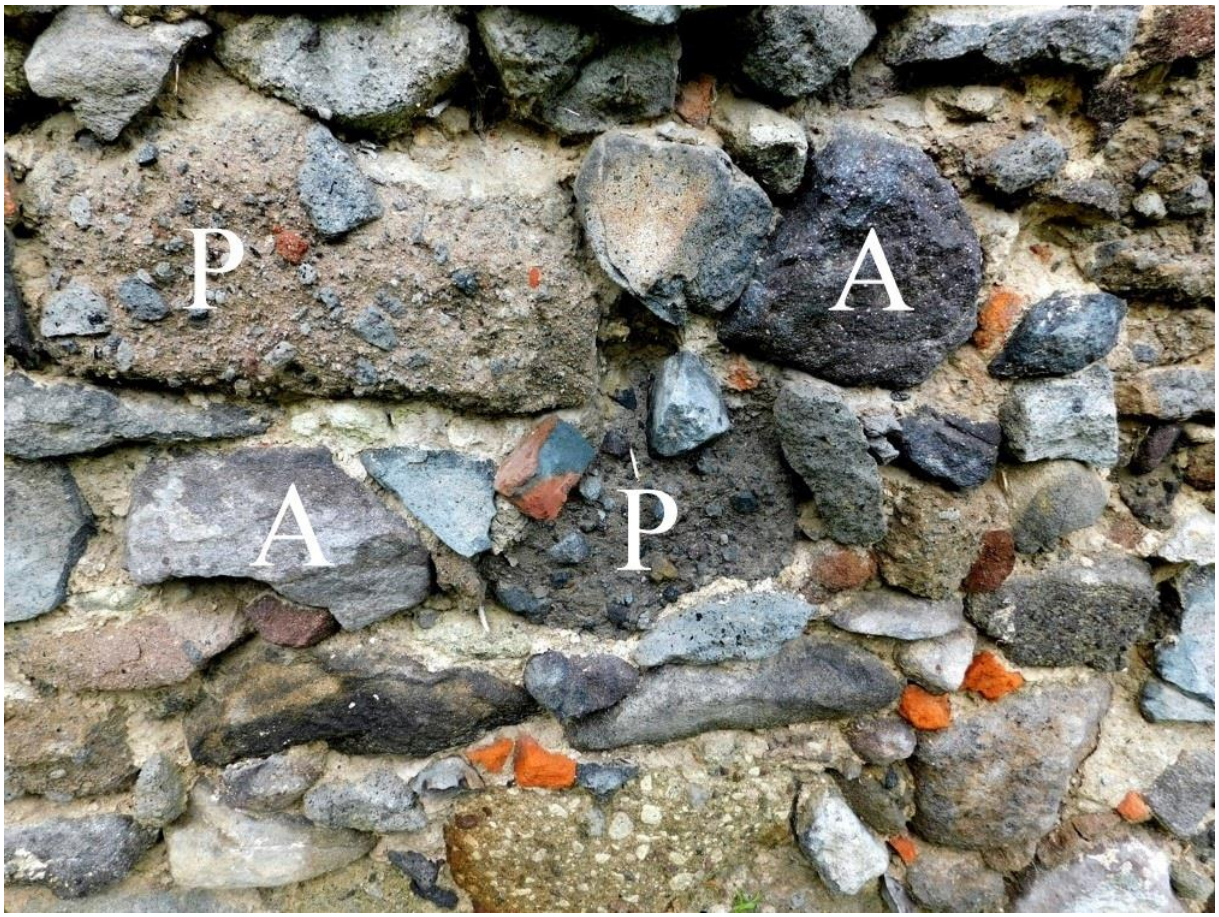


Figure 20 Geological material typical for the buildings of cloister: andesites (A) and pyroclastic material (P)

The pyroclastic rocks are both fine-grained (Fig. 21) as well as coarse-grained (Fig. 22), eventually conglomerates (Fig. 23). The cloister was built from more variegated material and in the ruins of the cloister is visible a little bit more soft rocks (sandstones, rhyolite tufs) as in the youger fortification, which is built predominantly from and andesite. Most stones are not chiselled but some little portion of the stones was carved (Fig.24)

Figure 21 Fine-graned pyroclastic material

Figure 22 Coarse-grained pyroclastic rock

Figure 23 Conglomerate

Figure 24 Chiselled blocks in the wall structure

4.1 *Microscopic study of the rock material*

The microscopic investigation of the building material is realised to study the weathering of the used rocks and in the second step find solutions how to control this process.

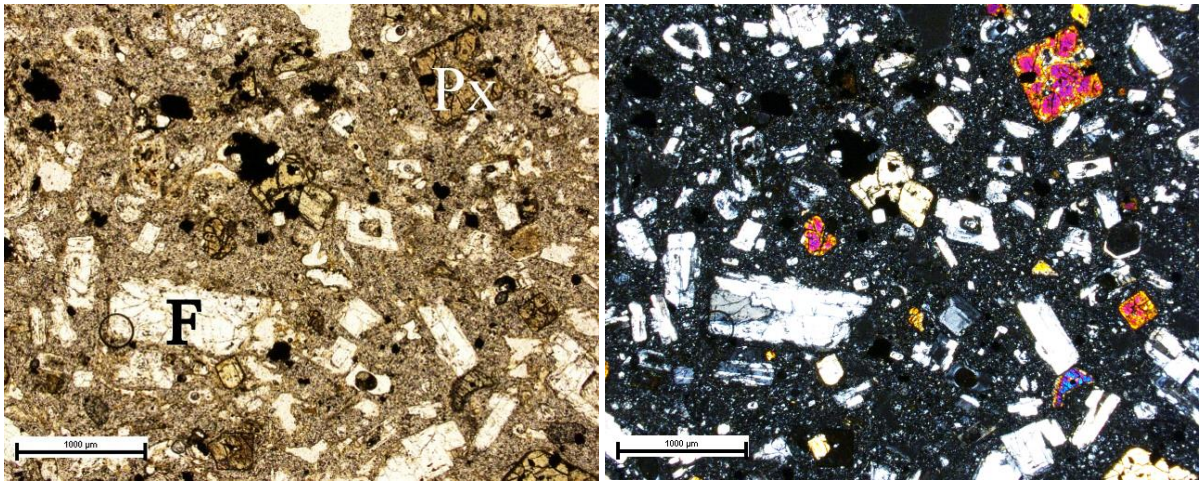


Figure 25 ltered dacite, vitreous matrix is strongly devitrificated. In the matrix are visible phenocrysts of feldspars (F) and pyroxens (Px); (parallel polars and the same in crossed polars).

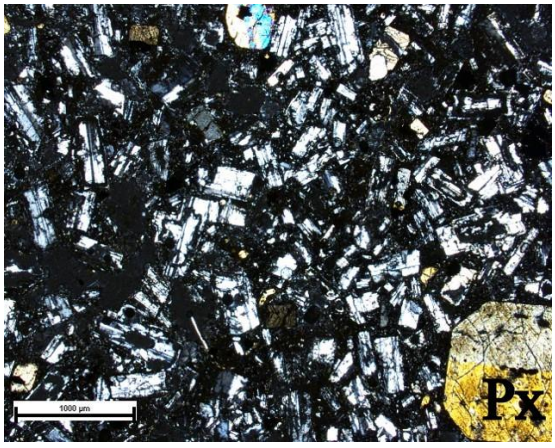


Figure 26 Ophitic texture of andesite with pyroxene phenocryst (P)(crossed polars)

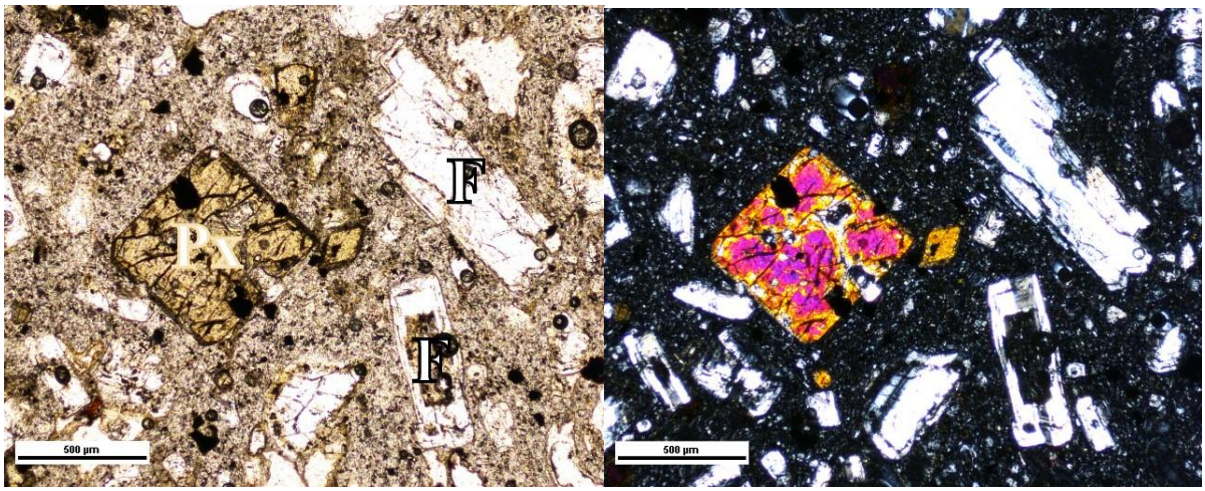


Figure 27 Detail of feldspars (F) and pyroxen (Px) phenocrysts

(parallel polars and the same in crossed polars)

4.2 Geological study of the building material – microscopic study

The complex was built from local geological material (rocks) but there are some differencies in the rate of the used rock types during the realization of the two mentioned building periods. There are differences in the composition of the building materials of both buildings (ruins of the Cistercian Abbey and yanger fortification)

Figure 28 Bzovík: ruins of the Cistercian Abbey and fortification

In the study, we focused on the mineral composition, texture and structure of rock and degree of their alteration. We mainly used the study of thin section of rock under the mineralogical polarized microscope. Polarized light is a contrast-enhancing technique that improves the quality of the image obtained with birefringent materials when compared to other techniques such as darkfield and brightfield illumination, differential interference contrast, phase contrast, Hoffman modulation contrast, and fluorescence. Polarized light microscopes have a high degree of sensitivity and can be utilized for both quantitative and qualitative studies targeted at a wide range of anisotropic specimens. Qualitative polarizing microscopy is very popular in practice, with numerous volumes dedicated to the subject. In contrast, the quantitative aspects of polarized light microscopy, which is primarily employed in crystallography, represent a far more difficult subject that is usually restricted to geologists, mineralogists, and chemists. However, steady advances made over the past few years have enabled biologists to study the birefringent character of many anisotropic sub-cellular assemblies.

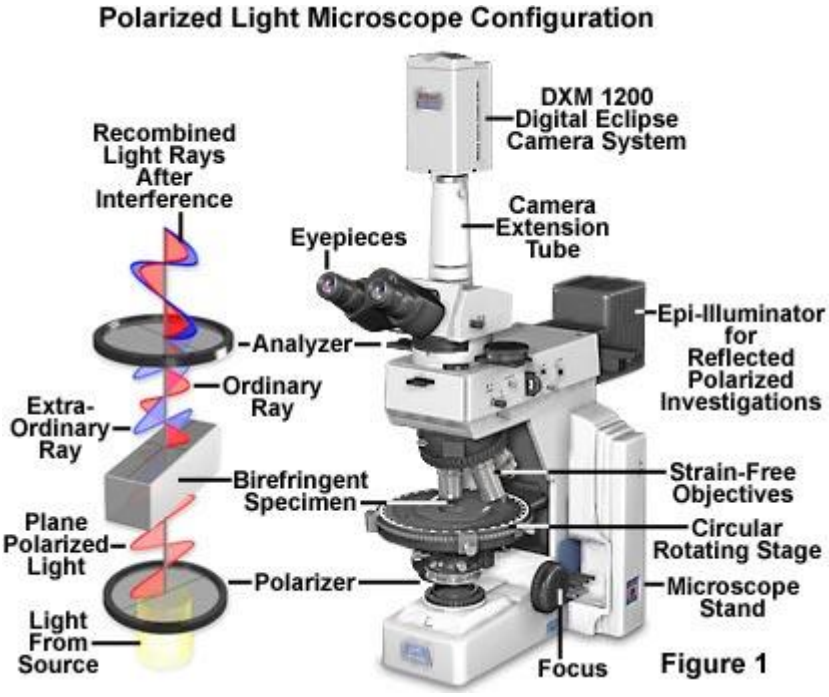
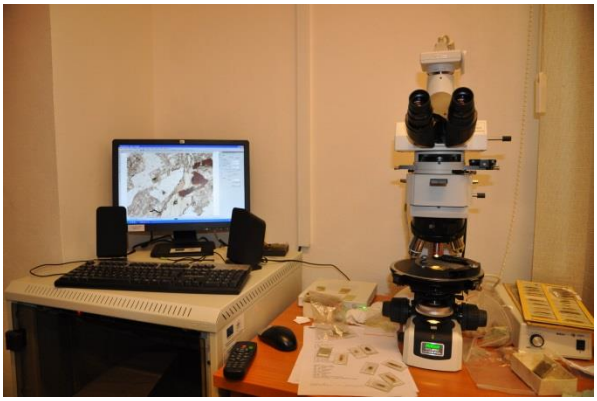


Figure 1

The polarized light microscope is designed to observe and photograph specimens that are visible primarily due to their optically anisotropic character. In order to accomplish this task, the microscope must be equipped with both a **polarizer**, positioned in the light path somewhere before the specimen, and an **analyzer** (a second polarizer), placed in the optical pathway between the objective rear aperture and the observation tubes or camera port. Image contrast arises from the interaction of plane-polarized light with a **birefringent** (or doubly-refracting) specimen to produce two individual wave components that are each polarized in mutually perpendicular planes. The velocities of these components, which are termed the **ordinary** and the **extraordinary** wavefronts , are different and vary with the propagation direction through the specimen. After exiting the specimen, the light components become out of phase, but are recombined with constructive and destructive interference when they pass through the analyzer. These concepts are outlined in Figure 2 for the wavefront field generated by a hypothetical birefringent specimen. In addition, the critical optical and mechanical components of a modern polarized light microscope are illustrated in the figure.

In optical mineralogy and petrography, a **thin section** (or **petrographic thin section**) is a laboratory preparation of a rock, mineral, soil, pottery, bones, or even metal sample for use with a polarizing petrographic microscope, electron microscope and electron microprobe. A thin sliver of rock is cut from the sample with a diamond saw and ground optically flat. It is then mounted on a glass slide and then ground smooth using progressively finer abrasive grit until the sample is only 30 µm thick. The method involved

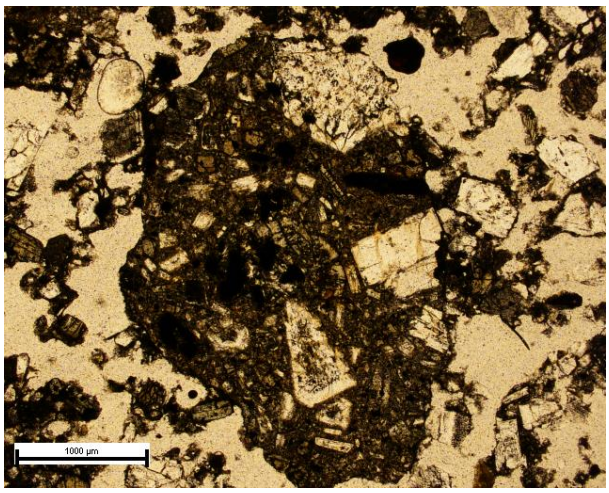
using the Michel-Lévy interference colour chart. Typically quartz is used as the gauge to determine thickness as it is one of the most abundant minerals.

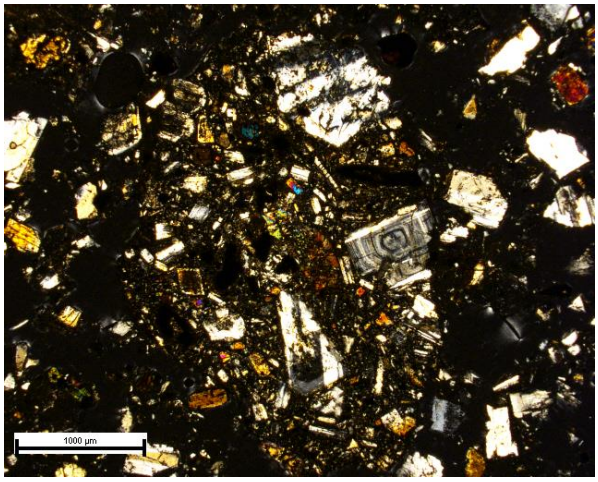


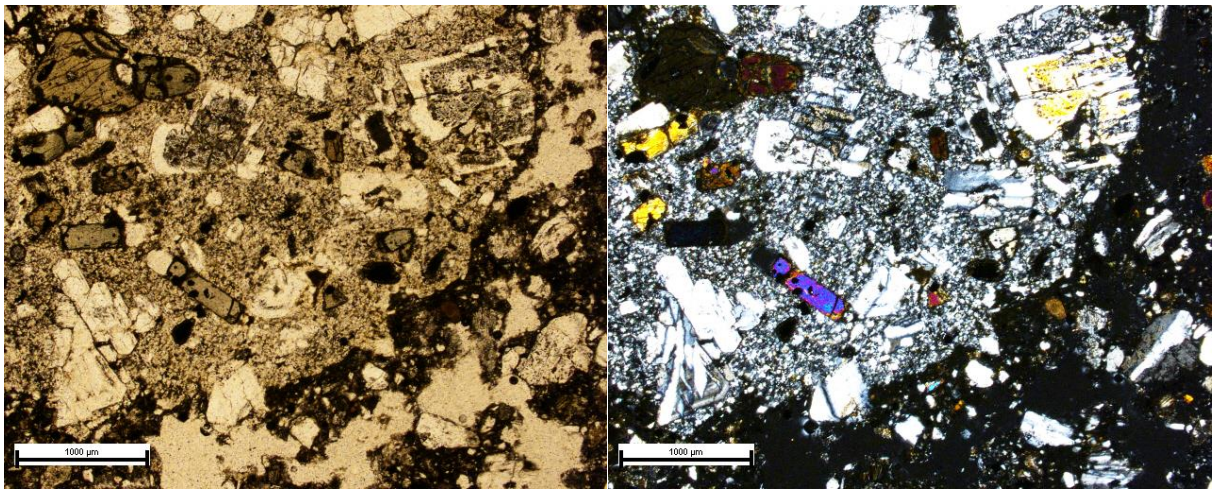
Geological material typical for the buildings of cloister: magmatic and pyroclastic material




Microscopic study of the rock material



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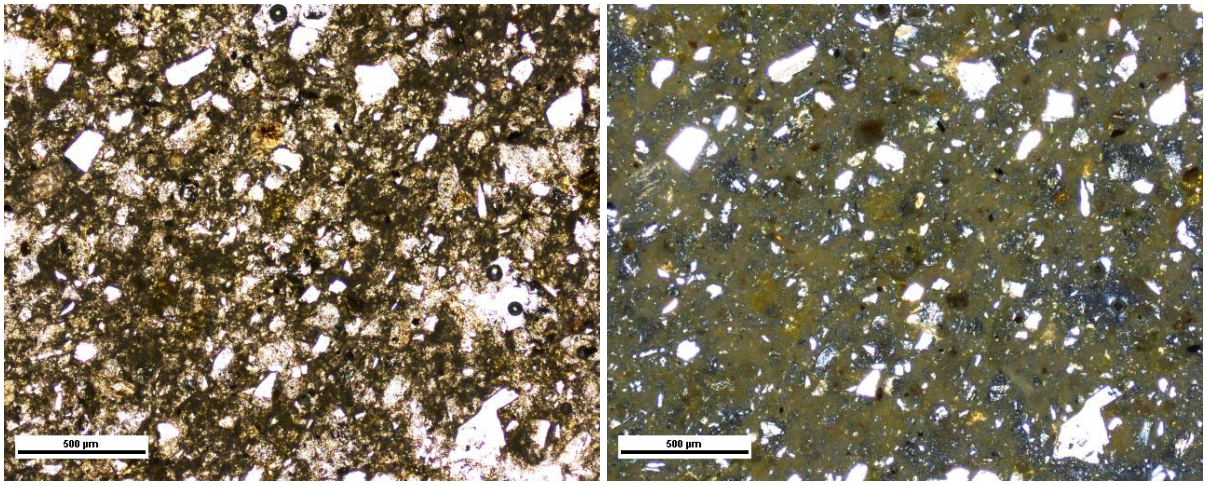
1000 µm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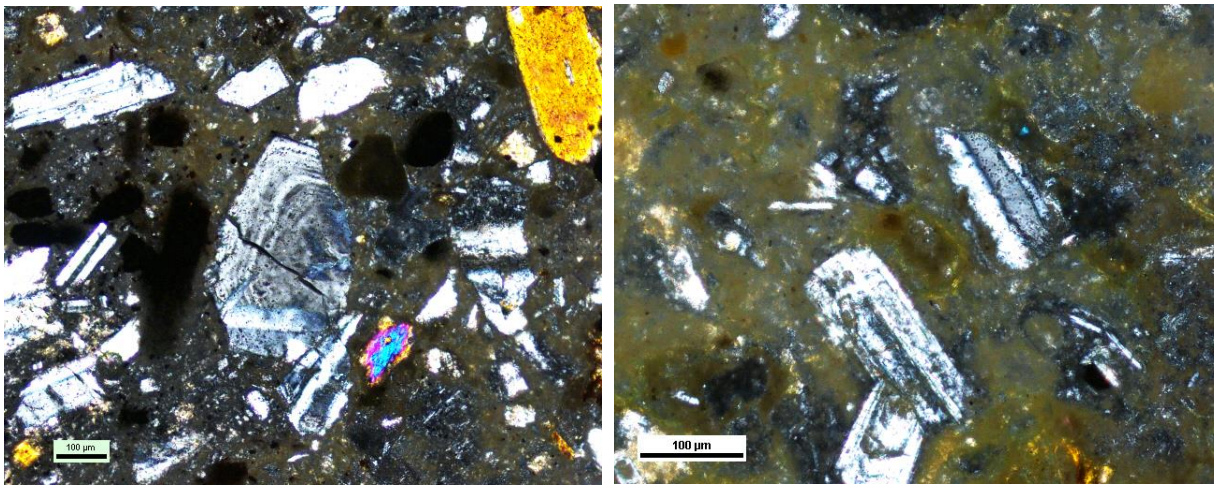
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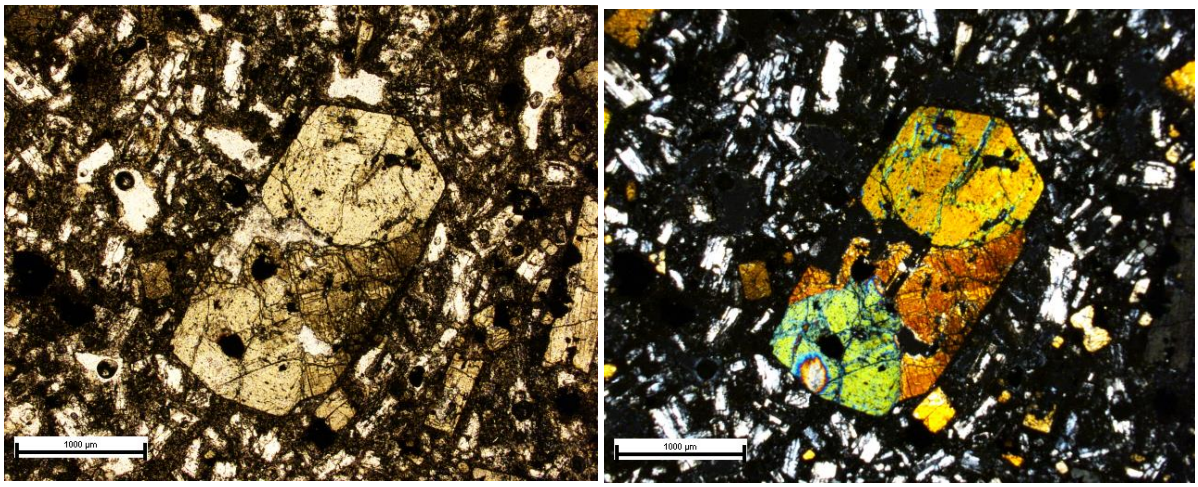


Literature in chapture :

Optical Mineralogy by Paul Francis Kerr (1977, McGraw Hill)

Optical Mineralogy by Ernest Ehlers (in two volumes, 1987, Blackwell Scientific)

Petrography of Igneous and Metamorphic Rocks by A. R. Philpotts (2003, Prentiss Hall)

Atlas of Rock-Forming Minerals in Thin Section by Mackenzie and Guilford (1984, Longman)

5 BIOLOGICAL ANALYSIS OF HERITAGE AREA AND ENGAGEMENT OF GREENERY, WORKSHOP WITH PRACTICAL STONEMASONS

Medieval monasteries, castles and their ruins represent a particular phenomenon of the rural landscape. They are considered to be important architectural and cultural monuments not only for their landscape position as a dominant feature of the region, also as integral part of cultural awareness of inhabitants. There are the significant dominant features in the relief of the country, especially the Slovak landscape. Here already in the mid-19th century they began to be seen as a romantic coulisse of the country (PISOŇ 1973).

From a biological point of view, medieval ruins represent anthropogenic habitats in which many species of **plants** and **animals** find suitable living conditions (ELIÁŠ 1981; 1994, 2014; LOŽEK & SKALICKÝ 1983). They represent the area with specific ecological conditions:

- rock substrate,
- shallow soil,
- slopes orientation,
- slope terrain,
- evaporation of water, etc.

Since the 18th century, they have become the subject of biological research (at first floristic and faunistic research, later also ecological and environmental research). CIELKA (2011) has published an extensive study on vascular plant´s analysis of 109 West Slavic sites located in Poland, NE Germany, and the Czech Republic and 21 sites of Baltic, East Slavs, Teutonic kinghts medieval West Slavic settlements and castles (Fig. 1), where 876 vascular plant species were recorded.

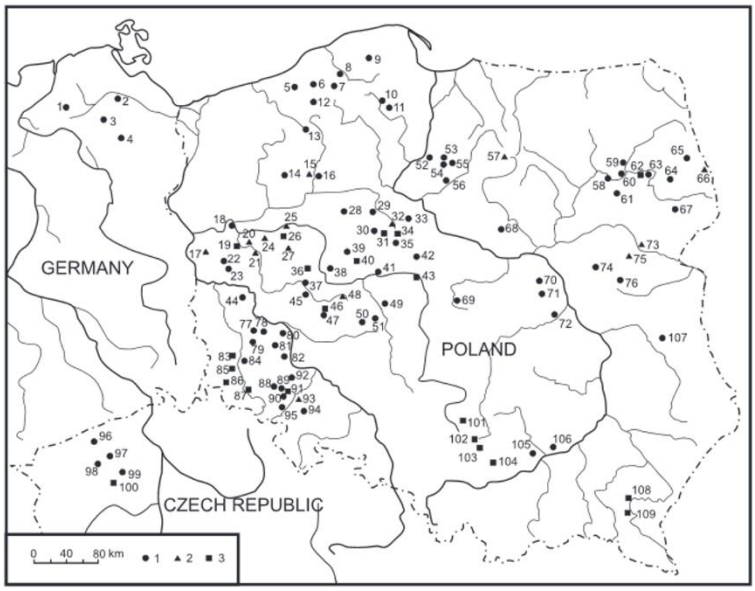


Fig. 1 Distribution of the studied West Slavic archaeological sites in Central Europe explanations: 1 – concave settlement, 2 – cone-shaped settlement, 3 – castle

Alien species account formed for nearly 21 % (of these 101 archaeophytes), so-called species of old (origin) deciduous forests 98 species and also there were founded 22 relics of cultivation. It means these species play a special role in research on the history of the flora (not only) of Central Europe and thus also of the world flora. Thus the best-preserved sites of medieval West Slavic settlements and castles **should be protected as our both cultural and natural heritage**.

5.1 *Ruins and Biodiversity*

The vegetation and local environmental conditions within individual sites are generally highly variable:

- small area and a variety of habitats:
  - clumps of trees or shrubs,
  - xerothermic grassland,
  - arable field,
  - ruderal habitat,
  - meadow, moat (filled with water all the time or only periodically wet),
  - and/or walls (of a castle) with some plants growing on them, etc.

In Slovakia:

Most castles and monasteries are ruins, and covered by forest stands

- the species richness is low (ELIÁŠ 2014)
  - less than 100 vascular plant species/castle
  - forest species prevailed
- Castles in open habitats (ELIÁŠ 2014)
- from 100 to 300 species
  - more xerothermophytes
  - Approx. 80 % of vascular plants are distributed in surroundings of ruins

Very important is that **many ruins are located in protected natural areas** – national parks, protected landscape areas, also small-scale protected areas – (national) nature reserve, protected area, (national) nature monument, etc.

The castle localities were reported as refuges of many **rare and endangered species** as well as habitats and centers of spread of synanthropic species, esp. **alien invasive species**. ELIÁŠ (2014) reported that conservation and restoration of the ruins alter the local flora and fauna by increasing of plant species number (**25 – 30 % of new species after restoration**). This confirms an important methodical approach:

- research before restoration is very important!

How to collect floristic data?

Floristic relevés on every type of habitat with information about abundance of every species:

- using the five-point Tansley scale (1 = rare, 2 = occasional, 3 = frequent, 4 = abundant, 5 = dominant) (TANSLEY, 1935) or 3-point scale (TANSLEY, CHIP 1926)
- Braun-Blanquet scale preferred in Central-Europe (r, +, 1, 2m, 2a, 2b, 3, 4,. 5) (WESTHOFF, VAN DER MAAREL, 1978)
- estimated percentage of the coverage

Another information:

- environmental characteristics
  - soil - pH, nutrient, moister, heavy metals and metaloides
  - water - permanent and/or periodic
    - species composition, abundance classes of plant species,
    - life-forms - (annual, perrenial, shrubs, trees...)
    - origin - (autochtonous, alochtonous – archeophytes, neophytes, cultivated - relics from past or recently planted, leaks from culture)
    - ecological groups
    - ruderal and synanthropic plants
    - hydrophytes; hygrophytes; mesophyte; xerophyte; halophytes
    - Plants of acidic soil (Oxylophytes); plants of saline soil (Halophytes); plants growing on the sand (Psammophytes); plants growing on the surface of rocks (Lithophytes); plants growing in the crevices of rocks (Chasmophytes)
    - rare and endangered plants
    - endemic species

How to evaluate floristic data?

Several approaches are possible:

1. according TURISOVÁ et al. (2016):

- index of diversity and the representation of any ecological group,
- index of alien invasive species
- index of synanthrophytes
- index of native non-apophytes

2. according CELKA (2011)

- Frequency classes
- Socio-ecological spectrum
- Floristic similarity and dissimilarity indices, floristic value

How to interpret floristic data?

- to evaluate the risks
  - fires
    - sites with high abundance of woody plants
  - disruption of masonry
  - high values of synanthropization and apophytization
    - negative impacts on biodiversity and aesthetics
  - occurrence of invasive taxa
  - acidification, etc.
- to evaluate the natural richness, values
  - rare, endangered, endemic, protected species

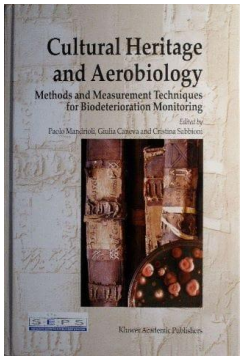
...and this is not all

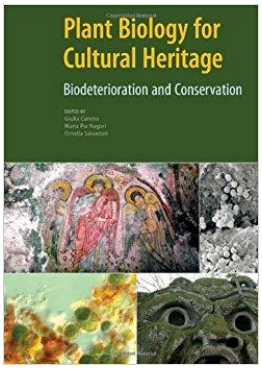
What must not be forgotten is the non-vascular plants (cyanobacteries, algae, and bryophytes), fungi and lichens - in the recent years they have been given significant attention. There are the first colonizers, the first producers of biomass, modest on living condition…

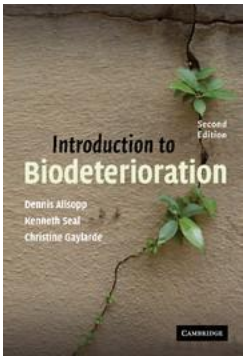
Biopathology of structures is causes: biocorrosion, biological weathering, biological change, biodeterioration, biodegradation, bioreceptivity, bioerosion, bioabrasion, biological degradation, biodeformation

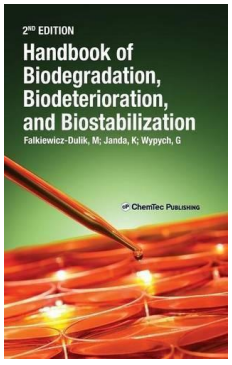
There are several ways to find answers to this topic:

- many important **journals**
  - International Biodeterioration & Biodegradation
  - International Biodeterioration
  - Diversity and Distributions
  - Urban Forestry & Urban Greening
  - Science of The Total Environment
  - Journal of Cultural Heritage
- **books**









GREENERY

- **Inseparable part of environment**

Positives

- The walls are reinforced and supported, which gratly prolongs the lifespan of ruins
- esthetic function
- higher biodiversity
  - especially walls contribute significantly to increasing biodiversity of ruins sites

Negatives

- at the constructions or at remains, seeding wood which disrupts the masonry are removed
- dissemination of synanthropophytes and invasive species locally

ASSESSED CASE BY CASE!

Conclusion

CASE STUDY BZOVÍK

First reconnaissance was at 17 October 2017, when we identificated four habitats in area of monastery:

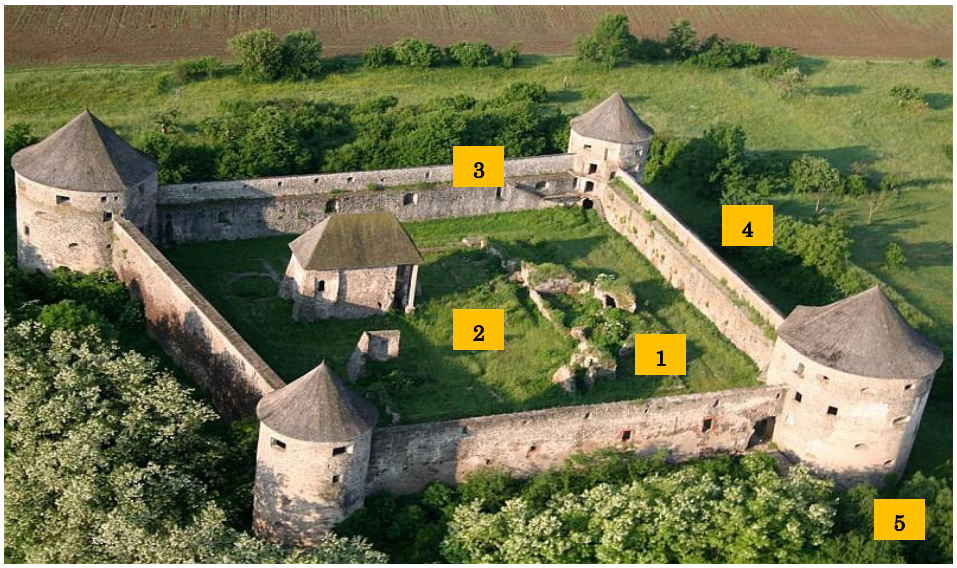
1. Ruins at different stages of decay in the central courtyard

2. Central courtyard with trampling impacts on vegetation

3. Vegetation on rocky vertical wall (small trees, shrubs, herbs, ferns, mosses)

4. Moat (slopes with trees and shrubs; bottom with grazing grasslands)

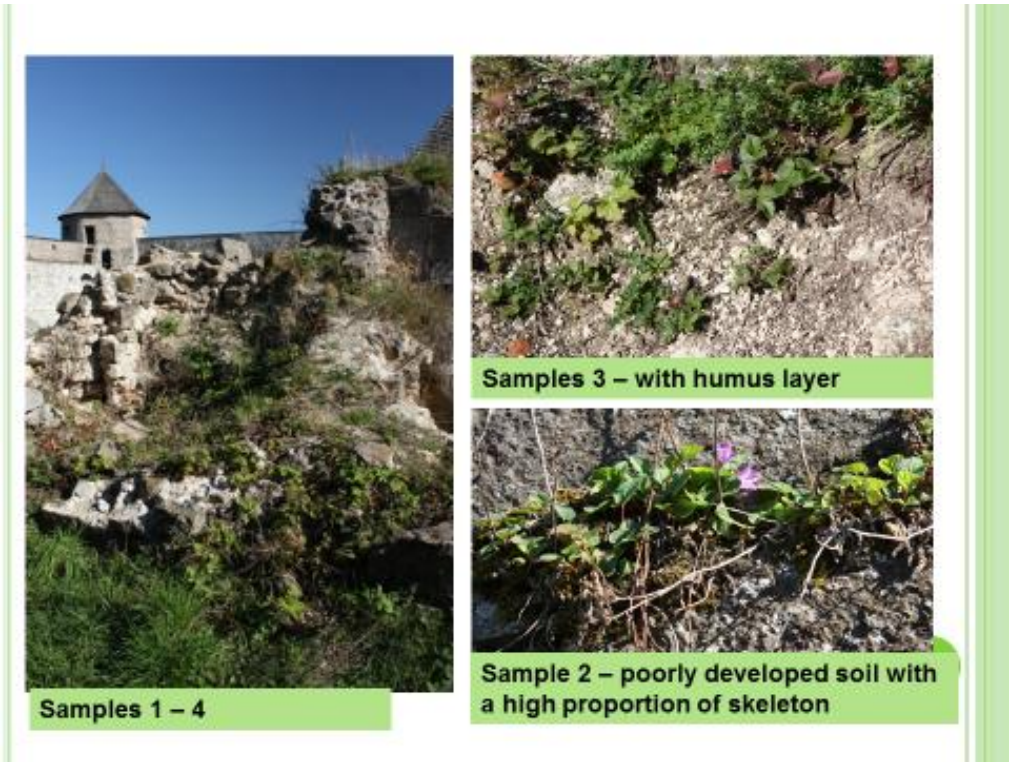
One locality near monastery Bzovík was choosen like reference area (no. 5).



We confirmed **63 species vascular plants.**

We analysed **8 soil samples** sample (each sample produced by mixing from at least 5 samples) from Bzovík area:

- **4** samples from ruins at the central courtyard (differentiated according to skeletness, color, the presence of at least a thin humus layer)
- **1** sample from grassland at the central courtyard
- **2** samples from moat (one from slopes with trees and shrubs; one from bottom with grassland)
- **1** sample from reference area



Samples 6

Samples 7

Results of soil analyses

Blue – maximum; yellow – minimum

The highest nutrient content was found directly in the monastery grounds.

	pH/KCl	C_{ox}	humus	N	P	K	Ca	Mg
Sample		[g.kg^{-1}]	[g.kg^{-1}]	[g.kg^{-1}]	[mg.kg^{-1}]	[mg.kg^{-1}]	[g.kg^{-1}]	[mg.kg^{-1}]
1	6,97	35,98	62,02	2,39	30,65	640,57	11,13	1160,25
2	7,36	23,74	40,93	2,10	18,48	962,97	11,79	1017,37
3	7,14	59,13	101,95	4,91	41,87	640,57	11,79	919,23
4	7,48	20,25	34,90	1,59	17,90	416,63	11,79	1312,97
5	7,09	39,91	68,80	2,49	87,48	640,57	8,70	473,64
6	6,98	41,66	71,81	2,82	44,69	640,57	6,49	388,07
7	6,4	36,41	62,78	3,50	32,14	640,57	3,40	212,79
8	6,54	36,41	62,78	2,92	97,92	724,42	4,62	147,72

5.2 Bzovík monastery – protecting wall coping

In the studied area to protect grasslands uses grazing small herds of sheep. This is a very effective method, as confirmed by the survey of represented plants. The herbs dominate over the trees. These should be removed to reduce the risk of fires and the spread of the invasive species *Robinia pseudoacacia*.

Other methods of grassland management are elaborated by Šefferová – Stanová and Čierna (2011). Mainly it is recommended mowing (with the removal of biomass) or mentioned grazing. Many target

groups, such as volunteers, unemployed, non-governmental organizations, schools, etc., can participate in the management.

Management of sheep grazing

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6 TECHNOLOGICAL WORKSHOP: HISTORICAL WOODEN CONSTRUCTIONS INCLUDING ANALYSIS OF HISTORICAL TECHNOLOGIES. ANALYSIS OF WOODEN BUILDING ELEMENTS

The technological workshop was held directly in the ruin of Bzovík monastery.

Workshop participants were by experts from Centre of Excellence Telč (CET) of the Institute of Theoretical and Applied Mechanics CAS (CZ) introduced to the principles of modern methods of diagnostics of historic wooden structures including illustrative examples and practical applications. Participants also had the opportunity to get acquainted with the activities and equipment of the mobile diagnostics laboratory of CET. Members of mobile laboratory are dealing with identifying the causes of material degradation and its actual extent on the ground injured or threatened buildings.

There were presented on the workshop the procedure of diagnosing of historic wooden constructions consisting of the following steps:

- Preliminary visual survey
- Basic exploration
    - Classification of damage
    - Evaluation of joins

Several on-site testing techniques and relevant equipment including its use. Especially non-destructive and minor-destructive methods and tools are used for historical constructions:

- Endoscopy

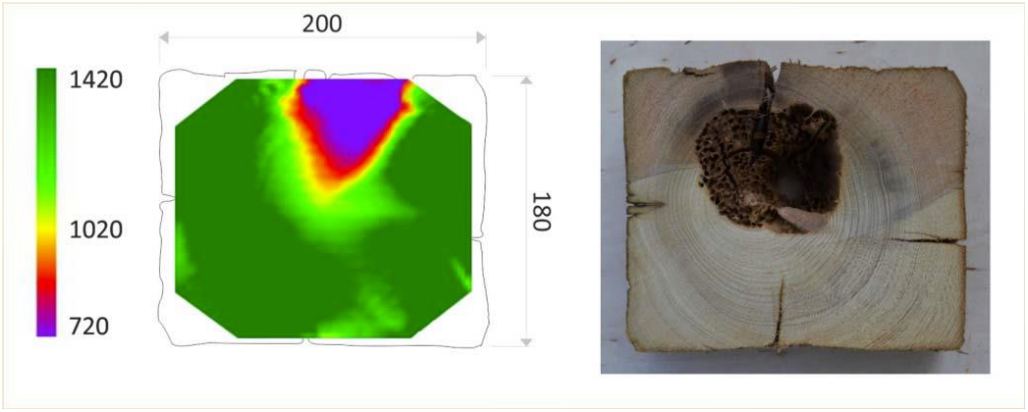
- Pilodyn – mechanical indentor

• Fakopp – stress-wave

• Resistograph – resistance drilling

• Portable X-ray

• Acoustic tomography



• Pin-pushing

• Loading jack

Except for the realization of technological workshop, the CET ITAM team actively participate on study visit of Bzovík monastery with the following expert evaluation (based on two site-visits in October and December 2017).

For the desirable preservation of the authenticity of the ruin its entire image should be protected approximately in its current state. Of course a protection of surrounding landscape qualities is another important aspect necessary for the future sustainability.

Former interventions could be viewed as controversial mostly in terms of extensive use of steel concrete, which superimposed many valuable findings and historical surfaces. On the other side the result – though never completed – can be treated as visually consistent. It would be confusing and counterproductive to bring there some another design concepts. The acceptable solution is to cultivate which was done (i. a. because steel concrete is difficult to remove) and for the necessary new interventions to choose a minimalist expression, if possible without distinctive new forms. Only in those cases, where the use of concrete or cement plasters has caused deterioration of the original masonry, we recommend their removing and replacing with compatible materials.

Ideas for future use of an object should respect local conditions and rely preferably on specific qualities of the site. This point is especially important for long-term strategies. The Bzovík ruin is an absolutely unique complex which is obvious by the fact that it is difficult to characterize in one word. In its history the different functions changed: monastery, fortress, castle, noble residence, source of building material and currently tourist attraction. So the rich individual history of the site can offer several topics to develop in a promotive presentation.

Outer fortress objects (bastions) can be gradually transformed to museum expositions and facilities for visitors. The shingle roofs require repair inclusive of the parapet walls covering, preferably using handmade wooden shingles.

The remnants of the monastery situated in the middle of the courtyard could be preserved as they are, of course when securing their long term conservation. Another solution is to use them for experimental archelogy activities and field seminars. Their conservation could be performed with the participation of public as the educational or research programme. Both cases envisage implementing the adequate measures for the safety of visitors.

In the free area of the courtyard one can very well imagine the presentation of the workplaces of traditional construction crafts: stonemason's and blacksmith's huts, carpenter's yard, lime pit, shingle maker's benches, etc. Their products would be used for conservation needs directly on site. The consolidation of monastery ruins may be realized as a long-term scientific project aimed at restitution of the state before their recent demolition. Such an event could have a chance for international reputation and remarkable tourist attendance, as for example Chateau Guedelon in France or Burgbau Friesach in Austria.

Green areas inside and outside the ruin can be reserved for temporary activities like open air exhibitions, festivals, etc. The stages for concerts or theatrical performances should be dismountable for to secure the everyday image of the site. The land around the castle is not available to the community now, thus limiting possible more extensive growth including for example parking sites.

7 TERRESTRIAL 3D SCANNING AND MODELLING FOR HERITAGE SUSTAINABILITY

3D scanning represents modern and progressive method to mapping and modelling of cultural heritage objects. At the Matej Bel University are services of terrestrial 3D scanning provided by Centre of Geoinformatics and Digital Technologies (CGI) in Faculty of Natural Sciences.

For terrestrial 3D scanning, we used 3D scanner Riegl VZ 1000. It provides high speed, non-contact data acquisition for ranges more than 1400 m using a narrow infrared laser beam and a fast scanning mechanism. Riegl VZ 1000 is fully portable, rugged and robust instrument offers a wide field of view of 100° vertical and 360° horizontal, and uses an invisible laser beam for eye safe operation in Laser Class 1. Other specifications are in the following table.

Figure 29: Terrestrial 3D scanner Riegl VZ1000.

Laser Pulse Repetition Rate PRR (peak) [2]	70 kHz	100 kHz	150 kHz
Effective Measurement Rate (meas./sec) [2]	29,000	42,000	62,000
Max. Measurement Range [3] for natural targets ρ ≥ 90% for natural targets ρ ≥ 20%	 1,400 m 700 m	 1,200 m 600 m	 950 m [4] 500 m
Max. Number of Targets per Pulse	practically unlimited [5]		
Accuracy [6] [8]	8 mm		
Precision [7] [8]	5 mm		

Table 1 Riegl VZ1000 range performance

All collected data are processed in a Riscan PRO software environment. Riscan PRO is a program solution with key features as:

- scanner control
- data acquisition
- scan registration
- georeferencing
- advanced filtering
- data import/export
- 3D visualization
- simple meshing
- volume calculation

Riscan PRO integrates sensor fusion and the transformation capabilities necessary to turn the data from multiple sensors into a seamless, colorized point cloud with a number of valuable attributes. These

data can then be exported in a number widely supported point cloud formats for further analysis and information extraction in software solutions tailored to each application.

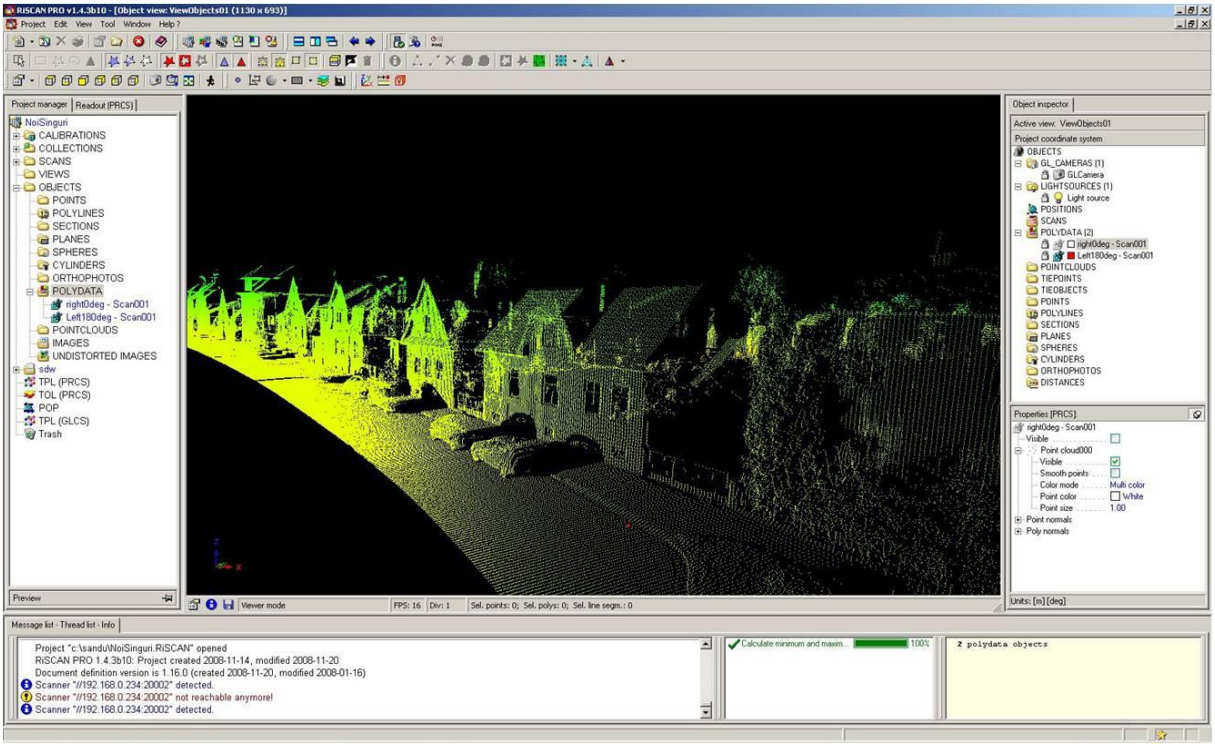


Figure 30: Demonstration of the Riscan PRO program environment.

Common outputs of basic 3D data processing are point cloud, coloured point cloud or 3D mesh. A point cloud is a set of data points in 3D coordinate system. These points are defined by *X*, *Y*, and *Z* coordinates, and they are used to represent the external surface of an object. A 3D mesh is the structural build of a 3D model consisting of polygons. 3D meshes use reference points in X, Y and Z axes to define shapes with height, width and depth.

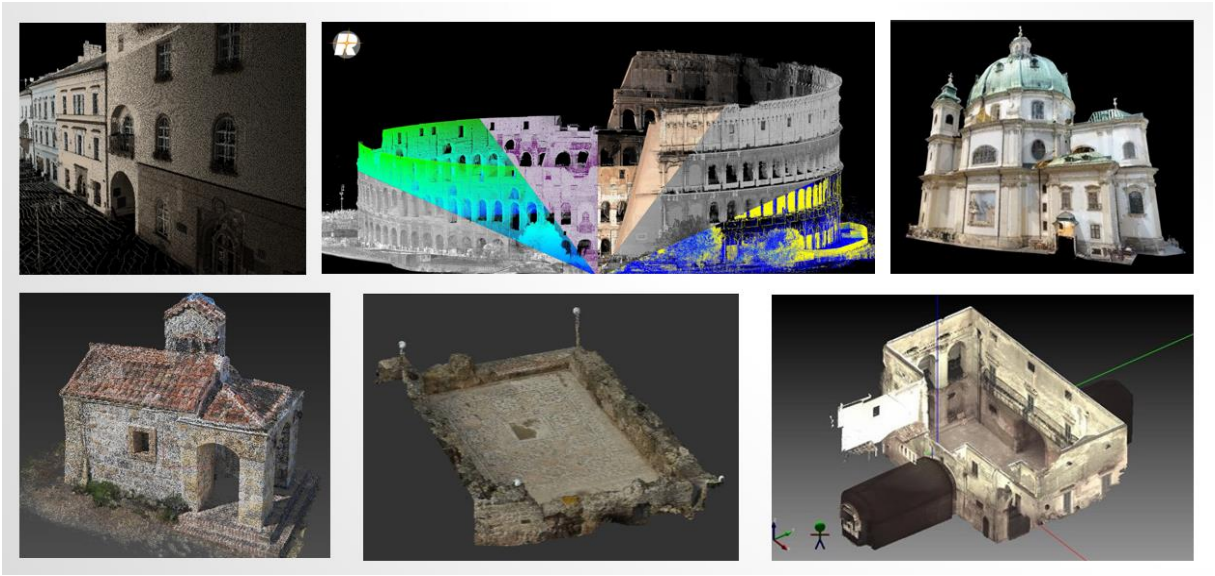


Figure 31: Demonstration of 3D data outputs.

Terrestrial 3D scanning have many fields of applications. For example topography & mining, city modelling, civil engineering, forestry and of course architecture & facade measurement and archaeology & cultural heritage documentation. Terrestrial 3D scanning is a suitable platform for documenting and preserving cultural heritage. In Bzovík, this method was presented as an optimal way of documentation of historical buildings with the subsequent 3D modeling options.

Figure 32: Presentation of terrestrial 3D scanning method in Bzovík

Figure 33: Bzovík - example of animation on the base of 3D data

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8 THE SUGGESTED APPLICATION OF GIS TOOLS WITHIN THE FRAMEWORK OF PROJECT RUINS

Geographical information systems (GIS) have a widespread use in modern research. The application of this tool is mostly used in natural sciences, however, the potential of cartographic data could play a useful role in other disciplines as well. Project RUINS presents a specific field, complexly associated with maps and geographic evaluation. The presented chapter presents the compendious overview of using GIS tools in this field.

Equipment:

- software equipment: ArcGIS Desktop, QGIS Desktop;
- GPS Devices.

Goals:

- ground plans: create new, compare the situation with the old ones;
- using as an additional tool of green area management and ruin conservation;
- evaluation of the surrounded environment's influence.

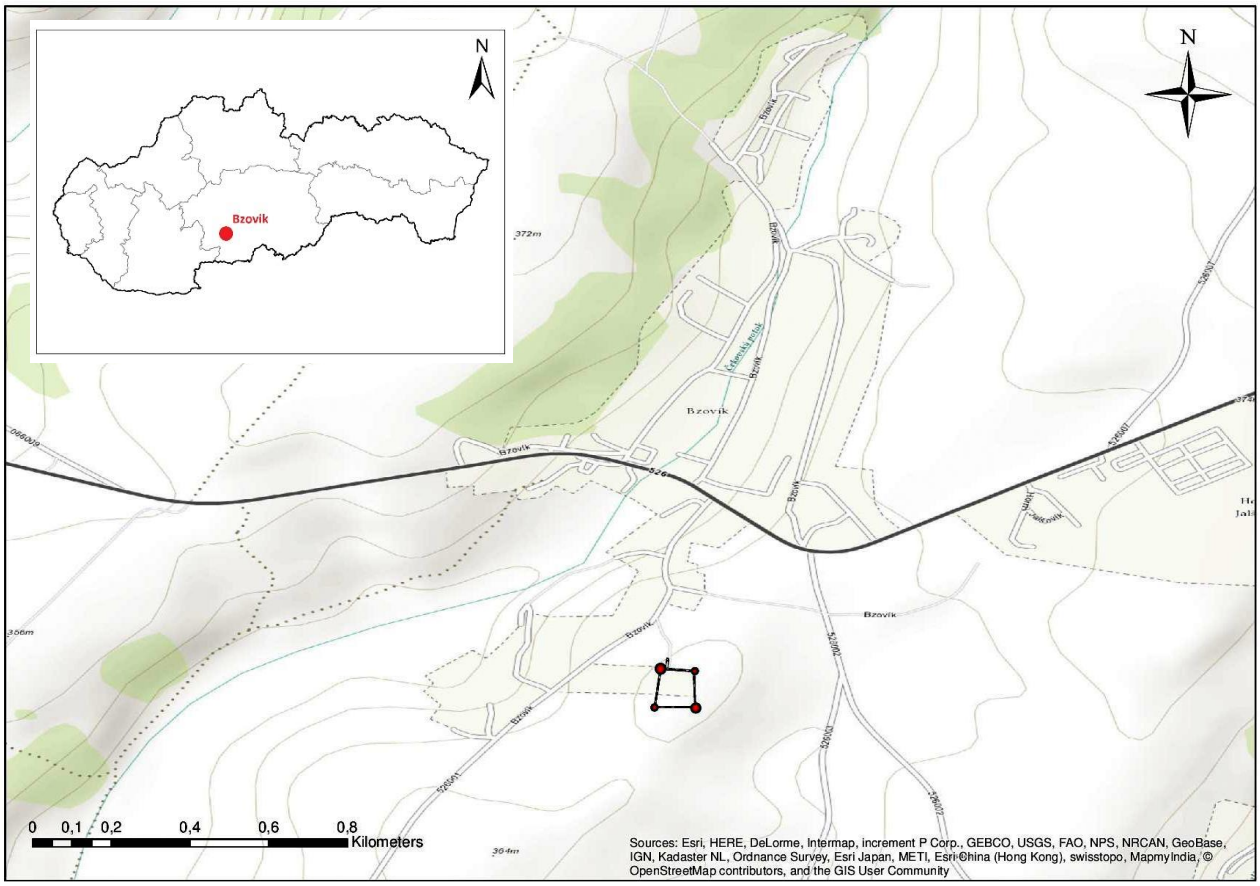


Figure 34 The position of the monastery within the area of Bzovík municipality.

Ground plans

The creating of complex ground plans in GIS requires following factors:

- archived documentation (fig. 3);
- historical and actual ortophotos;
- GPS mapping;
- photodocumentation (fig 4)

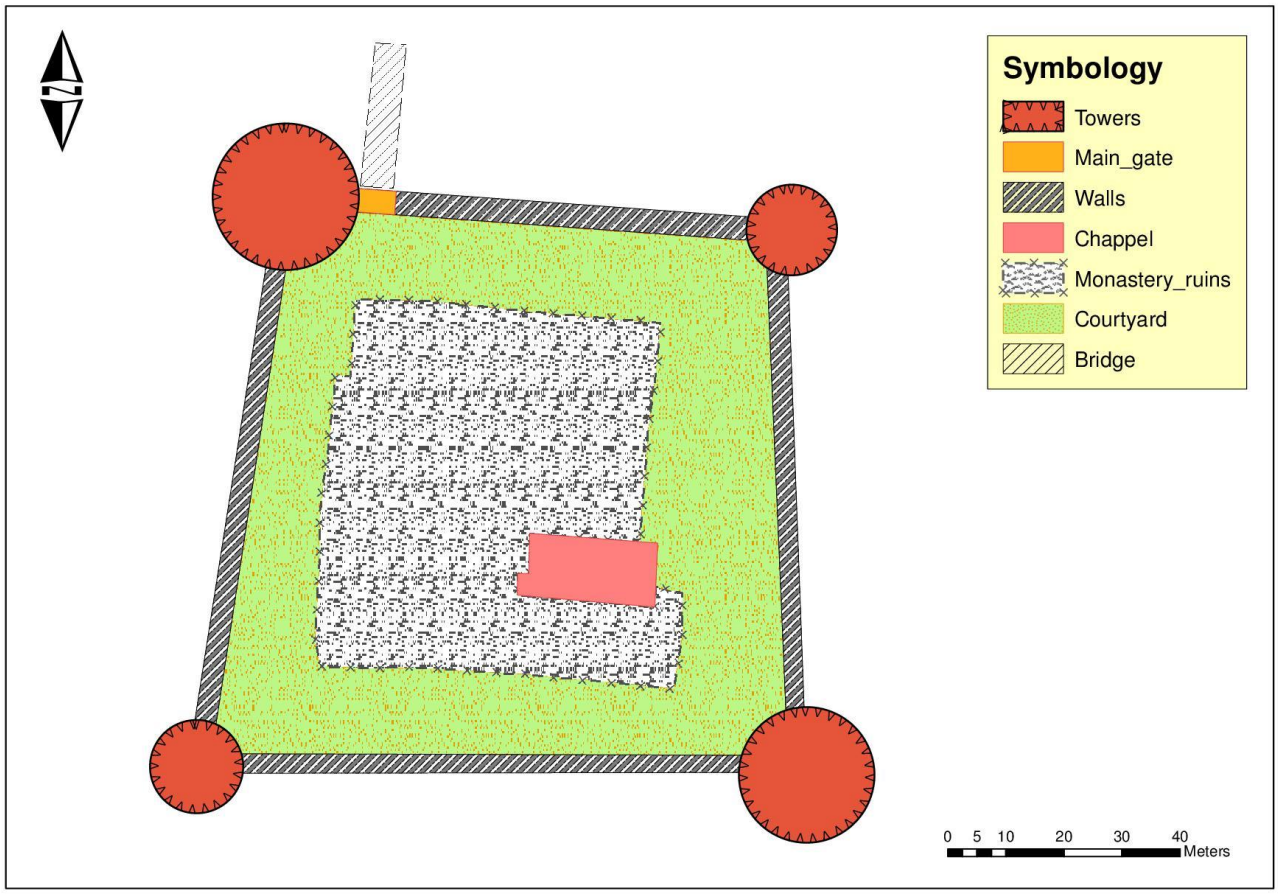


Figure 35 The simple ground plan of Bzovík monastery (concept).

The Ground plans are very helpful in evaluation of green areas, buildings and technical features. One of such an important feature could be the calculation of area of selected sites (Tab. 1)

Object	Area (m^2)
Courtyard	6822,085
Chappel	372
Monastery_ruins	4893,092
Towers	1883
Walls	1624

Table 2 The calculated area of selected parcels, presented in the ground plan – fig. 35 (concept)

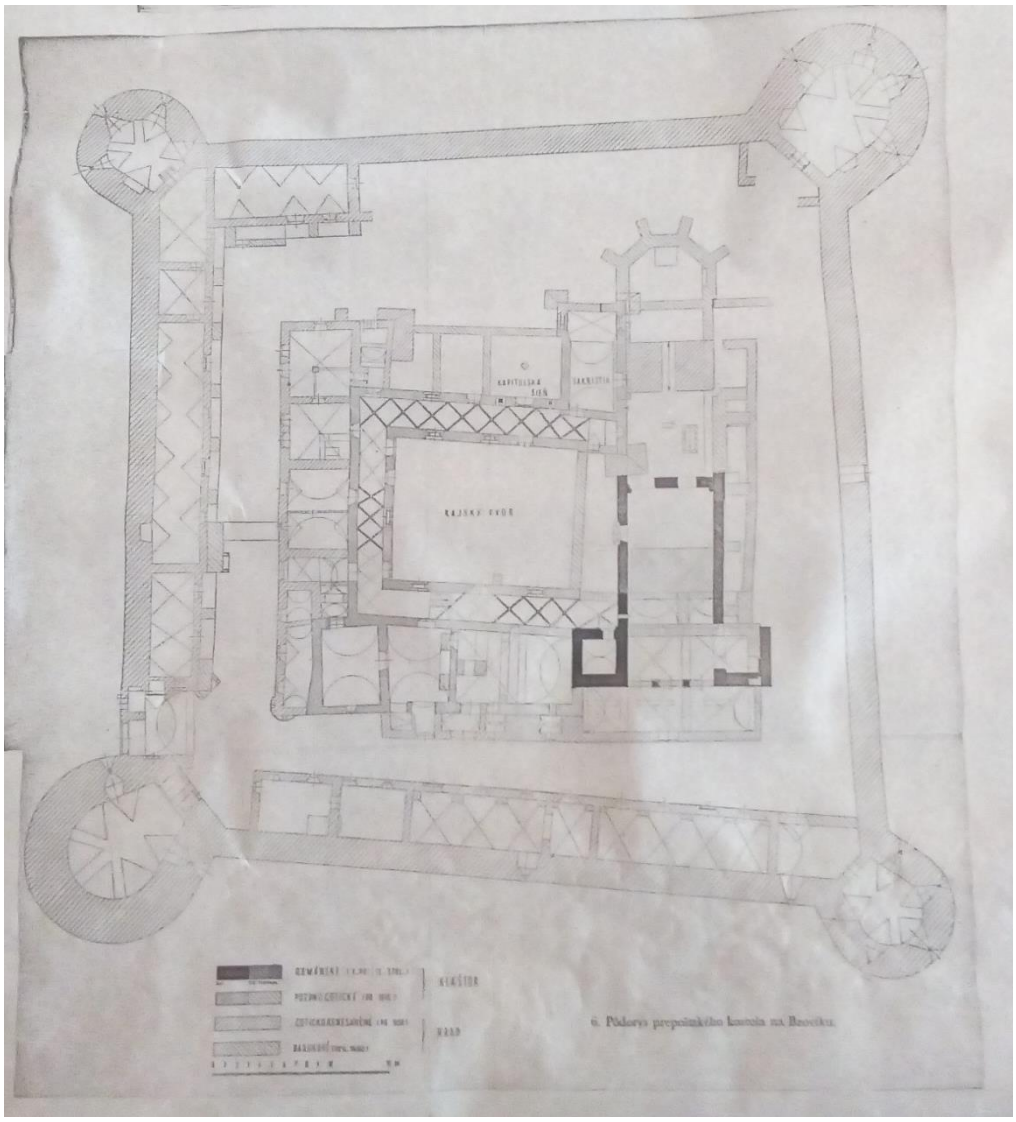


Figure 36 Archived ground plan of the monastery before destruction.

9 MANAGEMENT AND MARKETING TOOLS FOR THE USE OF RUINS

Management and marketing for the use of ruins is strategic long term process that requires setting of:

Vision – long term view of future

Goals – they should fulfil following criteria:

Goals of management and marketing in cultural heritage localities should be oriented on:

Preservation and promotion of

- **aesthetic** (ruins may have particular aesthetic qualities that are a result of their ruined state. Some ruins are picturesque and evocative. Aesthetics relate to our human senses and the way we respond emotionally to a place because of its beauty, symbolism, picturesque or evocative qualities.)
- **historic**, (Ruins are sometimes the only remaining physical evidence of significant historical events, phases, activities or way of life.)
- **scientific**, (many places have the potential to provide important and new information about a particular aspect of the past)
- **social,** (The strong and special associations between a community or cultural group and a place are the essence of social significance. Social value can derive from a community's ongoing relationship with the ruined place.)
- **spiritual** (spiritual value can encompass places with symbolic, ceremonial, sacred and religious meanings)

value for past, present or future generations.

It is important that heritage ruins are identified in local and thematic heritage studies, and that their significance is assessed and considered for protection through heritage listing in the same way as any other heritage place. Including a heritage ruin on a statutory heritage register or in a local planning scheme may pose some particular challenges.

10 MANAGEMENT IN CULTURE HERITAGE LOCALITIES

Management in cultural heritage localities should contain 5 basic steps:

1. **Planning**

Planning should involve following phases:

- Conception

  vision

  goals collectively set

- Analysis

  internal environment
  external environment
  market demand – existing and potential customers
  competitors – comparison of values of ruins and identification existing or potential competitive advantage

Strategy
  demand orientation
  marketing tools – product, price, place, promotion, people, participation

- Realization

  action plans

- Control, evaluation

  feedback

2. Organizing and implementation

is done via:

- Action plans – what/who/when/how/budget

Managing a ruin requires resources. Whether the decision is to do nothing or undertake substantial restoration and reconstruction, owners or managers may be wary of a commitment to managing such a place. Knowledge and specialist skills are required to manage ruins and these may also be difficult to source. A community-led approach can help to foster new 'ownership' for a heritage place.

3. **Controlling**
    a. Satisfaction of stakeholders
    b. Economy of place/ruins
    c. Market Success ….

4. **Governing/leading**
5. **Motivation**

Organizing, motivation and leading people means involvement of all relevant stakeholders, including citizens, eentrepreneurs, self-government, local NGO´s and university. Active participation of stakeholders requires established associations or who may be affected by management decisions.

It is important to be aware of risk management as well. Control of access can be a major issue with ruined places and balancing heritage values against occupational health and safety considerations and other legal requirements can be delicate. Engineering and technical advice will often be needed to guide how a place can be managed as a ruin.

MANAGEMENT PLAN normally creates ORGANIZATIONAL-MANAGEMENT MECHANISM as follows:

- Administrative - establishing and managing current plans
- Financial - financing scheme for the site
- Professional - performance of professional activity and the possibility of vocational training
- Social and contact - ways and detailed plans for company involvement in decision-making and activities, media mobilization

On the territory of the locality, it is necessary to create organizational - management mechanisms by taking into account:

• the size and complexity of the area,

• legal, administrative and ownership ratios,

• spatial planning,

• the diverse nature of the natural and cultural heritage (geology, natural monuments, urban and rural urban structures, architecture),

• interactions between cultural heritage conservation and nature conservation, other interactions.

Management plan usually contains:

- **Specification of the protected subject**

- includes items such as completion of existing data linked to the subject of protection, territory definition, definition of the protected subject matter, passporization of the protected subject in the context of geology, living nature, architecture and urbanism, etc. complex data and information on territorial planning documentation, analysis of valid planning and planning documentation; digitization of existing data

- **Status indicators**

- includes items such as an assessment of the current state of the site in terms of preserving its authenticity and integrity; assessment of the current state of the site in terms of the application of the instruments of its protection, interpretation and presentation of its values)

- **Legal protection**

- may include items such as research and analysis of the legal conditions of protection, proposals for action; legal level of protection of the territory and objects, its registry)

- **Organization - management scheme**

- **Education, Information and Interpretation System**

- **Participatory planning**

- **SWOT analysis**

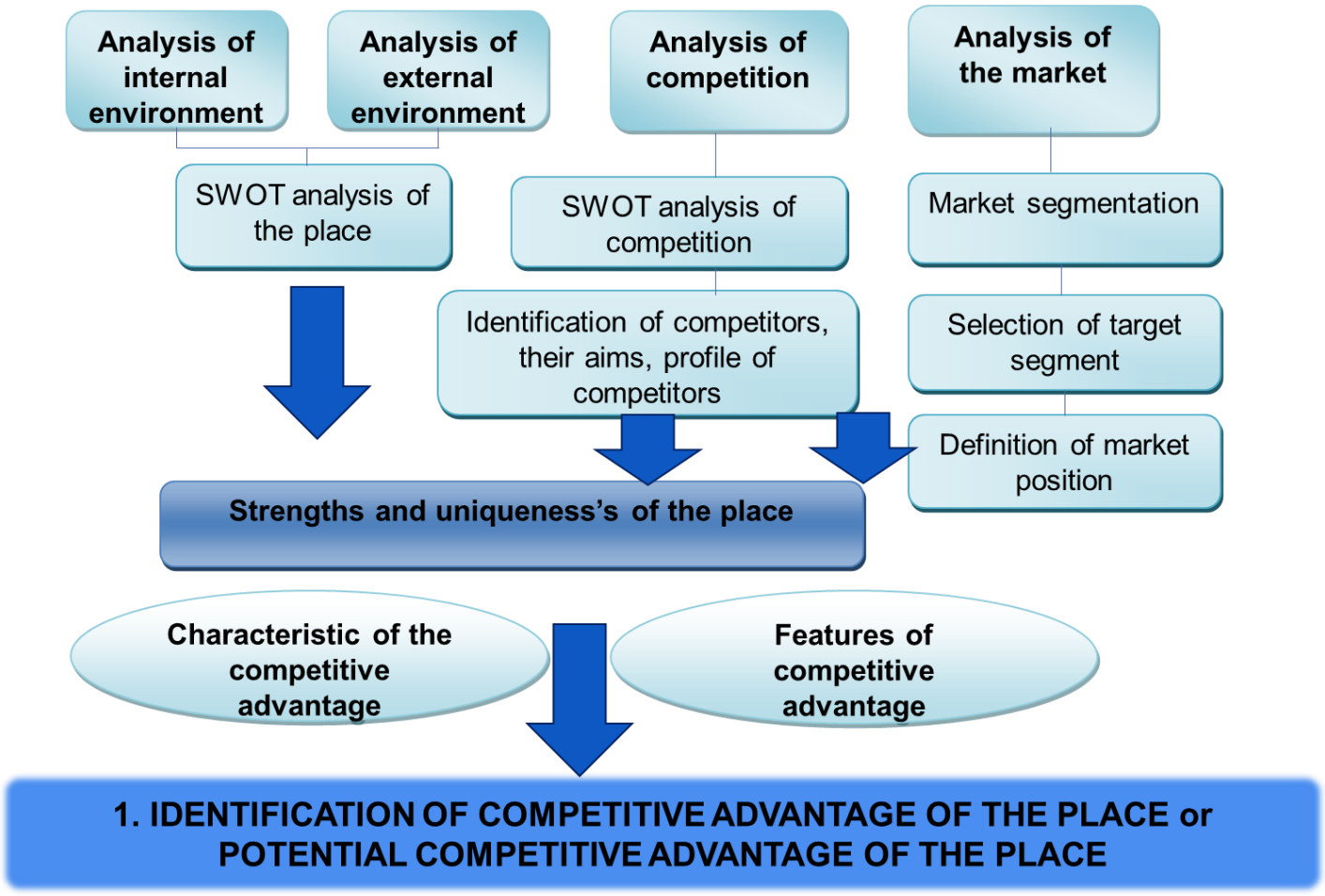
- **Missing data, surveys and analyses, proposals for measures, planned activities**

11 MARKETING TOOLS AND WORKSHOP WITH STAKEHOLDERS

Marketing places is application of marketing concept philosophy that is based on the market and oriented on the market, it is continuous social management process which provides the opportunity influence more effective the spatial development by building sustainable competitive advantage. It creates a coherence between demand and supply on the basis of exploitation specific marketing tools and methods. The aim is to minimize risks of territory connected with their „entry“ to the market and maximize social benefits while accepting their social function.

Strategic planning is a systematic, participatory and transparent decision-making process that determines priorities, makes wise choices, and allocate scarce resources (i.e. time, money, skills) to achieve agreed-upon objectives that are developed using local community values.

Strategic marketing planning is oriented on searching, identification and exploitation of strong competitive advantage which is the basement for setting of management plan and choice of suitable and proper marketing tools. The process of its identification shows the following figure:



Examples of possibilities for smart and creative ruins exploitation by using modern marketing tools:

- Innovation
- Creative and smart approach
- Socio-economic benefits
- Possibilities for new economic activities
- Tourism development
- Sustainable spatial development
- Preservation of historical heritage
- Re-use of ruins in a new, modern way

Proposals for future regular activities based by using modern marketing tools:

Why it is important?

- Building base of regular customers (domestic/foreign)
- Promotion of the place and self-promotion based on regularity
- Easier management based on regularly repeated activities
- The same or similar marketing strategy and tools
- Cost efficiency

Example of possible regular activity:

Summer in Bzovík

- Each weekend one event

Possible thematic orientation of marketing activities in Bzovík:

1. Open air Cinema in Ruins

2. Outdoor food festival

3. Theatre in Ruins

4. Thematic photography exhibition

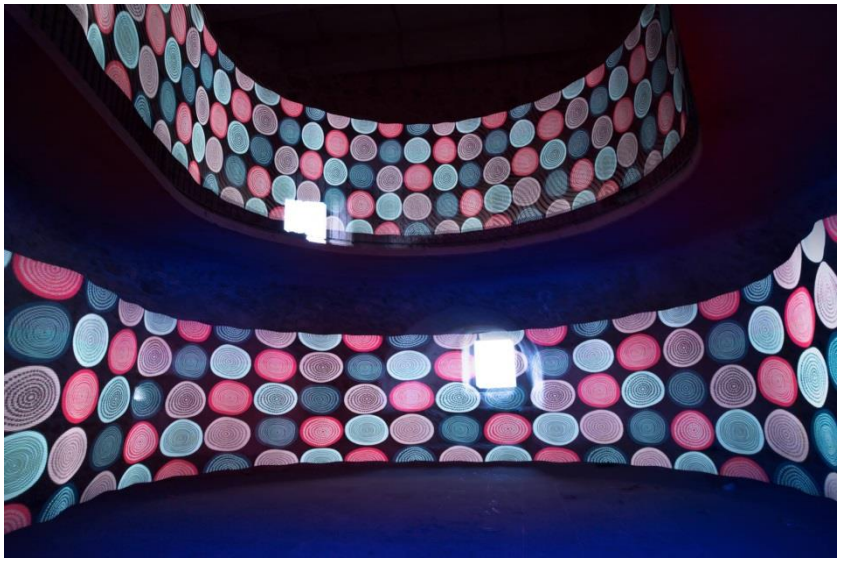
5. Art symposium

6. Concert of local music groups

7. Classical music concert

8. Festival of lights

Possible visualizations:




BZOVÍK 2017
PHOTO ADVENTURE
THE PHOTOGRAPHY OF
IVAN FODOR


BZOVÍK 2017
PHOTO ADVENTURE
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12 LOCAL POPULATION AND CONNECTING PEOPLE WITH CULTURAL HERITAGE

This theme was about deepening our understanding of the local context in which lived ruin exists and is formed. Intentions lead to developing innovative approaches, applications and tools that will create added value for local society from cultural heritage.

Local linking information

• to increase understanding of quantitative and qualitative heritage databases along cultural, spatial, temporal or other scales, using data mining and similar techniques.

• to integrate the available cultural heritage information in different fields of study including, but not limited to history, ethnology, science, digital heritage in order to move the field towards truly interdisciplinary heritage studies.

• to explore how processes can be exploited to generate new knowledge around cultural heritage.

• to advance use of reference collections of materials and data through better characterisation, cataloguing and improved accessibility, thus establishing links between disparate contents for knowledge and management, taking into account different spatial and other frameworks.

Change

• to local understand changes and their consequences for ruins

Methods for local inventory

• to apply local accessible imaging and local inventory methods for surveying and understanding of local contexts of ruins and heritage.

• to build on local system integrated with assessment of impact of agents of change on cultural heritage.

12.1 Contact of the local population with the cultural heritage

Inventorying in reflective local society

Questions: *What are the consequences for cultural heritage in light of local demographic changes as well as changes due to depopularisation or rapid development?*

Identity and perception

• to describe knowledge of how the use of all forms of cultural heritage contribute to identity at a personal, local level.

• to question how narratives of ruin are constructed on a micro, meso and macro scale.

• to recognise that people are both - users and producers of lived cultural heritage.

• to understand why we care about cultural value and heritage; how we are motivated to produce, recognise and use heritage; the impact of context and histories on ruins on how it is curated and managed, and how learning environments can contribute to our understanding and coproduction of heritage.

• to investigate approaches for protecting ruin as cultural landscape, and the safeguarding of their associated intangible expressions (for example, crafts, trades, oral histories, folklore, etc);

Reflective society and values

• to understand the meaning ruins holds for people and therefore how they perceive, use and interact with it.

• to explore the socio-economic role and significance of ruins.

• to examine forms of user interaction, involving interaction and dialogue with a range of ruins 'users'.

• to examine the consequence for cultural heritage of demographic changes as well as changes due to depopulation of small localities or rapid development.

• to investigate the balance between historical integrity and authenticity

• to ensure that new policies around the management of cultural heritage respect the different values and beliefs people hold.

Indicator 1.

The ***ageing of societies*** present some interesting questions regarding values and cultural heritage. Responses indicated some distance between the values of older and younger cohorts – in a more generic sense – which may be relevant for cultural heritage. Indeed, the processes of demographic change stimulate debates not only on servicing the needs of older people, but also on how younger people can shape cultural heritage.

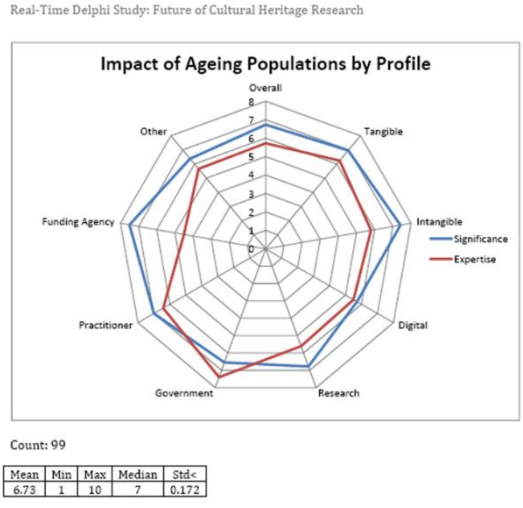


Figure 37 a.) Impact of Ageing Populations to culture heritage b.) Old Generation at knowledge workshops

Indicator 2.

The ***younger generations*** will have an important impact on cultural heritage. They will redefine the definitions and enforce new practices. The younger generation will be the driving force and will have a more significant impact. The impact is unpredictable, but will surely exist.

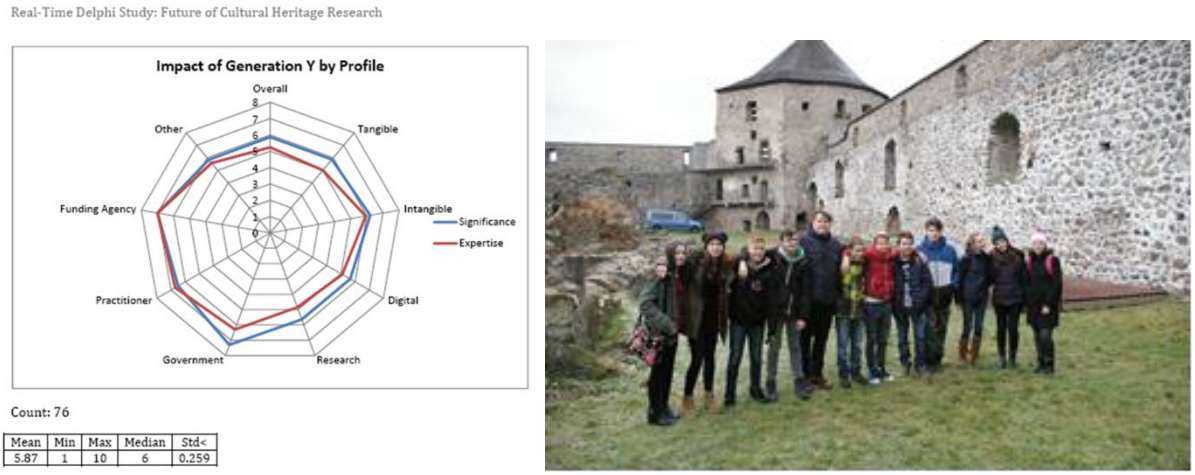


Figure 38 a.) Impact of Generation Y to culture heritage b.) Young generation from Bzovík

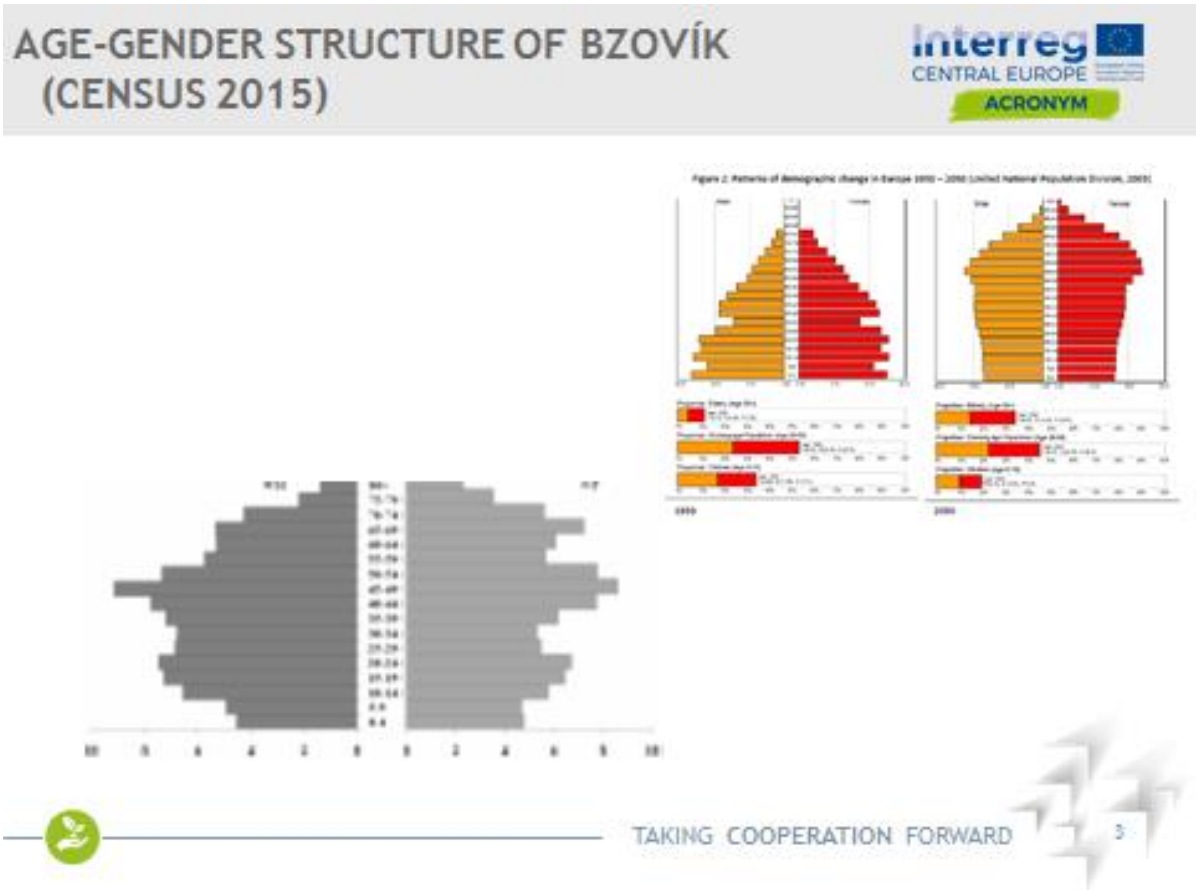


Figure 39 Comparation of Bzovík local demography with Europe demography in 1950 and prognosis to 2050

Figure 40 Cooperation with local authorities – major of Bzovík village and young generation graffity *I love you* in Bzovík ruins

12.2 Questionnaire: research instrument and application in heritage

What is questionnaire?

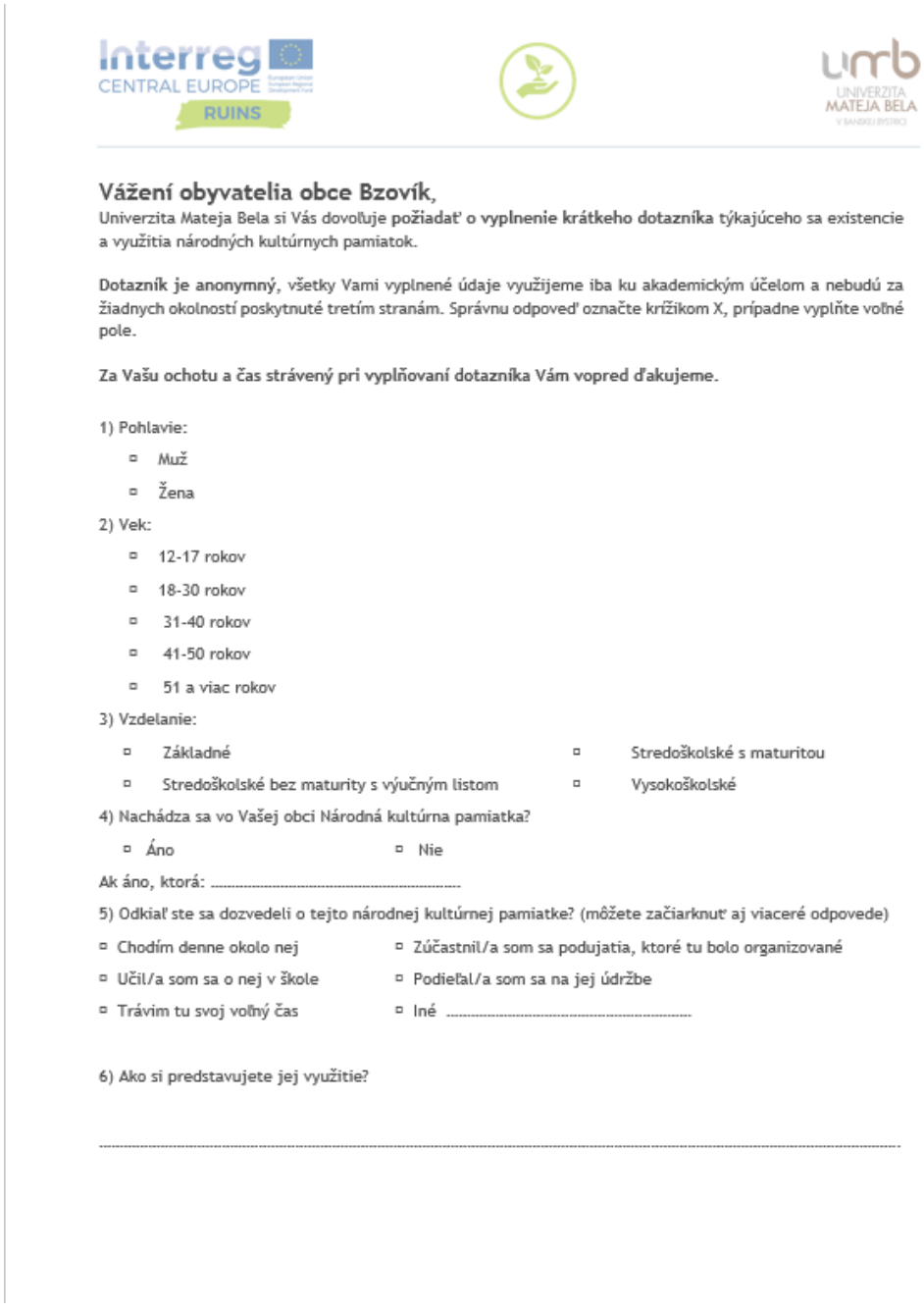
- A questionnaire is the vehicle used to pose the questions that the researcher wants respondents to answer.
- A set of predetermined questions for all respondents that serves as a primary research instrument in survey research.
- Used to collect factual information.

Questionnaire design

- Questionnaire design is a systematic process in which the researcher contemplates various question formats, considers a number of factors characterizing the survey at hand, ultimately words the various questions very carefully, and organizes the questionnaire's layout.

Characteristics of a good questionnaire

- Should be concerned with specific and relevant topics
- Should be short
- Directions and wording should be simple and clear
- Should be presented in a good order
- Should be attractive, neatly printed and clearly arranged



Vážení obyvatelia obce Bzovík,

Univerzita Mateja Bela si Vás dovoľuje požiadať o vyplnenie krátkeho dotazníka týkajúceho sa existencie a využitia národných kultúrnych pamiatok.

Dotazník je anonymný, všetky Vami vyplnené údaje využijeme iba ku akademickým účelom a nebudú za žiadnych okolností poskytnuté tretím stranám. Správnu odpoveď označte krížikom X, prípadne vyplňte voľné pole.

Za Vašu ochotu a čas strávený pri vypĺňovaní dotazníka Vám vopred ďakujeme.

1) Pohlavie:

- ▫ Muž
- ▫ Žena

2) Vek:

- ▫ 12-17 rokov
- ▫ 18-30 rokov
- ▫ 31-40 rokov
- ▫ 41-50 rokov
- ▫ 51 a viac rokov

3) Vzdelanie:

- ▫ Základné
- ▫ Stredoškolské bez maturity s výučným listom
- ▫ Stredoškolské s maturitou
- ▫ Vysokoškolské

4) Nachádza sa vo Vašej obci Národná kultúrna pamiatka?

- ▫ Áno
- ▫ Nie

Ak áno, ktorá: .....

5) Odkiaľ ste sa dozvedeli o tejto národnej kultúrnej pamiatke? (môžete začiarknuť aj viaceré odpovede)

- ▫ Chodím denne okolo nej
- ▫ Učil/a som sa o nej v škole
- ▫ Trávim tu svoj voľný čas
- ▫ Zúčastnil/a som sa podujatia, ktoré tu bolo organizované
- ▫ Podieľal/a som sa na jej údržbe
- ▫ Iné .....

6) Ako si predstavujete jej využitie?

.....

Figure 41 Questionnaire on awareness about cultural heritage

Questionnaire format

1. Questions in Open Ended Format (Question number 3)

- Questions that allow the target audience to voice their feelings and notions freely are called open-format questions or open-ended questions.

2. Questions in Closed Ended Format (Questions number 1 and 2)

- Questions which have multiple options as answers and allow respondents to select a single option from amongst them are called closed-format or closed-ended questions.

List of questions – first part

- Basic sociodemographic data of the respondents: age, gender, education level

List of questions – second part

1) *Is there a National Cultural Monument in your village?*

Yes No

2) *Where did you learn about this national cultural monument?*

- I walk around it
- I attended the events that were organized here
- I taught about it at school
- I participated in maintenance of it
- I spend my free time there
- Other

3) *How do you imagine using it?*

Method of administering

Self-completion postal questionnaire

- administered in the form of a postal survey
- participants is sent a questionnaire which they fill out themselves and return by post

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12.3 Quantitative indicators of heritage sustainability

Cultural heritage plays a marginal role in the 2030 Agenda for Sustainable Development. It is explicitly mentioned only once in the goal 11, that is referred to the cities, in particular to the need of making cities and human settlements “inclusive, safe, resilient and sustainable”, through “inclusive and sustainable urbanization, planning and management” (Target 11.3) and more “efforts to protect and safeguard the world’s cultural and natural heritage”

The indicators related to cultural heritage should reveal authenticity, integrity and cultural values and, at the same time, monitor impacts on tourism sector, environmental capital, community wellbeing, etc. In

other words, these indicators have to be used to assess and monitor the state of conservation of cultural heritage, but also to evaluate the impacts of cultural heritage conservation/regeneration on city multidimensional productivity, that is its contribution to sustainable development.

The indicators to assess the "productivity" of cultural heritage conservation/regeneration of the 40 analysed case studies, that is the multidimensional benefits produced, have been subdivided into nine impact categories that compose the comprehensive matrix for impact assessment:

1. Tourism and recreation
2. Creative, cultural and innovative activities
3. Typical local productions
4. Environment and natural capital
5. Social capital/cohesion and inclusion
6. Real estate
7. Financial return
8. Cultural value of properties/landscape
9. Wellbeing

QUESTIONNAIRE – PILOT STUDY

- study aims to analyse and assess the reference of the residents of village Bzovik on the cultural heritage,
- the questionnaire was conducted only 2 week in December 2017 in village Bzovik,
- basic sample = residents of village Bzovik = 1003 people,
- selective sample = random selection residents of Bzovik

QUESTIONNAIRE – PILOT STUDY – RESULTS

Sociodemographic data

SEX AGE EDUCATION

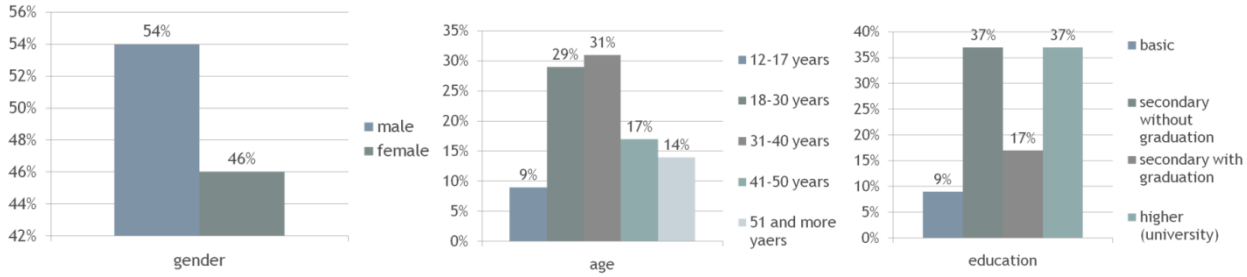

Figure 42 Sociodemographic data of selected sample a.) sex b.) age c.) education

The selected sample of respondents is varied of gender, age and education. This sample meets the requirements of qualitative research.

Questions 1

Is there a National Cultural Monument in your village?

Figure 43 Important monument in Bzovik a.) castle (monostary) b.) church

The all respondents (100%) identified Castle (monastery), but 9% identified also church. We state, that the inhabitants of Bzovik (selected sample) have knowledge of the object of cultural heritage in their village.

Questions 2

Where did you learn about this national cultural monument? (to select multiple answers):

- I walk around it
- I attended the events that were organized here
- I taught about it at school
- I participated in maintenance of it
- I spend my free time there

The respondents identified most frequently (69%) - I attended the events that were organized here and I walk around it (46%). We state, that the national cultural monument is a subset of their lives.

Questions 3

How do you imagine using it?

Figure 3 Possibilities of using national cultural monument a.) school in outdoors b.) expert workshop

This question offered respondents a free answer. Surprisingly, most respondents (31%) do not want to do anything with national cultural monument. Another respondents (25%) could not specify, what they want to do with national cultural monument, but they feel the need for change. The specific possibilities of using national cultural monument were different: cultural program (concert, festival), museum and exhibitions (eg. hunting), mini zoo and animal breeding, fencing fights, marriage room and hotel.

QUESTIONNAIRE: CONTINUATION OF RESEARCH – PLAN

We plan to conduct a questionnaire survey on the whole sample of inhabitants of Bzovik + adjacent area.

The results obtained by questionnaire survey we plan to evaluate using the statistical method (quantitative and qualitative character analysis), such as for example:

- two-step cluster analysis (distribution of respondents by relationship and knowledge of cultural heritage),
- statistical methods testing the dependence of socio-demographic data and cultural heritage issues.

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13 PREVENTION OF RISKS

Basic definition of risk (Point method)

R = P x D,

where

R - system risk,

P - causes of Unwanted event (UE) formation, P ≤ 1 and

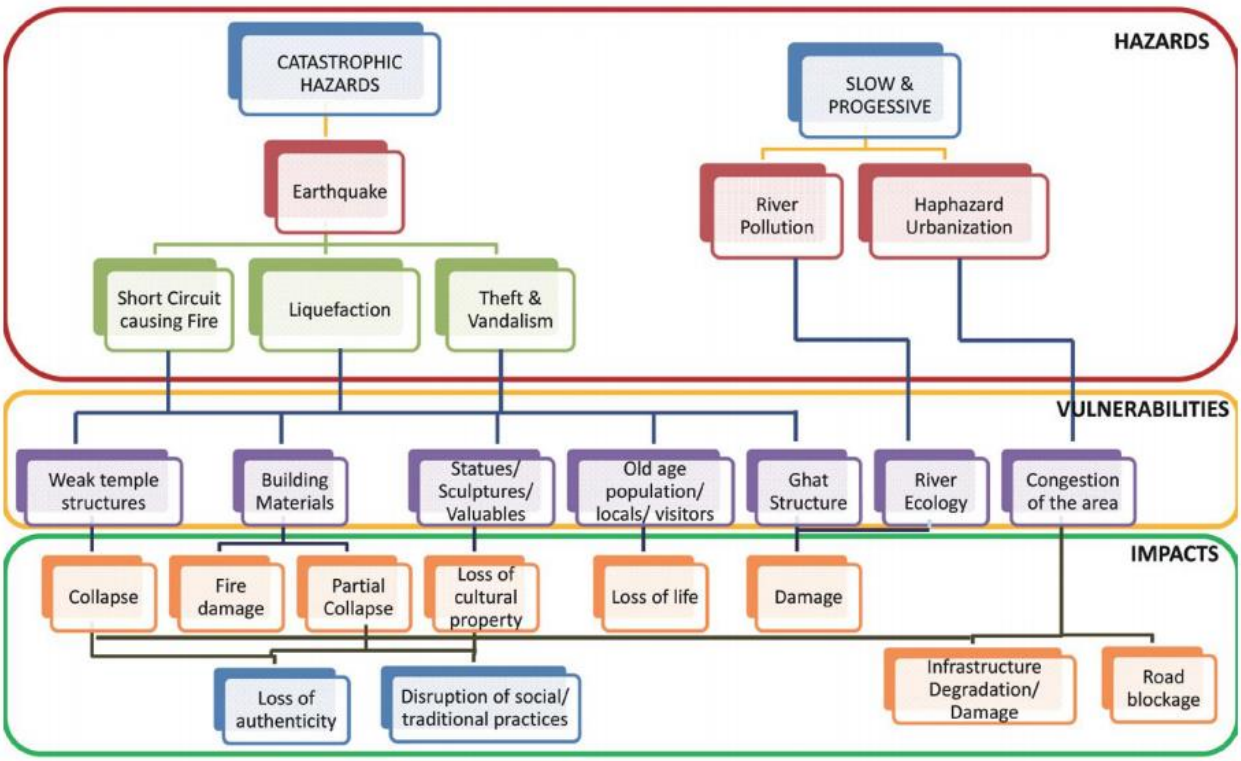
D - consequences of UE (in monetary or physical units)

The complexed process consists of the following phases:

1. Risk identification (Check list: http://www.hkfsd.gov.hk/eng/source/safety/efschlst.pdf; file:///C:/Users/DELL/Downloads/Building%20Fire%20Safety%20Checklist_11-15.pdf)
2. Risk assessment (Disaster Scenario)
3. Risk management (Main task of managers)
4. Monitoring and control

Risk Analysis

There are exist many opportunities by the realising “Risk Analysis”. Generally, Risk Analyse by “Chart by the ITC 2015 Participants (see figure bellow)”[1] is instruction for prepare for an optimal development of risk management and find of events which are possible causes of damage.



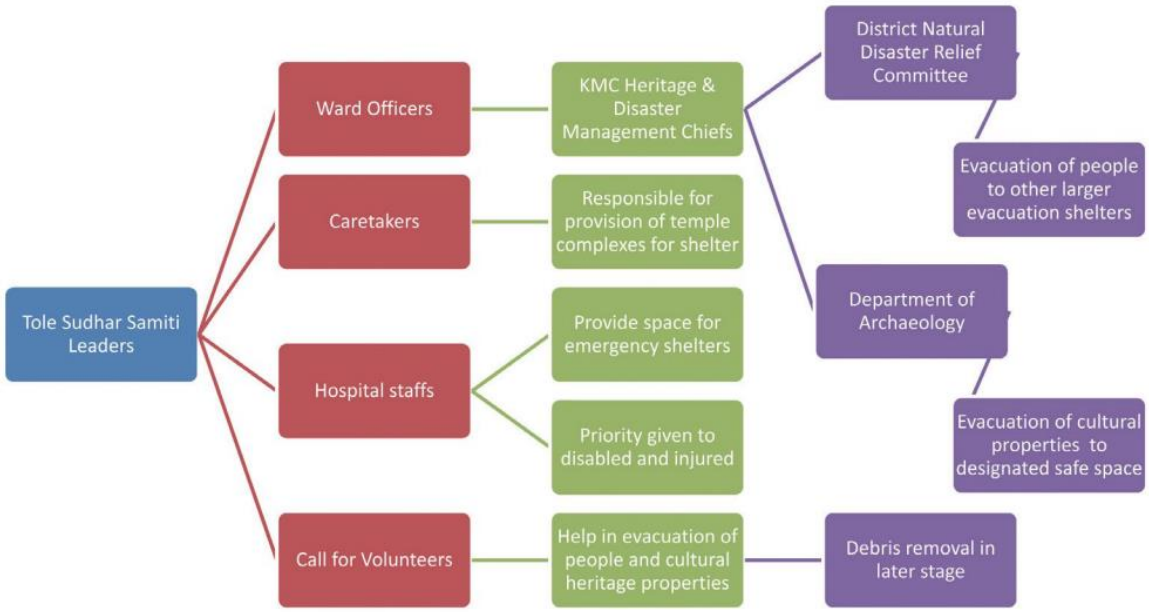
1st step Risk Analysis: Risk identification

The process of the risk identification is based on multi-hazard and vulnerability assessment by the Mohammad RAVANKHAH (Academic assistant at Department of Environmental Planning & PhD candidate in International; Graduate School: Heritage Studies, Brandenburg University of Technology, Germany from the ITC 2015 Participants) [2]

PRIMARY HAZARD EARTHQUAKE	**SECONDARY HAZARDS** ▪ Liquefaction ▪ Flooding/ rising ground water ▪ Fires/ explosions ▪ Wind driven rain/ Sand storm	**HUMAN-INDUCED THREATS FOLLOWING QUAKES** ▪ Looting of valuable objects in citadel ▪ Response and damage assessment related errors ▪ Improper interventions affecting the OUV ▪ Encroachment adjacent to the core zone
VULNERABILITY (Exposure/Sensitivity/DRM)	**STRUCTURAL** ▪ Weakness of mud layer/bricks to seismic activities ▪ Improper past interventions/ lack of foundation ▪ Existing cracks/structural damage due to the earthquake 2003 ▪ Loss of cohesion of mud brick due to decay, drying out, and termites	**NON-STRUCTURAL** ▪ Lack of appropriate risk assessment/ preparedness ▪ Lack of adequate emergency coordination amorg heritage and disaster related organisations ▪ Lack of appropriate public awareness and socio-cultural revival of the citadel ▪ Vulnerable local residents & tourists in the citadel
RISKS	**DIRECT RISK** ▪ Cracks and collapse of earthen material/structures ▪ Damage to Qanat by quake & liquefaction ▪ Damage to archaeological sites by quake & debris ▪ Impact on date palm orchards by fire from damaged life lines ▪ Casualties & Loss of life (staff/residents/tourists) ▪ Impact on the OUV and authenticity of the property	**CONSEQUENTIAL RISK** ▪ Dampness and growing vegetation/fungi on adobe walls as a result of rising ground water ▪ Damage to interior collections by environmental factors, such as rainfall and wind, via collapsed roofs ▪ Loss of traditional earthen techniques ▪ Social loss (local ceremonies & rituals in citadel) ▪ Economic loss (shortage of water for irrigating gardens due to damage to Qanat)

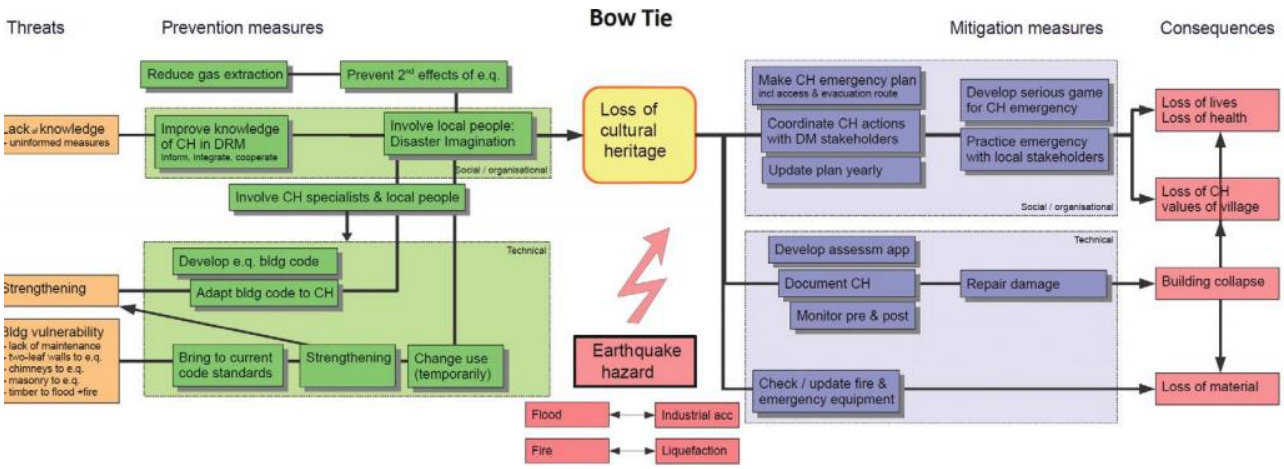
2nd step Risk Analysis: Scenarios

Conclusions of first step risk analysis are identific risks places. Risk places form the basic information for the creating scenarios make of disaster, accidents, fires and prepare planning of prevention and interventions. Proceedings of UNESCO Chair Programme on Cultural Heritage and Risk Management from INTERNATIONAL TRAINING COURSE (ITC) on DISASTER RISK MANAGEMENT of CULTURAL HERITAGE Ritsumeikan University, which was prepared by ITC 2015 Participants, proposed scenario on the following picture.



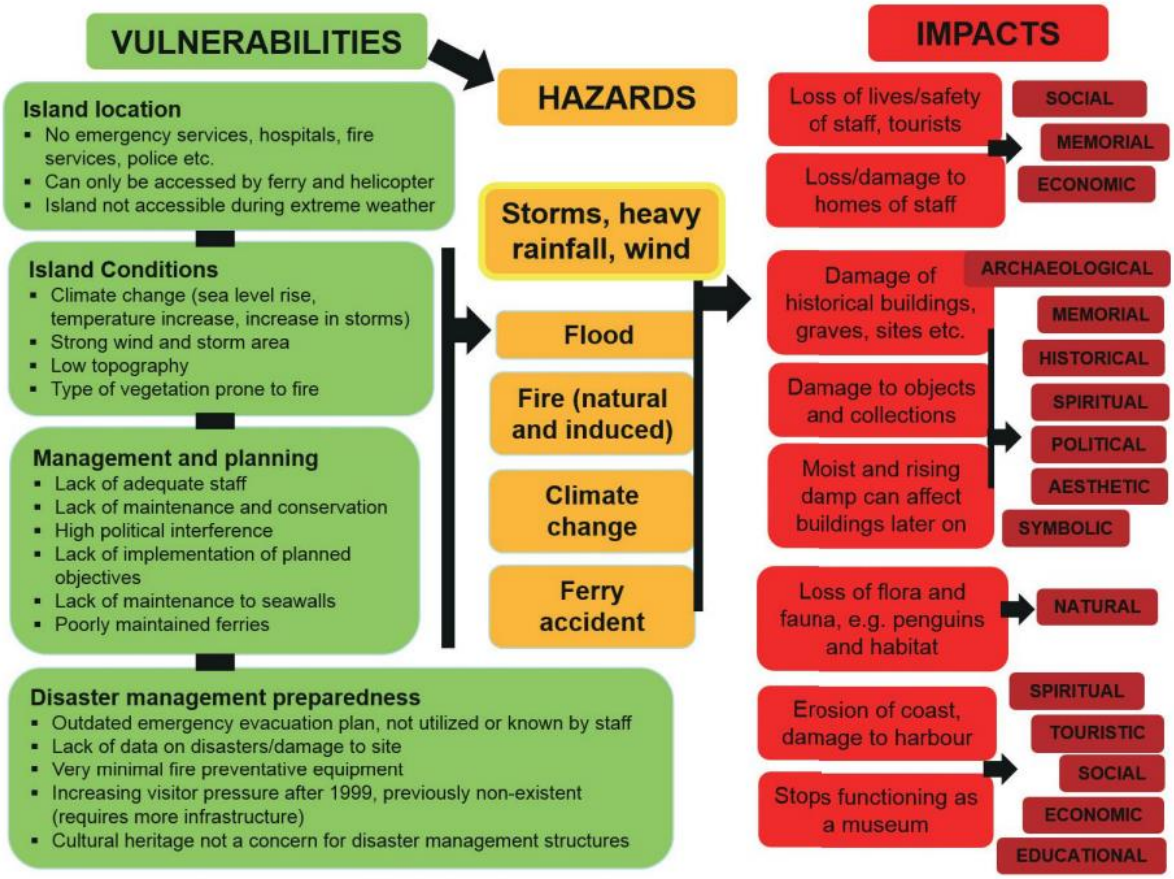
3th step Risk Analysis: Methodology, Prevention and mitigation measures

Ilse A.E. DE VENT, Senior inspector, Dutch State Supervision of Mines from the ITC 2015 Participants [1] showed methodology “Bow Tea”.



13.1 Good practise of Risk Assessment

Pamela MAC QUIKAN from African World Heritage Fund (ITC 2015 Participant) showed the clear example of vulnerabilities of Heritage place Robben Island with the related hazards and impacts.



Vurnerabilities have to treat prevented tools. There are safe risk places before unwanted impacts. The risk analysis by the manager is the basis for the development of an adequate risk management.

13.2 Risk management of ruins

The primary task of managing the risk is to avoid the risk. As it is impossible to avoid any risk, the objective is to minimize and keep below control the residual risk.

Greater security is achieved with optimization of the following factors:

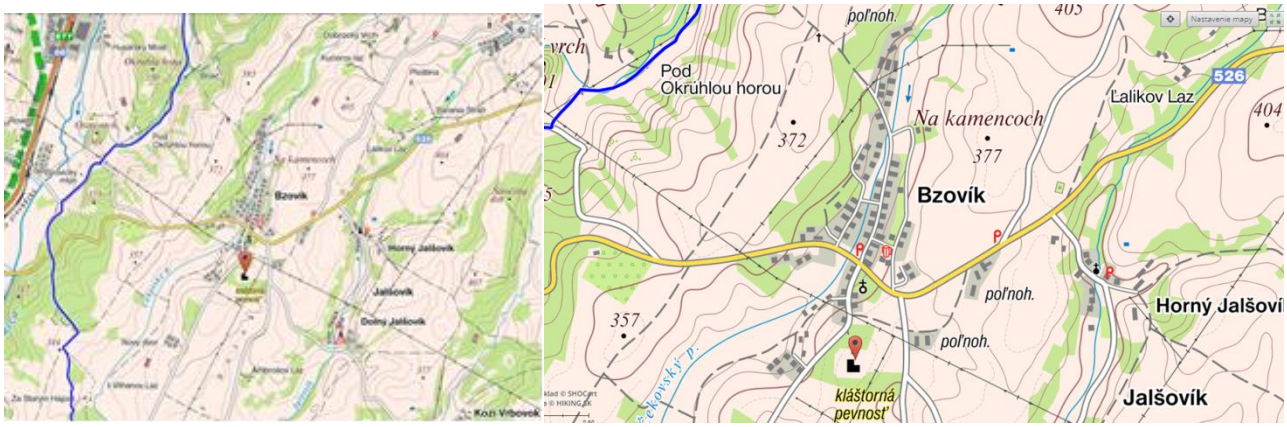
1. **CH_M_Ruins environment and construction:** protection of the site where the object is located, as well as analysis of features of the protected building or of what contains the protected object.

2. Technical characteristics: they are understood as the technical components that are in the cultural heritage good to be protected. These can be functional to the good to be protected (alarms) or functional to the building itself (heating, electrical connections, telephones, etc.).

3. Organization of education: this term indicates the kind of practical use and maintenance of the site/good.

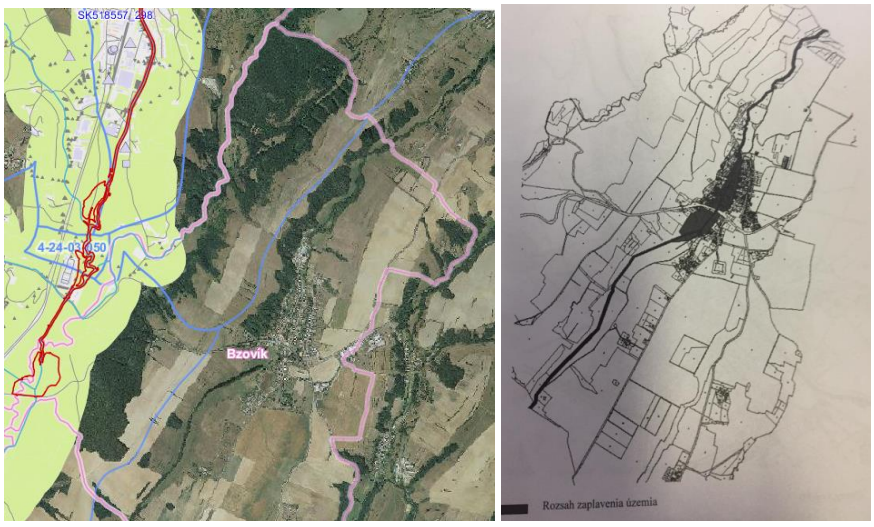
13.2.1 CH_M_Ruins environment and construction

- Category: **Bzovík Castle**
- GPS: N48° 18' 54.91", E19° 05' 22.09"
- Height above sea level: 340 m



Location of Castle Bzovík = Kláštorná pevnosť [3]

The extent of the flooded area is out of the castle Bzovík.



Flood control measures and [4]

13.2.2 CH_M_Ruins Technical characteristics

- Do not exist source of water
- Construction are not by actual Acts
- Fire equipment for construction are not, alternative evacuation does not exist
- Fireflighting unavailability of technique
- Rescue service does not access in to castle

13.2.3 CH_M_Ruins Organization of education

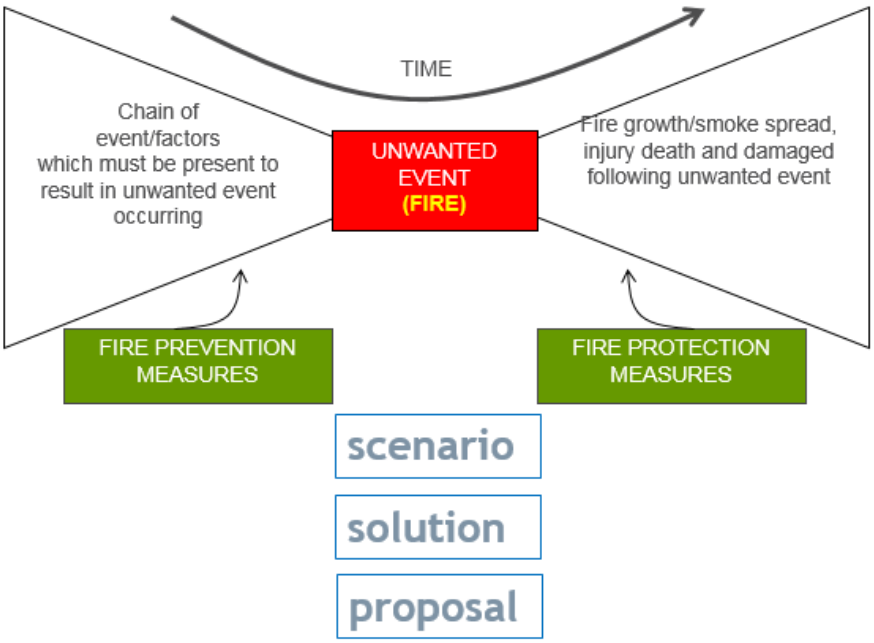
Proposal by Ilse A.E. DE VENT, Senior inspector, Dutch State Supervision of Mines from the Training programme ITC 2015 Participants [1]

13.2.4 Proposal Risk analysis by the Risk management of Bzovík

Vulnerabilities	Hazards	Impacts		Solution
Location/Environment **-No emergency servis**	**Wind**	- Loss of lives/safety of citizen, tourists - Loss/ damage to home	- Social - Memorial - Economic	**Civil defiance** **Documentation** **Content 1, 2** **Graphic plans:** **Evacuated roads** **Flooding**
Conditions **- climatic change (rivers level rise, temperature increase in summer and winter decrease, increase storms)** **- strong wind** **- low topography** **-type of vegetation prone to fire**	**Wind** **Flood** **Fire**	- Damage of historical building – ruins - Loss of flora and fauna	-Archeological -Historical - Memorial - Spiritual - Political - Estetic - Symbolic - Natural	
Management and planing **- Lack of adequate staff** **- Lack of maintenance and conservation** **- hight political interference** **- Lack of implementaation of planned objectives**	**Car or bus acci-dent**	- stop functioning as museum, school, ...	- social - turistic - economic - education	

13.2.5 Fire prevention of heritage subject

Simple fire risk assessment process was describe by DAVE SIBERT, Senior Fire Engineer, NFPA.



Fire risk places:



Risk places: Fireflighting and emergency unavailability of technique


Risk places: missing evacuation outputs



The case of fire presents different problems

The hills are highly vulnerable places for fire for many reasons, especially because of the conditions imposed by geography; complex layout of narrow streets, stairways and alleys typically remain inaccessible to firefighters and safety equipment. In addition, most of the buildings are made of wood with no firewall. There are additional factors such as lack of maintenance, obsolescence of electrical installations, inoperative taps and scarce coverage by firefighters that contribute to fire's hazards. [5]

Organising Fire safety of cultural heritage [6]

The funding and maintenance of cultural heritage lies in th e hands of the owner of the property in all countries. In some countries the local / regional / central government may give subsid ies for these activities. In England, England Heritage can give subsidies and in the Netherlands, the Netherlands Department for Conservation can give subsidies. The responsibility of the fire safety of cultural heritage lies mainly in the hands of the owner. In almost all countries this responsibility also is shared with the local / regional / central government. In Scotland, Historical Scotland in responsible, as the central government body, of the fire safety of cultural heritage. On a regional plane the fire brigade holds th e responsibility and on the local place the building control officers hold the responsibility. In different countries different organisations /governmenta l bodies set the priorities related to for the protection of cultural heritage. In Switzerland this is the responsi bility of the fire authority. In Germany the responsibility lies with a local government body. In Italy the responsibility lies with the central government / a central government body. In Slovak the responsibility lies with a local government body.

Bibliography to the chapter

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