VALUES AND POSSIBILITIES OF REUSING BROWNFIELDS

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INTRODUCTION

1 BROWNFIELD

The problem of industrial sites is discussed in professional circles and also in publicity but despite of this only a very small part of the total projects of this type was realized. This situation was happend due to several reasons such as: environmental burden, difficult communication between stakeholders, economics and complexity of projects. It’s possible to arrive to the schema of brownfield solution access by contemplation and comparing of industrial parks in Slovakia and also in foreign countries. The situation is alarming because of damages which are caused to society and environment.

The term brownfield is not entirely clear, and almost every country it translates differently. Just inequality terminology causes communication problems in international cooperation in the field of restoration and protection of industrial sites.

The definition, which was made by Concerted Action on Brownfield and Economic Regeneration Network-CABERNET, in which a network of European experts address the issue of Brownfield Regeneration in Europe is currently the most widely accepted:

Brownfields are areas that:
- affected by previous using and using of surrounding land,
- are abandoned or underused
- have actual or anticipated problems with contamination
- are located mainly in developed areas of settlements
- require intervention in order to be returned to beneficial uses. [1]

1.1 DISTRIBUTION OF BROWNFIELDS

We can classify brownfields by different aspects: initial use, size, location, extent of contamination, the financial performance of their conversion and economic attractiveness.

According to initial use they can be divided into those that remain:
- after the agricultural production: unused areas of farms; here can be expected organic pollution and pollution originating in agricultural machinery;
- after logging in surface or deep mines: often quite extensive areas, their specificity lies in the huge amount of movement of earth, which overlap layer material sought. After extracting therefore do not get just devastated area after mining, but also fills. Deep mines optically not spoil the country to an extent, but they are a burden on the environment;
- after manufacturing: former factory premises of different spatial extent, after the cessation of production of the expected environmental burdens. They represent a valuable architectural structures that can be rebuilt into attractive residential, administrative, social, cultural, sports and wellness facilities, amusement parks, or shopping centers;
- after the military: troop withdrawal and reduction of armies appeared a large number of formerly military buildings and sites that have lost their function, for example. barracks, warehouses and covers civil defense, military sites and training ground;
- after the transport and technical infrastructure: oversized freight stations, sidings, terminals, depots, shipyards, ports, sewage treatment plants, heat exchangers and substations;
- after landfills: after filling capacity ideally adjusted to the surface so as to integrate into the surrounding landscape without its load. The amount of landfill is not reclaimed, thus endangering the environment;
- after the housing and amenities: unused buildings, blocks, neighborhoods, houses, closed or only partially used amenities (small operation, shops, health centers, campuses);
- other: from a broader perspective, we can also assign a brownfield area of abandoned buildings under construction, which is not yet completed, the long-term unused can be dangerous and affect the environment negatively. [2]
A conceptual model based on the ABCD project CABERNET identifies four types of brownfield sites in accordance with their economic situation (such as the costs necessary for the regeneration or by the value of the property):
- Category A: Development projects these sites and objects are highly economically feasible and implements most of the private sector;
- Category B: Projects in these areas are outside the profit. They are often financed on the basis of public-private partnership or cooperation;
- Category C and D: conversion of these sites and objects is not profitable, depends on public sector projects or governments with lower economic viability. To stimulate the revitalization is necessary public funding, or specific legislative instruments, for example tax incentives. [3]

Categorization according to the economic viability and attractiveness of regeneration. Economic conditions may be affected by:
- direct and indirect costs of conversion;
- anticipating revenues from the project;
- type of financing and the related financial risks;
- the amount of taxes and perceived risk of fluctuations;
- development agreement between the landowner, government and investors. [4]

1.2 VALUES OF INDUSTRIAL BUILDINGS

The buildings and parks of industrial production are the values that are often not visible at first sight. The general public takes them as ugly and distracting objects in the body sites, does not perceive any historical reference and also from their perspective, they are hindering the construction of the modern city development. [5] In this context it is important to articulate the value and potential industrial sites. They can be divided into:
- historical: preservation of buildings of historical documents such as manufacturing and engineering activities;
- architectural: buildings represent aesthetic values, its specific architecture;
- economic: revitalization of facilities for new production activities, or for other functions;
- social: maintenance of buildings, which are intimately close to people, are part of the traditional environment.

Fig. 1 and 2: Wastewater treatment plant in Bubeneč (ČR)


2 FACTORS AFFECTING CONVERSION

The process of conversion (functional change) of objects that finished operation of its original purpose is different from the normal architectural practice by:
- working with the historic environment or working with technical monument;
- using the existing urban, architectural and building structure;
- searching and evaluating new use, unless the operational program is defined. [6]

Each building has its strengths and weaknesses for the adoption of the new features. The crucial is the compatibility option of existing buildings and the expected program. Typological, health and safety requirements of the new features and technical support can be detrimental to the architectural quality and the loss of the original character of the building, because of decision to maintain.

Conversion requires special approaches for joint restoration and modernization of historic sites, buildings and their details.
2.1 THE LANDOWNER, INVESTOR AND LEGISLATION

In converting of industrial areas there are facing three groups of interest: land owner, investor and legislation to protect the environment. Negotiation and communication between them is the cornerstone of the success of the conversion. The landowner is obliged by legislation to ensure the removal of contaminated sites and pollution, caused by the former production, regardless of whether they are involved or not involved in their functions. Fear of the consequences of possible pollution discourages investors from buying and industrial areas. Fear of responsibility, have direct and indirect impacts of the conversion.

- Direct impact: the investor is not appealing to embark on a restoration project, if there is land that is polluted because of fears of future liabilities and risks associated with environmental pollution, which could greatly expensive project and make it uneconomical;
- Indirect impact: problems with borrowing funds from financial institutions (banks reluctance to provide funding or recognize industrial estate as security for the loan) and also uncertainty about market demand for real estate because of its past contamination.

In central Europe the conversion, compared with examples from other European countries or countries USA, there are several specifics related to the politico-economic system of the previous regime (for example, complicated and unsettled ownership relationships that can extend or block the conversion process). A big problem is, as discussed above, underdeveloped real estate market and imperfect and rapidly changing legislation. New investments, such as building residential complexes, shopping malls and industrial parks are located on the green meadows, resulting in increased image free country and urban sprawl. This occurs because of the increased risk and financial costs of removing contamination. Reuse of industrial sites in Slovakia currently limited to only those properties whose value is after deduction of any additional costs associated with the project and gain proportional to the risk taken by the investor, is still positive. [7] In the industrially advanced countries, the conversion of industrial sites supported legislation grants or tax credits. In order to make the conversion in Slovakia would be desirable at the national and regional level, there was a concept and strategy for brownfield regeneration.

3 BASIC ATTRIBUTES FOR CONVERSION OF INDUSTRIAL SITES

3.1 SEARCHING AND SELECTION OF NEW FEATURES

Every use of the building leaves traces on it and forms part of its history. This is a situation where the function operates on the form. In the event of changes of function this relationship becomes reciprocal. Form often affects the choice of a new function object. Quantity examples of successful conversions nevertheless show that there are no clear rules for determining the new features. It is always more complex and technically demanding inclusion of new functions into a dedicated industrial buildings such as the multipurpose which is able to take its universal character of a diverse array of functions.

Changing the destination of object lies primarily in its commissioning in good technical condition. Furthermore, the adoption of social and cultural history of which can then be based on the choice of the new features. This is of course also influenced contemporary needs and conditions of the site and, therefore, external conditions to which the object received.

For the determination of the new features should be involved in teamwork architect, city authorities responsible for the development of the area, residents, sociologists and many other specialists. They based on the development and needs of localities and their confrontations with the possibilities of objects will select the most appropriate solution area functions. This is necessary scholarly views, assumptions and analyzes based on:

- Cultural history of the building, or complex;
- The wider territorial and spatial relationships;
- Architecture of the building and its uniqueness;
- Construction and technical capabilities.

3.2 THE RATE OF INTERVENTION TO THE ORIGINAL ARCHITECTURE

Frequently occurring approaches include these interventions and their combinations:
- full protection and preservation of the historic character of the building or environment. Preserving elements of the original morphology;
- evaluation and amendment of space at the construction site and the proposed purpose;
- possibility of adapting the architectural concept of building a new interpretation of the original architectural solutions;
- new interpretation of elements of construction, found during demolition, incurred or partial demolition of a deliberate;
- solution based on the contrast between the new and original architectural accession environment;
- extension of the original construction of the new architectural volumes (additions, extensions, completion), in order to meet the requirements of the new circuit functions.

In all cases, should dominate respect to architecture, to history and to the structural logic of construction.

3.3 URBANISM - THE COMPLEX VIEW

Conversion is an architectural, social and economic contribution not only in the scale of individual buildings, but also in urban scale. Cities go through alternating periods of development and decline, new construction and demolition of urban structures. There was a new arrangement in built-up areas, and in the works of the new buildings follow the original construction. The approach to rebuilding cities, various urban concepts it is possible to trace the image of a greater or lesser sense of historical continuity and coherence of the architectural legacy of past periods.

In industrialized countries, the 2 World War II accelerated the pace of urban transformations. Cities began situate industrial premises on the suburbs, the new monofunctional production or storage areas. Evolving transport and technical infrastructure accompanied zoning processes. Transport communications and transport distances for transportation were shortened, but on the other hand brought disintegration of traditional urban structure and, consequently, the loss of identity of the city. These processes have affected the original industrial areas, which were often too close to the historic city centers. Value of building substance of these cities began after the operation quickly reduced. The problem of revitalization, urban revival, is often perceived by the value of the land abandoned complex. For this reason, recently view was that the most appropriate solution is demolition of the site. Reviews for disposal factory, which conditioned the life and flourishing city also has an emotional side. It was a place of work and life of employees and people living in its vicinity. In view of the progress of industrialization has been the birthplace of inventions factory. Take down industrial area is sometimes a loss of urban perspective. Its demolition will bring a gap in the urban structure and are reflected by deleting "a familiar landscape". [8]

When exploiting the potential of disengagement has become the main objective on the first place are urban requirements, terms and conditions, which heralded the approach to conversion. As an example we can mention the functional transformation of cargo port in the center of Helsinki (fig. 3 and 4). Conversion were induced by planners and architects who were aware of the potential of the site in relation to the city and waterfront. The first stage was the analysis of the former admiralty and docks, evaluation and selection of those to be retained. Their position in the area was the basis for the election of a new concept of the urban waterfront.

Fig. 3 and 4: Functional transformation of the port of Helsinki

Zdroj: Žemánková Helena, Tvořit ve vytvořeném, VUT, Brno, 2003
3.4 INTERMEDIATE STATE- POSTINDUSTRIAL GREEN

Depending on the size, location and function previous industrial sites have different potential for further use. A lot of them are not attractive even though they are capable and ready for conversion. One solution for this kind of sites is postindustrial green.

In recent years as an example of the arrangements is the Ruhr region in Germany (fig. 5 and 6). Ruhr had weak preconditions for the creation of housing, or cultural, and commercial center due to its lack of infrastructure. How best to use proven postindustrial green respectively industrial forest. This space creates conditions for recreation and sports activities. In the project were involved locals who had the opportunity to participate in creating an environment in which they live which is another positive aspect of this deal. Meetings and workshops have been successful people showed great interest in active participation in the planning and implementation of the project.

The study focused on the social aspect of industrial forests in the Ruhr shows their use as:
- added open space;
- place for games and learning about nature for children;
- recreation areas for adults

The result is the acceptance of post-industrial green as a full fledged urban green areas, which brings out the environmental and social values. [9]

Fig. 5 and 6: The area Ruhr, Germany

Most post-industrial green is planned as a temporary solution with the possibility of further use in the future. This “middle ground” is the removal of contamination and arrangements for access and use by the public.

4 KASÁRNE/KULTURPARK IN KOŠICE

As an example from Slovakia we can mention Kasárne/kulturpark in Košice. It is purpose-built complex of buildings from the late 19th century in the industrial style which is set in a historic park and is located in proximity to the town center. Cultural areal creates space for production, assembling and presenting various types and genres of art.
There are presentational spaces (gray hall, black hall, exhibit space), studios, creative studios, spaces for organizing workshops, offices for administration center and cinema. The program of independent cultural center is trying to cover the most diverse forms of art and therefore is planted on the exact programming lines.

The building complex is set in a park near the historic center, to inhabitants of Košice offer new cultural and artistic quarter. Culture park is not only the largest national investment projects (in value of more than 26 million euro) co-financed by the European Union under the auspices of Košice - European Capital of Culture 2013 but also a unique space in which it is possible to co-organize 8 musical and literary events on wooden podiums around the complex, 5 workshops in Workshops exhibition halls and ballrooms, 3 exhibitions in the gallery space, 2 concerts, conferences, theatrical and dance performances in multifunctional halls with a capacity of 300 guests, 1 seminar for 50 participants, 2 discussion/literary events in the café areas, 2 audio recording and image in audiovisual studies, 1 tour 50 exhibits entertainment technology center Steel Park- creative factory for 100 children and provide space for 300 creatives actively involved in areas such as new media, architecture, design, literature and visual arts.

Campus of Kulturpark was built in 19. century by austro-hungarian army and initially served as a supply barracks. They later used the Czechoslovak People's Army and the Army of the Slovak Republic. Subsequently, the complex fell under the administration of the city. Building barracks were built in strict geometric system and architects have established and placed additional objects under the same key. New pavilions complement the infrastructure and will serve to ensure that activities of the main building to expand into public space and park. Furniture site has been designed specifically for Košice to be able to give variable stacks of different configurations, serving visitors to relax. An essential part of the complex is an underground car park with 114 parking spaces. [10]
CONCLUSION

Industrial areas are often located inside the city, in areas with developed infrastructure. Conversion is therefore less expensive than building on new land. Their position is attractive for future users, not only for economic reasons. There are other aspects of the conservation and restoration as architectural quality and sometimes appealing unrepeatable atmosphere of a familiar environment.

Old buildings and areas of different historic industries have become an integral part of the historic environment, documenting the stages of development of our cities. Their distinctive silhouettes are an important part of urban units and countries. Many of them serve their original purpose or they got the replacement program. Those which have finished operations altogether, are standing on the periphery of the actual owners, and are used as menial warehouses, or are abandoned for decades and slowly disintegrate. Lack of funds for maintenance and restoration, and a general lack of understanding of values disinterest in these objects make the most of them are intended for disposal.

Converting today is a very important step in the cultural, economic, social and in some cases environmental contribution can not be ignored by the architects implementers.

LITERATURE


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Abstract

Nowadays we encounter two serious incentives for the conversion of abandoned manufacturing sites. The first is quite common risks of environmental pollution or health risks caused by activities of the original function. The second impulse is vacant. In contemporary situation of population density question of space becomes very actual and industrial sites that have finished their activities are huge stores.

Key words

Brownfield, cultural park, innovation
JEL Classification

R - Urban, Rural, Regional, Real Estate, and Transportation Economics