

To the problems of agricultural brownfields in the Czech Republic – Case study of the Vysočina region

K problematice zemědělských brownfields v České republice – případová studie kraje Vysočina

H. SVOBODOVÁ, A. VĚŽNÍK

Department of Geography, Faculty of Science, Masaryk University, Brno, Czech Republic

Abstract: After 1989, Czech economy was transformed into free market economy and this brought many changes into agricultural sector. One of the changes was the decline of the volume of agricultural production which caused that many of objects used in agriculture lost their function and were not needed any more. Here begins the origin of agricultural brownfields. There was no interest in this problem for a long period; a bigger attention paid to brownfields started in the context of the Czech Republic entrance into the EU and with the possibility to draw finances for the brownfields' regeneration from the structural funds of the EU. This article deals with the problematic of agricultural brownfields in the Vysočina Region since there were located 44 brownfields of this type and it is important to know about this and to set up a strategy to solve this problem.

Key words: agricultural brownfield, Vysočina Region, barriers of development, revitalisation

Abstrakt: Po roce 1989 prošla česká ekonomika transformací na tržní ekonomiku, což přineslo do zemědělského sektoru mnoho změn. Jednou z těchto změn byl pokles objemu zemědělské produkce, jež způsobilo, že mnoho objektů užívaných v zemědělství ztratilo svoji funkci a nadále nebyly využívány. Zde začíná problematika zemědělských/venkovských brownfields. Po dlouhou dobu se o tento problém nikdo nezajímal; větší pozornost se brownfields začala věnovat až po vstupu České republiky do EU s možností čerpat finance na regeneraci brownfields ze strukturálních fondů EU. Tento příspěvek se zabývá problematikou zemědělských/venkovských brownfields v kraji Vysočina, jelikož zde bylo lokalizováno 44 brownfieldů zmíněného typu a je jistě důležité o této problematice vědět a stanovit strategii k jejímu řešení.

Klíčová slova: zemědělský brownfield, kraj Vysočina, bariéry rozvoje, revitalizace

The origin and existence of brownfields is a manifestation of the economic and social changes which are reflected in the development of urban and rural areas. The main reason for the emergence of brownfields in the Czech Republic is the change which affected our economy after 1990. In particular, it was the diversion from heavy industry, the collapse of big enterprises, cancelled military domains – the general restructuring of industry and agriculture. Until this time, the problem of brownfields in the CR did not exit while in the Western countries this problem has been solved since the late 70's.

Reasons of origination and existence of brownfields in the CR are simple: during the period 1949–1989 the lack of interest in this problem, there was not

any political willingness to address the problem, the involved entities – both public and private – were passive, there was an insufficiency of resources and needed legislation. A bigger attention to brownfields started to be paid in the context of the Czech Republic entrance into the EU and with the possibility to draw finances for the brownfields' regeneration from the structural funds of the EU (Sýkorová 2007).

Brownfield is an English term which is used as a terminus technicus. In the Anglo-Saxon countries, the brown colour was used to mark the localities in plans of the former industrial areas which lost their function. The definition of brownfield in the Czech Republic is not clear. According to the Investment and Business Development Agency, the Czechinvest,

the term brownfield means a real estate/property (plot, facility, area), which is not effectively used, is neglected or even contaminated; cannot be used effectively without a prior regeneration process; arises as a remnant of industrial, agricultural, residential or other activities. Brownfields represent for us an economic source, a business activity and opportunity that have to be used. Brownfields are also important as historical trails, the sources of the national memory, of the cultural and architectural heritage which should be preserved and reconstructed. Almost in each town and city in the Czech Republic, there are many of localities that were or are built-upon that were used in the past and are now abandoned, dilapidating, occupying space and hindering development. Their appearance and presence often annoys the inhabitants living in their vicinity. Investors lose interest in such areas and the development is blocked for years ahead. On the other hand, some of these locations represent interesting or unique examples of the industrial heritage.

In present, there is a number of foreign literature which deals with the issue of economy and environment and is closely connected with the topic of brownfields, e.g. Singer (2000). There are also some works which apply to the legal aspects of development of brownfields, Wolf (1999).

In the Czech research field, especially Jackson from the Institute of Sustainable Development of Seats (IURS) is engaged in brownfields or the Investment and Business Development Agency, Czechinvest, which worked out the Research Study for Localization of Brownfields in the Territory of the Czech Republic (2007). There are also high-quality diploma theses concerning the brownfields topic –Holeček (2006) or Hlušková (2006).

To just the matter of agricultural brownfields, there has not yet been devoted an adequate attention and in the literature, they are mentioned only marginally, e.g. Dvořáková, Dlouhý (2006), Jackson (2003), Bičík et al. (2001), Bičík, Jančák (2005) or Kabrda, Jančák (2007), in Slovakia – Spišiak et al. (2005). In connection with brownfields should be also studied strategies of farming which were described by Herová (2007) or new trends in agriculture concerning changes in land use in which were engaged e.g. Svatoš (2008) or Doucha and Foltýn (2008).

MATERIALS AND METHODS

The problem of brownfields was processed on base of the Czechinvest data which are often very limited. However, they provide basic information about their

structure. A deeper analysis of this problem was worked up according to the data from the questionnaire survey and also by interviews with the employees of the Regional Development Agency in Jihlava and the Vysocina region. Proper and available methods, such as classificatory method, comparative analysis or cartographic interpretation, were used to increase the predicative value of the monitored phenomena. Also the socio-economic characteristics in the spatial context were evaluated.

RESULTS AND DISCUSSION

Brownfields in the Czech Republic

Brownfields are usually located in industrial zones in cities or along railroad lines in the suburbs or in rural communities. According to the Czechinvest Study for Localization of Brownfields in the Territory of the Czech Republic (2007), in total 2 355 localities have been found in the Czech Republic, with a total area of 10 326 ha and the built-upon area covering 4 206 ha. Although earlier the brownfields were perceived mainly as a result of the transition of the industrial sector of Czech economy, the Study has indicated that most brownfields (36%) were formerly used in the agricultural sector. Industrial localities make 33% of the total number of brownfields in the CR. Other brownfields in the CR may be classified as the civic amenities (13%), military (6%), residential (4%) and other (8%).

When we study the area of brownfields with regard to their previous use, the largest area in the CR is represented by industrial brownfields (42% of total brownfields' area), then military (23%) and agricultural brownfields (17%).

Agricultural brownfields

The problem of agricultural brownfields is closely connected with change of the general socio-economical conditions in Czech rural areas and with the overall decrease of economical activity. Since 1990, employment in agricultural production decreased to 27% of the former state. Agricultural and also non-agricultural activities which were often integrated to agricultural enterprises ceased in the majority of municipalities. Changes after 1990 affected different regions of Czech countryside quite differentially. While rural areas situated near bigger towns were affected by the positive and also negative consequences of the fast developed suburbanisation,

a great part of Czech rural areas remained outside the development axis. Compared with the situation of inhabitants of core areas, the social and economical situation of inhabitants in less developed areas has relatively worsened. This could be documented, among other, by the growing volume of daily commuting to the metropolitan areas, differential rates of unemployment, the average income in specific types of activities or by rate of business activities.

The extinction of the socialistic large-scale agricultural production brought a new phenomenon into Czech rural areas. Majority of former agricultural enterprises built in 70s and 80s of 20th century went through a considerable reduction which was caused mainly by the substantial depression of agricultural production. Many objects of these former firms are empty or used only partially, many of objects decay (including partially the demolition of single buildings). According to this, there arises new type of brownfields in the Czech countryside – abandoned former agricultural facilities. These areas are usually located in marginal places. It would be difficult to use them for new and modern technologies that are why the present owners or municipalities could not find a new investor who would be able to revitalize and re-utilise this area. Despite the proclaimed support to small and middle entrepreneurs, it is still not possible to find an appropriate support mainly to small trading in the countryside, either in the traditional crafts or new fields connected with the IT.

Situation in the Vysocina region

In the Vysocina Region, there have been located 98 brownfields with the total built-upon area covering

36.9 ha (some objects were not exactly measured and so the real area is a bit larger). The biggest number of brownfields in the Vysocina Region as well as in the whole CR was used in agriculture (46%), 22% represent industrial brownfields, the other types represent a smaller part – civic amenities 12%, military 12%, residential 3% and other 5% (Figure 1).

After the transition of the conditions for agricultural private enterprise in rural municipalities in the Czech Republic, many of them emerged in the former agricultural areas, often also of administrative buildings. At present, these former agricultural areas have been fast decayed and it is really difficult to find a new use for them, even for those located in sub-urban zones.

Agricultural brownfields are large-scale areas formerly used in agriculture (e.g. barns, grain silos, storehouses, mill houses, cowsheds, calf houses, pigsties, ...) which are underutilized or abandoned and are typical for rural and peripheral regions. They also have very a low investment potential, are mostly contaminated and are not immediately exploitable. According to the A-B-C Model (www.cabernet.org.uk), it is possible to differentiate three types of brownfields – A, B and C. The criterion of categorization is the amount of finances which are required for the possible revitalisation of the object. The absolute majority of agricultural brownfields belongs to the C category – these brownfields are quite without a chance of revitalisation. They are often out of the contemporary commercial, social, industrial or cultural development trends and are located in the localities without an adequate demand so it is unreasonable to cover the costs gap. Also brownfields with a serious ecological burden belong to this category because the revitalisation would be very expensive.

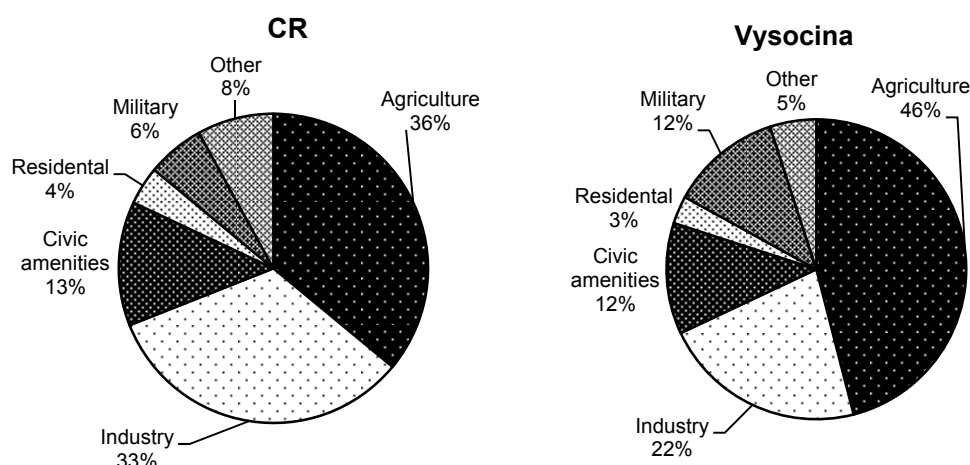


Figure 1. Structure of brownfields in the CR and the Vysocina Region according to their original use

Source: Regional Development Agency Vysocina (www.rrav.cz) and own calculations

Table 1. Number of agricultural the brownfields in the Vysocina Region and their area

Area in m ²	Number of objects		Total area in m ²	
	abs.	rel. (%)	abs.	rel. (%)
1–499	3	6.8	752	0.8
500–999	14	31.8	10 832	11.5
1 000–1 999	8	18.2	10 598	11.3
2 000–4 999	9	20.5	23 475	25.0
5 000–9 999	3	6.8	21 514	22.9
> 10 000	2	4.5	26 833	28.5
Undetected	5	11.4	–	–
Total	44	100.0	94 004	100.0

Source: Regional Development Agency Vysocina (www.rrav.cz) + own calculations

In the Vysocina Region, there have been localised 44 objects which could be considered as agricultural brownfields. This number could not be taken as final because it is not possible to decide what is or is not a brownfields without a clear definition.

In the Vysocina Region, brownfields with the total area of 500–900 sq. m present the main share (14 objects, 31.8 %), the lowest number of brownfields has an area larger than 10 000 sq. m (only 2 objects, 6.8%). Five objects were not exactly measured because they were in demolition or there was no access to the private estate (Table 1).

When the possibility of re-use of agricultural brownfields is compared with the brownfields in the urban or core areas, they have some disadvantages (inconvenient location, poor condition of objects

- not very environment- friendly, simple and old construction, unwillingness of investors to put their finances into not very perspective objects and the unsuitable age structure of local inhabitants – the potential employees as well as the users of revitalised brownfields).

The extent of risk to the public posed by the environmental contamination of agricultural brownfields – in the Vysocina Region: 18% of agro-brownfields carry some environmental load and in 34% cases it is supposed to be so (Figure 2). This ecological burden comes from the original function of the object – e.g. slurry, dung-water, stocking fuels or other materials. Depending upon the amount and type of contamination, the soil may be removed, a concrete or other impermeable layer placed on top of the land, and restrictions placed on its future use of the land. Costs of the revitalisation and re-utilisation of these objects would be many times higher than the renovation of non-contaminated objects or building in the greenfields which are generally believed, even if sometimes incorrectly, not to be contaminated. Brownfields strongly contrast with greenfields, which are the fields and lots that were never developed, or only lightly developed.

Since transport is a factor which forms the shape of urban and economic structures, a poor traffic accessibility could be as well the reason which makes the revitalisation of brownfields difficult (Figure 2). In the Vysocina Region, on the whole 72% of agricultural brownfields are accessible only by the second- or third-class roads, often of very poor condition. Only 14% of brownfields are less than 15 kilometres far from the D1 highway, which could be a convenient factor to their revitalisation.

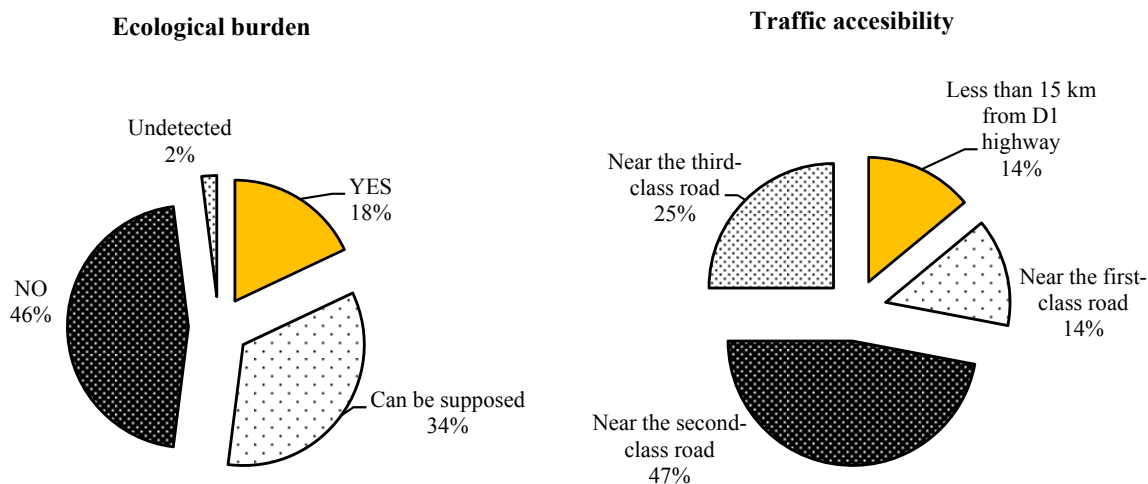


Figure 2. Barriers of development of the agricultural brownfields in the Vysocina Region: ecological burdens and transport accessibility

Source: Regional Development Agency Vysocina (www.rrav.cz) and own calculations

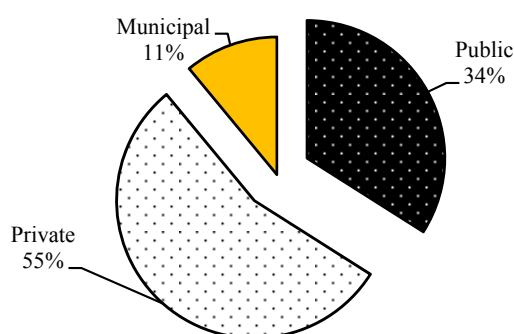


Figure 3. Ownership of agricultural brownfields in the Vysocina Region

Source: Regional Development Agency Vysocina (www.rrav.cz) + own calculations

The further negative load of agricultural brownfields re-utilisation is very often the unclear ownership rights after the transition; some agricultural enterprises were terminated, some have not settled financially with the former members of cooperatives. In the Vysocina Region, 55% of these brownfields are owned privately (often by several private owners), 34% are owned publicly, that means by the Land Office of the Czech Republic, the region or the community, 11% of objects are owned both by a private and a public owner (Figure 3).

Possibilities of revitalisation of agricultural brownfields

Revitalisation of agricultural brownfields is a problematic issue and the number of brownfields in cities and rural areas could still grow. This problem was not solved in the Czech Republic before 1989; there was

no political will and the private subjects remained passive for a long time. The former agricultural facilities are typical examples of agricultural brownfields and despite all problems, it is necessary to find a new use for them, even if out of large-scale agricultural production. According to the Ministry of the Environment of the Czech Republic, the main barriers of the re-utilisation of these brownfields are:

- non-transparent and complicated ownership of the brownfields' estate
- strong competition of greenfields – building up here is easier, faster and cheaper
- risk of the possible ecological burden and higher costs for revitalization
- lack of experience with brownfields' problematic and its solution
- public-private partnership used insufficiently
- lack of investment incentives for private investors
- absence of a development conception and planning documentation

Even if there are several disadvantages regarding brownfields, the Ministry of Environment of the CR also brings out some benefits of the re-utilisation of brownfields:

- revitalization of landscape
- elimination of contamination
- elimination of aesthetical flaws
- protection of inhabitants' and environment health
- business development and growth of incomes

At present, 69% of agricultural brownfields in the Vysocina Region are not utilized and 20% of them are utilized only partially. Only 11% of objects are used in agriculture or industry (Figure 4). However, utilizing of these buildings could be dangerous be-

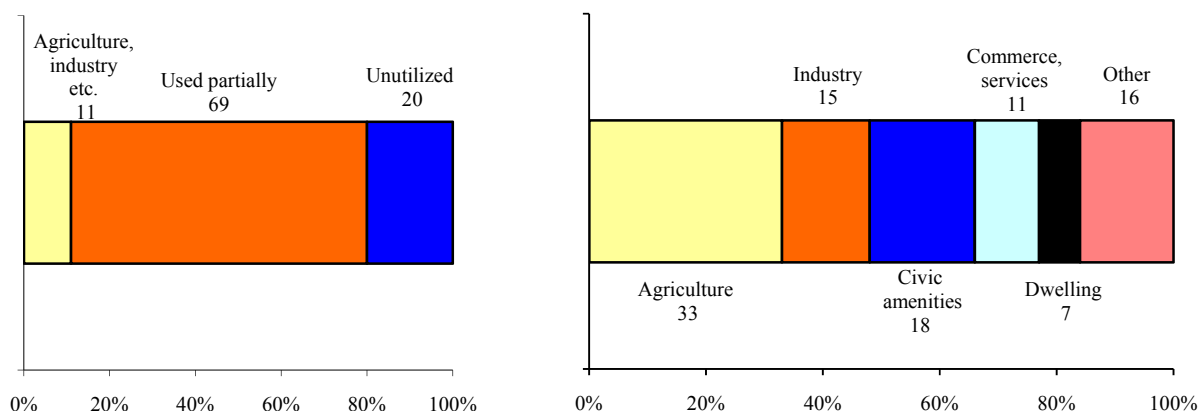


Figure 4. Present and possible future use of agricultural brownfields in the Vysocina Region

Source: Regional Development Agency Vysocina (www.rrav.cz) + own calculations

Table 2. The positives and the negatives of the brownfields' regeneration

<i>Positives</i>	<i>Negatives</i>
Revitalisation of landscape	Ownership relations
Removal of ecological and aesthetical defects	Strong competition of greenfields
Protection of inhabitants' health	Possible ecological burden
Protection of environment	Lack of experience in revitalisation
New opportunities for employment	Bad cooperation of public and private sector
Activation of economy	Low investment incentives
Rise of incomes	Territorial documentation

cause of the poor condition of the objects or the ecological burden.

The Regional Development Agency Vysocina (RRAV) declared that the future use of agricultural brownfields is possible. The main share of objects (over 31%) should be re-utilised in agriculture or agri-tourism again. More than 18% of objects should be use as civic facilities; the remaining brownfields should be re-utilized in industry (15%), commerce and services (11%) or for housing (7%); (Figure 4). According to the State Agricultural Intervention Fund (www.szif.cz), it is necessary to prevent the further emergence of brownfields in rural areas mainly by the modernisation of agricultural enterprises, giving-over of the farms to young farmers, diversification into non-agricultural activities, supports for development of agricultural enterprises, support of tourism in rural areas, the dissemination of basic services for inhabitants in rural areas and the protection and general development of rural areas. These activities are supported by the Rural Development Programme 2007–2013 and financed from the European Agricultural Fund for Rural Development (EARFD).

CONCLUSIONS

Cultivated landscape is said to be “the mirror of society”. The aim is to prevent the traditionally cultivated landscape from devastation, mainly in the economically poorer regions, which the Vysocina Region surely is.

Despite the high inflow of finances form the funds to the Vysocina Region, the problem of brownfields is not actually solved due to many obstacles and the absence of high-quality projects. The probability of revitalization is also lowered by a not very suitable localization of the brownfields in the region. However, it is evident that revitalisation of the brownfields can contribute to the total revitalisation of the se-

lected region – the removal of ecological burdens and the increase of the aesthetic value of landscape (Table 2).

The renewal and the connected development of economic activities in the affected regions will help to overcome the social and economic problems. Building up of a commercial object could help to activate the economics in the region, which brings about further advantages, such as employment, the inflow of finances etc. Brownfield localities offer a significant potential for the further development and, despite the substantial funds and time required for its preparation, their regeneration has a positive social and economic impact on the relevant region. That is the reason why we should not view the brownfields as a problem but as an opportunity.

REFERENCES

- Bičík I., Perlín R., Šefrna L. (2001): Rozvoj povodí Kocáby (Development of Kocaba river-basin). UK, Praha.
- Bičík I., Jančák V. (2005): Transformační procesy v českém zemědělství po roce 1990 (Transition processes in Czech agriculture after 1990). UK, Praha.
- Brownfield Redevelopment Types – the A-B-C Model. Cabernet – Concerted Action on Brownfield and Economic Regeneration Network, University of Nottingham. Available at <http://www.cabernet.org.uk/index.asp?c=1124>
- Doucha T., Foltýn I. (2008): České zemědělství po vstupu do Evropské unie – dopady na vývoj jeho multifunkčnosti (Czech agriculture after the accession to the European Union – impacts on the development of its multifunctionality). Agricultural Economics – Czech, 54 (4): 150–157.
- Dvořáková P., Dlouhý P. (2006): Brownfields Invest Czech. SZIF, Praha. Available at www.szif.cz

- Herová I. (2007): Strategie hospodaření s přírodními zdroji na českém venkově v rámci trvale udržitelného rozvoje (Strategy of the management of natural resources). *Agricultural Economics – Czech*, 53 (2): 74–82.
- Hlušková M. (2006): Analýza brownfields na území JMK a další možnosti jejich využití (Brownfields' analysis in the South-Moravian region and next possibilities of their use). [Diplomová práce.] Fakulta ekonomicko-správní MU, Brno.
- Holeček J. (2006): Městská brownfields – stav a perspektivy rozvoje (Metropolitan brownfields – current state and potential re-development). [Diplomová práce.] Přírodovědecká fakulta MU, Brno.
- Jackson J.B. (2003): ABC brownfields. Institut pro udržitelný rozvoj sídel o.s., Praha. Available online at <http://www.brownfields.cz/e107/download.php?view.7>
- Kabrda J., Jančák V. (2007): Vliv vybraných politických a institucionálních faktorů na české zemědělství a krajinu (Influence of selected political and institutional factors on Czech agriculture and landscape). *Geografie – Sborník ČGS*, 112 (1): 48–60.
- Pasporty brownfiels (Brownfields'passports). Regionální rozvojová agentura Vysočina, Jihlava. Available at <http://www.rrav.cz/investori/brownfields.html>
- Singer M. (2000): New ways to pay for property restoration. *Public Management*, 83: 17–20.
- Svatoš M. (2008): Některé trendy formující evropské zemědělství (Selected trends forming European agriculture). *Agricultural Economics – Czech*, 54 (3): 93–101.
- Šílová K.: Brownfields – možnosti řešení (Brownfields – possibilities of solution). Available at <http://www.essentia.cz/index.php?obsah=6&id=58>
- Spíšiak P. a kol. (2005): Agrorurálne štruktúry Slovenska po roku 1989 (Agro-rural structures of Slovakia after 1989). Geografka, Bratislava.
- Sýkorová I. (2007): Pražské brownfields: příležitost i hrozba pro rozvoj metropole (Prague brownfields: oportunity and threat for the development of the capital city). *Geografie, Sborník ČGS* 112, (3): 250–265.
- Vyhledávací studie pro lokalizaci brownfieldů (Research Study for Localization of Brownfields in the Territory of the Czech Republic) (2007). Czechinvest, Praha. Available at www.czeinvest.org
- Wolf M.A. (1999): Dangerous Crossing: State Brownfields Recycling and Federal Enterprise Zoning. *Fordham Environmental Law Review*, 68 (9): 495.

Arrived on 8th July 2008

Contact address:

Hana Svobodová, Antonín Věžník, Masaryk University, Kotlářská 2, 611 37 Brno, Czech Republic
e-mail: veznik@sci.muni.cz, 67632@mail.muni.cz
