

ANALYSES OF THE BROWNFIELDS USE IN THE NITRA CITY AND ITS SURROUNDING

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The main objective of the paper is identification, analysis and outlining options for revitalisation of selected brownfield sites in Nitra and its surroundings. Contribution aims to highlight the potential for development of abandoned sites with emphasis on the regional and local identity and tourism development.

Keywords: brownfields, revitalisation, Nitra, industrial sites, agricultural co-operatives

Introduction

Brownfield – according to the dictionary is a piece of industrial or commercial property that is abandoned or underused and often environmentally contaminated, especially considered as a potential site for redevelopment. Other definitions defines brownfields as abandoned, vacant, derelict, idled or underutilized property in the urban area with an active potential for redevelopment, where redevelopment is complicated by environmental contamination or potential presence of a hazardous substance, pollutant or contaminant (Coll. of authors, 2007).

Term “brownfield” was used in the meaning as it is known nowadays on 28th of June 1992, when U.S. Environmental Protection Agency pointed Cuyahoga County (state Ohio, USA) as a first brownfield (Vanheusden, 2007).

Kyselová (2010) divides brownfields according to the previous use to the following categories: Agricultural and productional sites, Industrial areas, Manufactural buildings, Army and Military areas, Housing and Community Amenities, Tourism, Medical buildings, Hotels and other (e.g. Breweries). Petříková (2011) and Hrubý et al. (2013) add to this categories also Surface mines and Remains after transport and technical infrastructure.

In Slovakia industrial, administrative and residential complexes of brownfields have occurred as the results of restructuralisation of the state economy and as a change in social – economic sphere after 1989.

Brownfields are not in the centre of the interest in Slovakia. They are only marginally solved within the projects – mostly only on the local level. International experiences lead to the integrated approach – best on the state level. Slovak Investment and Trade Development Agency SARIO in cooperation with representatives from the local municipalities have elaborated overview of the brownfields in Slovakia. This database contains of 2355 localities.

Material and methods

Nitra Self Governing Region is mainly used for agricultural production and mostly deforested. The main industrial branches are engineering, chemical industry and food processing industry, which is the oldest and most expanded industrial branch covering whole region. Nitra region is on the third place in number of firms among Slovak regions, it is the largest agricultural producer in Slovakia and the second most important producer of energy and provider of trading and business services. Nitra city is a cultural and economic centre of it.

Rated proposition of Brownfield:

1. **Name and Location:** object identification by its position and the current title
2. **Category of area basis of reconstructive methods:**
A – Brownfield after reconstruction and land reclamation with the original architectural characters – objects have a new function after reconstruction, but the architectural form was unchanged; B – Brownfield after reconstruction, whose architectural function was completely changed by demolition; C – Brownfield, after partial land reclamation, it should be used for the recreation; D – Brownfield – industrial facilities without land reclamation, but the site has potential to develop due to its favourable position in relation to the city (Cabernet, 2012).
3. **Area of site:** we evaluated area measurement of Brownfield based on data from cadastral web portal. For greater clarity, we were subsequently included objects into different size categories. ≤1 ha, 1–5 ha, 5–10 ha (Urbion, 2002).
4. **Transport availability** of Brownfield – fixed based radius from the centre of Nitra, expressed in km from city centre: a) Centre, b) 0–5 km c) 5–10 4) 10–20.
5. **Brownfields define by ownership** (the economic potential of redevelopment process). Based this we created following categories: A. Brownfield redeveloped in private sector – self-evolving objects

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- it has the highest value of next potential use of area;
 - B. Public-private partnership – the objects have semi – potential for development – objects with certain restrictions (by the financial restriction from the public sector);
 - C. The owner is the state – public financing, at least probable redevelopment of the property, the lowest level of funding.
6. **Previous use of sites:** the following categories identified by numerical code: 1. Industrial, 2. Military, 3. Railway, 4. Transportation, 5. Agricultural, 6. Infectious institutional (hospitals, prisons), 7. trade (shopping centres, administration), 8. Cultural (cultural centres, theatres, cinemas), 9. Recreation (sports grounds, stadiums, parks, open spaces), 10. Non-infection institutional (schools, offices).
 7. **The current a status of the object** – the subjective evaluation of site and architectural state of buildings. A. Good – Brownfield after reclamation (Greenland), site with new function, B. bad – Brownfield undergone redevelopment, large contamination of land; present use – other than the original. C. very bad – emergency conditions of Brownfields.
 8. **Forms of vegetation** – according to normative for green we set following categories: 1. Synanthropic vegetation: (occurring in the vicinity of human settlements and using environmental changes caused by man.) successional communities and invasive plants and herbs. 2. Cultural vegetation – founded, managed and maintained by man.
 9. **Environmental Load** – classifying areas according to the previous usage of Brownfield, affecting the degree of environmental loads. A. high level of potential environmental loads: industrial, military, railway and

transport, agricultural, institutional infectious (hospitals, prisons). B. The low level of potential environmental loads: commercial (shopping centres, administration), cultural (cultural centres, theatres, cinemas), recreation (sports grounds, stadiums, parks, open spaces), non-infectious institutional (schools, offices).

10. **Potential after Brownfield redevelopment:** H – High – excellent accessibility of facilities, distance up to 10 km, become connected to roads and greenways, public transport; M – median – object distance up to 15 km from the city, the availability of a motor vehicle, cycling, L – low – distance of 20 km from the city, the availability of a motor vehicle.

Based terrain research we identified 18 objects 9 Brownfields after redevelopment, 8 belonged to Brownfields. Subsequently we evaluated them based our methodology.

Results and discussion

We have studied altogether 18 sites with brownfields characteristics. During investigation, we evaluated their location, size, accessibility, ownership. We compared the current and former use, potential environmental load, vegetation and their potential for the further development. Table 1 shows the results of the mapped potential Brownfields sites.

From the total number of studied objects had the largest representation renovated building with original architecture (A category). Overwhelmingly there were the objects associated with agricultural processed industry: barns, mills, distilleries. Size of the area were up to 1.5 ha. Buildings have been renovated by physical person. Their condition can be described as good. All of these objects represent a high

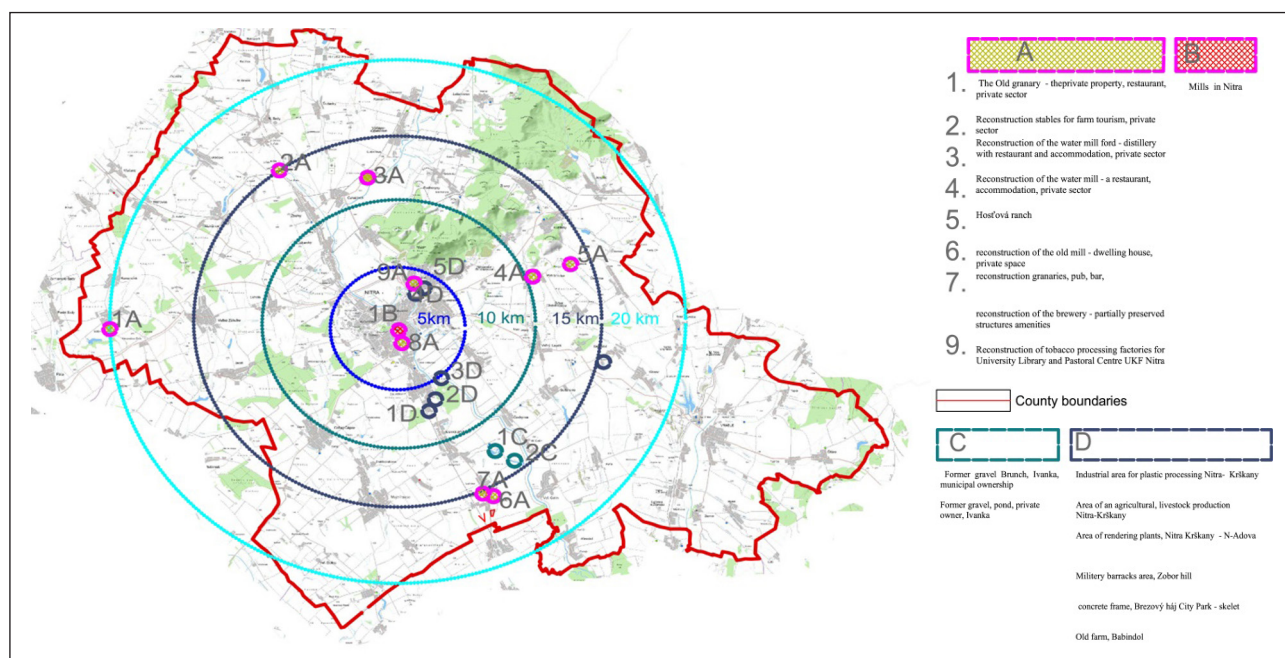


Figure 1 Map of sites dividing based the degree of redevelopment and using

Table 1 Evaluation of selected Brownfields areas

Name	Locality	Area size in ha	Transport accessibility	Ownership	Previous use	Current state and use	Vegetation	Environmental load	Potential for development of site
A category									
1	Báb	≤ 1	3	A	5	A	1	A	H
2	Čab	1–5	3	A	5	A	1	A	H
3	Jelšovce	≤ 1	4	A	1,5	A	1	A	H
4	Pohranice	≤ 1	4	A	5	A	1	A	H
5	Hostňová	1–5	4	A	5	A	1	A	H
6	Branč	1–5	4	A	5	A	1	A	H
7	Branč	≤ 1	4	A	5	A	1	A	H
8	Nitra	1–5	2	A	1	A	1	A	H
9	Nitra	1–5	2	A	1	A	1	A	H
B category									
1	Nitra	1–5	1	A	1	A	2	A	H
C category									
1	Ivánka	1–5	4	C	1	A	2	A	H
2	Ivánka	1–5	4	A	1	A	2	A	H
D category									
1	Dolné Krškany	1–5	3	A	5	B	2	B	H
2	Dolné Krškany	1–5	3	A	5	C	2	B	H
3	Horné Krškany	1–5	3	A	5	B–C	2	B	H
4	Nitra	1–5	2	B	2	B	2	B	H
5	Nitra	1–5	2	B	10	C	2	B	H
6	Babindol	1–5	4	A	1	B	2	B	M

potential for further development in conjunction with tourism and the appropriate forms of recreation.

The second category (B category), when the original architecture was completely changed by demolition of buildings, was only object of the food industry (mill). Original environmental loads have been eliminated by new redevelopment. In this case this area plays an important role in the development and long term economic sustainable in the urban core. This form of rehabilitation is very questionable in terms of preservation of historic architectural city structures.

C category included two objects – original mining pits for gravel (river gravel), which are in excellent accessible distance from the city and they are also in direct contact with the surrounding villages. For the comparison, one part of the pit is privately owned (owner built a canter for recreation). The second is owned by the municipality and is used as – catch fishery. The area has strong potential for further development and completion of other structures.

The last category is made up of industrial sites without reconstruction (D category). Areas of these sites are larger

than one hectare. Ownership is private or mixed – public-private partnership. These objects have a convenient location and accessibility within the city, their previous use, which corresponds to the current very poor state facilities detects a high degree of environmental loads. These Brownfields have a high future potential for further development of the area after the removal of all forms of stress and restoration sites (which may be due to the large area of blocked financial barrier).

There is an increasing interest of the brownfields using in the urban structures. The “brownfield issue” in Slovakia has several particularities: absence of comprehensive database of brownfields; absence of the National strategy of the brownfield revitalisation; marginal solution of the brownfields, only within the whole project concept; missing of the data regarding the soil contamination and other pollutions; reselection of the areas, which are easily accessible.

Many authors of research in this area would agree precisely on the idea that the attractiveness of Brownfield increases depending on their localization, accessibility and connection to the main transport roads. Another

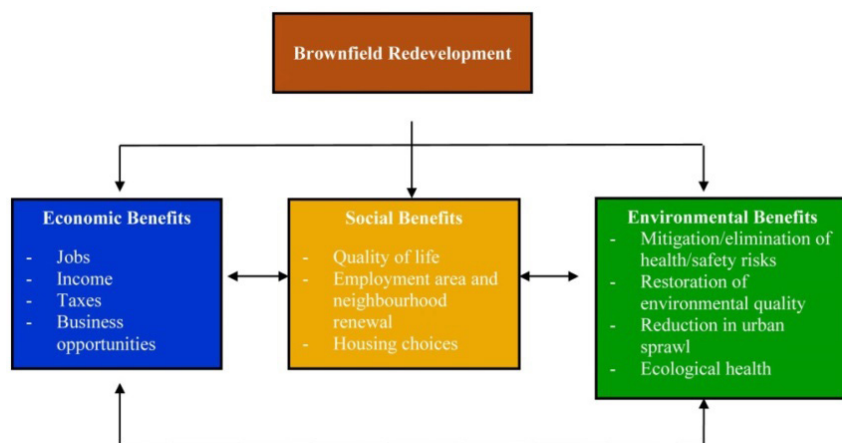


Figure 2 Benefits of brownfield redevelopment
Source: Regional Analytics, 2002

important role plays the historical background as a relic of culture, hint of previous generations and the development of continuity. Views on this issue see authors in three positions, they are following: economic, social and environmental one (Figure 2).

We brought an overview and comparison of selected brownfield sites before and after reconstruction. We can find the origin of the Brownfields in the restructuring of the economy after 1989 – beginning of period of transition to a market economy. Part of the privatization process, followed by a process of change and production base.

Slovakia landscape is mainly used for agricultural production. The great potential is still hidden in disused and dilapidated campuses. Form of their future use and the reconstruction depends primarily on the number of economic facts as well as the extent and manner of their future use. As mentioned by various researches in this fields for incorporation of the social and cultural dimensions of sustainable revitalization it is necessary to: analyse the costs and benefits arising from the inclusion of these objectives into the revitalization scheme of brownfield sites, find or develop the specific tools that can be utilized for the implementation of these objectives (specific policy direction, regulations, detailed methods of social parti-

icipation, creation of new coalitions, fiscal measures, the improvement of skills and education, etc.) (Petříková, Finka and Ondrejčíka, 2013).

Conclusion

This comparison brought several question marks regarding the method of evaluation and Brownfield categorization in Slovak conditions. We have looked on the methods of brownfield assessment, based on the methodologies used in foreign countries (Czech Republic and the countries of Western Europe). Slovakia has the potential for development of such sites, confirming attendance reconstructed facilities. Despite of this fact there is high percentage of creation and buiding of the new architectural complexes. This situation can be solved by elaborating of the methodology of the Brownfield assessment, which will be followed by brownfield program. This is the first step in the redevelopment process, which is key factor in its revitalization. Old industrial sites represent a great potential for tourism, recreation sport and cultural development.

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