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REGENERATION OF AGRICULTURAL BROWNFIELDS IN THE CZECH REPUBLIC – CASE STUDY OF THE SOUTH MORAVIAN REGION

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Abstract

KLUSÁČEK PETR, KREJČÍ TOMÁŠ, MARTINÁT STANISLAV, KUNC JOSEF, OSMAN ROBERT, FRANTÁL BOHUMIL: *Regeneration of agricultural brownfields in the Czech Republic – Case study of the South Moravian Region.* Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, 2013, LXI, No. 2, pp. 549–561

The paper deals with the regeneration of agricultural brownfields in the Czech Republic. The first part of paper introduces the issue and the most important results of the previous scientific researches. The second part describes the goal of paper and methodology of own research activities. The third part brings own analysis of the Czechinvest Agency dataset of the non-regenerated agricultural brownfields collected in period 2005–2007 updated for the case study area of the South Moravian Region according the dataset of the Regional Development Agency of the South Moravia (2010). The forth part pays attention to origin and potential location of agricultural brownfields in the South Moravian Region – the issue is demonstrated by using of the selected indicators showing decrease of agricultural production in this region. The fifth part brings the more detailed analysis of non-regenerated agricultural brownfields for the South Moravian Region. The six parts describes the selected examples of the regenerated agricultural brownfields. The final part contains discussion of main results and brings some recommendations which could be useful and inspiring for the different groups of stakeholders (e.g. owners, investors, representatives of public administration etc.) who are involved in process of the regeneration of agricultural brownfields.

regeneration, agricultural brownfields, Czech Republic, South Moravian Region, best practices

Brownfield has become a worldwide recognized term that usually refers to *any land or premises which has previously been used or developed and is not currently fully in use, although it may be partially occupied or utilized, they may be vacant, derelict or contaminated and therefore not necessarily available for immediate use without intervention* (Alker *et al*., 2000: 49). Brownfields are results of changing patterns of economic structures in many regions – they are largely regarded as liabilities degrading the value of the surrounding land, because it is often difficult to sell them, and municipalities are unable to revitalize them by own resources (Cabernet, 2005). While some of the most developed countries (e.g. USA, United Kingdom, France, West Germany, etc.) have a long-time experiences with the problems of brownfields which emerged already during the 1970s of the 20th century as results of the massive change of economic structures, in other countries (e.g. Czech Republic, Slovakia, East Germany, Poland, Romania, etc.) they appeared in large quantities just after the collapse of centrally planned economy and the return of a market economy during the 1990s of the 20th century. There are differences among the different countries in definitions of brownfields reflecting the different economic, political, historical, geographical or other specifics of national conditions (Oliver *et al*., 2005).

In the Czech Republic, a brownfield is officially defined as property (land, building, area), that is underused, derelict and may be contaminated; it occurs as reminder of industrial, agricultural,

residential, military or other activity; it is not possible to use such site suitably and effectively without regeneration process (The National Brownfields Regeneration Strategy of the Czech Republic – Národní strategie regenerace brownfieldů, 2008: 3). In the period 2005–2007, a large survey on evidence of brownfields in the Czech Republic was conducted by the CzechInvest Agency. This survey identified 2,355 brownfields sites in the Czech Republic, that cover area of 10.3 thousands of hectares with circa 14% of built-up areas (The Search Study for Location of Brownfields – Vyhledávací studie pro lokalizaci brownfieldů, 2007: 1). From perspective of original use, the number of agricultural brownfields had higher share in CzechInvest Agency sample (821 agricultural brownfields create 34.9% of sample) than industrial brownfields (785 industrial brownfields created 33.3%) (for detail shares of the main categories see the Tab. I). In spite of high numbers of agricultural brownfields, the attention of previous studies (e.g. Klusáček, 2005; Jáč *et al*., 2006; Alexová, 2007; Klusáček *et al*., 2011; Vojvodíková *et al*., 2011; Kunc *et al*., 2011; Hercik *et al*., 2011) was paid especially to the non-agricultural brownfields, which have usually larger spatial extent (The Search Study for Location of Brownfields – Vyhledávací studie pro lokalizaci brownfieldů, 2007: 4) and are often located in larger municipalities and therefore they are more important for higher amount of voters and political representatives in comparison to agricultural brownfields located usually with rural regions with lower population density. There are only a few researches, which have been systematically dealt with the agricultural brownfields in the selected regions of the Czech Republic yet – for example Svobodová and Věžník (2009) analysed the phenomenon of agricultural brownfields in the Vysočina Region or Staněk (2012) described the issue on example of the Kroměříž district. The agriculture brownfields from economic perspective were analysed by Kadeřábková and Piecha (2009). As an example of study carried out in other countries, Merolli (2009), who dealt with successful strategies for regeneration of this type of rural brownfields, or Navrátil (2010) can be mentioned. The main objectives of this paper are to bring: (a) a basic analysis of the agricultural brownfields for the whole territory of the Czech Republic, (b) a more detail analysis of agricultural brownfields for the case study area of the South Moravian Region and (c) a brief analysis of the selected examples of the regenerated agricultural brownfields. The issue of agricultural brownfields is also discussed in selected diploma or bachelor theses (e.g. Cibulková, 2011; Hlávková, 2012).

Methodology and sources of data and information

Basic analysis of the agricultural brownfields for the whole territory of the Czech Republic is based on the CzechInvest Agency sample of 2,355 brownfields, which were collected by means of workers of 13 regional authorities of the Czech Republic (Prague was not included to this survey) during the period of years 2005–2007. Of course this method has its weaknesses and limits as well – the responsible persons from the different regions provided the CzechInvest Agency with the different quality of data – especially two regions (Vysočina Region and Pardubický Region) included only very limited sample of brownfields located in the area. To be specific, there are only 22 brownfields from the Vysočina Region and 37 brownfields from the Pardubický Region, while on the contrary – there are for example 236 brownfields from the Liberecký Region. In spite of some missing data for two above mentioned regions, the CzechInvest Agency sample of 2,355 brownfields still remains the most detailed survey which has been conducted in the Czech Republic yet and therefore we believe that it can be used as relevant source of information for achieving of the objectives of this paper.

Detail analysis of agricultural brownfields for the case study area of the South Moravian Region is based on two sources of information: (a) Sample of the selected statistical data showing the decrease of the intensity of the agricultural production in different parts of studied region, which enable identification of areas, where such type of brownfields can be potentially located (b) dataset of non-regenerated brownfields for the South Moravian Region based on dataset of the CzechInvest Agency (2005–2007)

I: *Main features of database of brownfields from the CzechInvest Agency*

Original use	number		extent		
	abs.	rel. [%]	abs. [ha]	rel. [%]	average [ha]
agriculture	**821**	**34.9**	**1,840.4**	**17.8**	**2.2**
industry	785	33.3	4,423.2	42.8	5.6
civic facilities	304	12.9	413.3	4.0	1.4
military	151	6.4	2,394.1	23.2	15.9
housing	95	4.0	88.3	0.9	0.9
accommodation facilities	22	0.9	22.4	0.2	1.0
other	177	7.5	1,144.6	11.1	6.5
Total	**2,355**	**100.0**	**10,326.3**	**100.0**	**4.4**

Source: The Search Study for Location of Brownfields – Vyhledávací studie pro lokalizaci brownfieldů (2007)

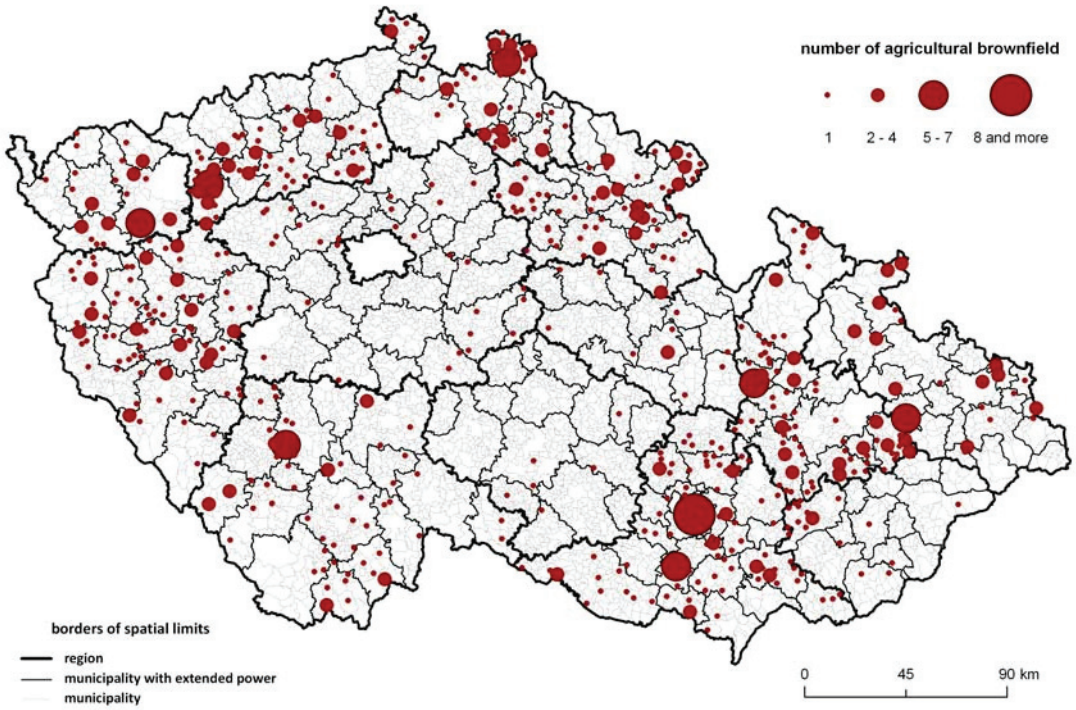
updated according the dataset of the Regional Development Agency of the South Moravia (2010), (c) different sources of information related to already regenerated agricultural brownfields – e.g. the Regional Development Agency of the South Moravia published sample of 6 special publications describing the selected examples of the regenerated brownfields for the period 2006–2011 – they are available at http://www.rrajm.cz/publikace. The South Moravian Region was selected as case study area intentionally because of two reasons: (a) its agricultural character – case study area with very fertile soils belongs traditionally to the regions with very important role of the agricultural production that has been intensively changed in last two decades (b) availability of statistical data and other types of information on brownfields.

Agriculture brownfields in the Czech Republic from the perspective of the Czechinvest Agency dataset

This part of paper is focused on analysis of 821 agricultural brownfields with minimal area of 1 hectare collected by the Czechinvest Agency in period 2005–2007. Spatial distribution of the agricultural brownfields in this dataset within municipalities of the Czech republic (Fig. 1) shows that sample is distributed in quite homogenous way with exemptions of the areas, where the data for brownfields might have not been collected properly and in detail (e.g. Pardubický and Vysočina Regions etc.). Surprisingly, the highest numbers of agricultural brownfields (14 sites) were located in Brno (the second largest city of the Czech Republic and seat of regional administration of the South Moravian Region) – increased number of agricultural brownfields can be linked here to important position of peri urban agriculture during socialistic era. As typical examples were identified agricultural brownfields originated in former agricultural cooperatives in Brno peripheral urban districts (e.g. former agricultural cooperative in Brno Komín) or former facilities of periurban agriculture of the producer of the flowers Florimex or former greenhouses for production of vegetables.

The data of the Czechinvest Agency do not allow the detailed categorisation of the studied agricultural brownfields from the perspective of their previous use, because at the majority of the brownfields sites according to their previous activity is described only in general way as for example "former agricultural activity" or "former agricultural buildings" (Tab. II). The categorisation of the agricultural brownfields, where the information is available show the interesting fact that number of brownfields previously used for animal husbandry (especially former cow-sheds and piggeries) was more than three times higher than number of agricultural brownfields previously used for vegetable production.

If decline of the agriculture of the Czech Republic as a whole in last two decades is taken into account (more than 60% decrease of workers and similar

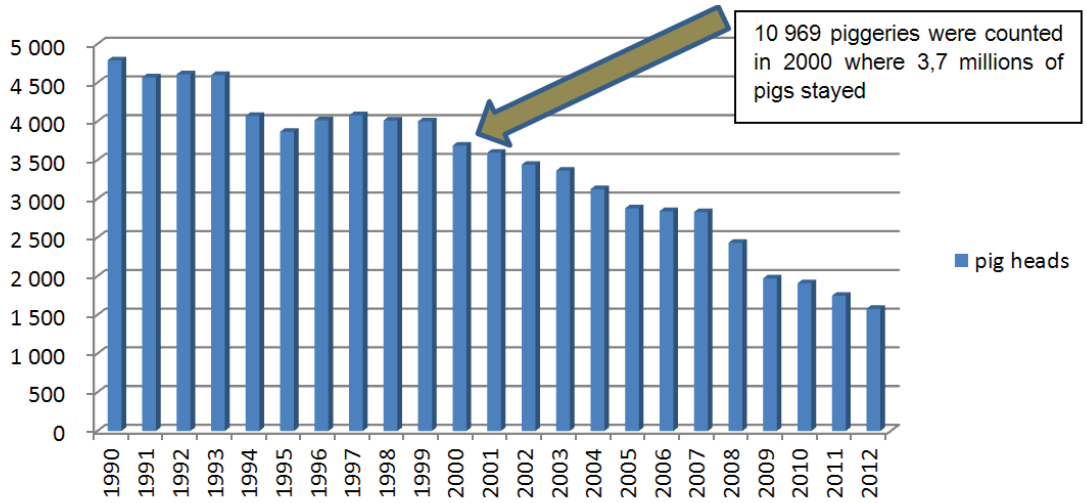


1: *Spatial distribution of the agricultural brownfields in municipalities of the Czech Republic*
Source: CzechInvest Agency dataset (2005–2007) updated for South Moravian Region according the dataset of the Regional Development Agency of the South Moravia (2010), own elaboration

II: *The main categories of agricultural brownfields in the Czech Republic according to their previous use*

Category according of previous use	Number of brownfield sites	Share (%)
Non-specified	441	53.7
Vegetable production	51	6.2
Animal husbandry	176	21.5
Former farm-houses or agricultural cooperatives buildings	64	7.8
Other types of agricultural brownfields	89	10.8
Total	**821**	**100.0**

Source: CzechInvest Agency dataset (2005–2007) updated for South Moravian Region according the dataset of the Regional Development Agency of the South Moravia (2010), own elaboration



2: *Development of number of pig heads in the Czech Republic (1990–2012, in thousands of heads)*
Source: Inventories of animal husbandry of the Czech Republic (1990–2012), Agro Census 2000, Czech Statistical Office

decrease of number cattle and pig heads, more than one third decrease of gross agricultural production), countrywide appearance of agricultural brownfields is supposed. Unavailability of data for development of numbers of cowsheds or piggeries do not allow us any estimations, but if such data on piggeries from Agricultural census of 2000 before decay of pigs breeding in the Czech Republic are used (10,969 piggeries; number of pigs experienced 60% decrease in last 10 years), we can suppose that more than 4,000 of such facilities became brownfield or is endangered to became brownfield very soon (Fig. 2).

Transformation of agriculture – origins of agricultural brownfields on the territory of the South Moravian Region

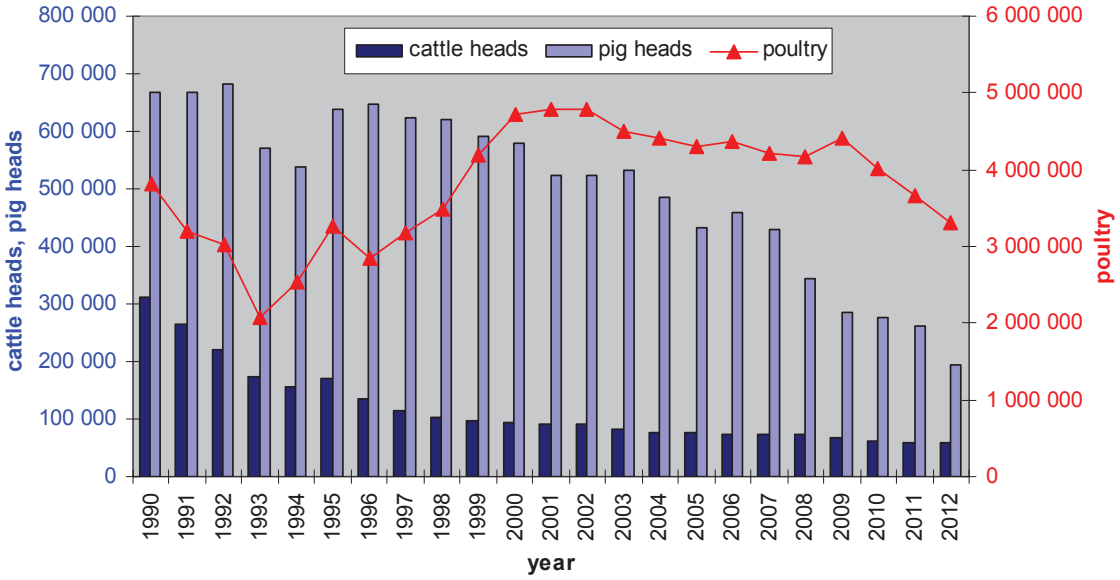
Agriculture in the South Moravian Region has experienced large structural changes since 1948. In the period 1948–1989, the agriculture was influenced by processes of collectivisation and industrialisation, which created new and usually large and centralised agricultural facilities following the Soviet patterns and created many abandoned and neglected agricultural brownfields from former traditional agricultural facilities (e.g. farm houses), which had been used before 1948. After 1989, the state planned agricultural policy was replaced by market economy oriented focus again. As a consequence of this structural change, which was implemented especially by processes of restitution and privatisation of former collectivised or nationalised agricultural properties, another large amount of the agricultural brownfields appeared. Abandoned or partly abandoned, more or less contaminated agricultural facilities of former socialistic era that lost its original function came into existence in majority of rural municipalities of the case study area (Martinát, *et al.*, 2009; Věžník, Konečný, 2011). Former oversized cowsheds, piggeries, operational building of agriculture cooperatives or state farms could not represent effective way of farming in the new conditions when demand for agricultural product decreased in 1990s in such dramatic extent in context of cheaper agricultural products that were imported to the Czech Republic from other European countries (Doležalová, *et al.*, 2009). Appearance of agriculture brownfields is widely spread in marginal submountain areas as a result of previous development (Klapka *et al.*, 2005).

Increase of numbers of the agriculture brownfields in the South Moravian Region is also related to the decreases of the selected categories of livestock in the South Moravia Region which can be

III: *Decrease of the selected categories of animal husbandry in the South Moravian Region (1990–2012)*

Category	1990	2012	index (1990 = 100)
number cattle heads	328,662	60,167	18,3
number of pig heads	698,068	194,801	29,9

Source: Inventory of animal husbandry of the Czech Republic (as for January 1, 1990 and April 1st, 2012), Czech Statistical Office



3: *Development of animal husbandry in the South Moravian Region during 1990–2012 (in million heads)*
Source: Own elaboration based on Czech Statistical Office data

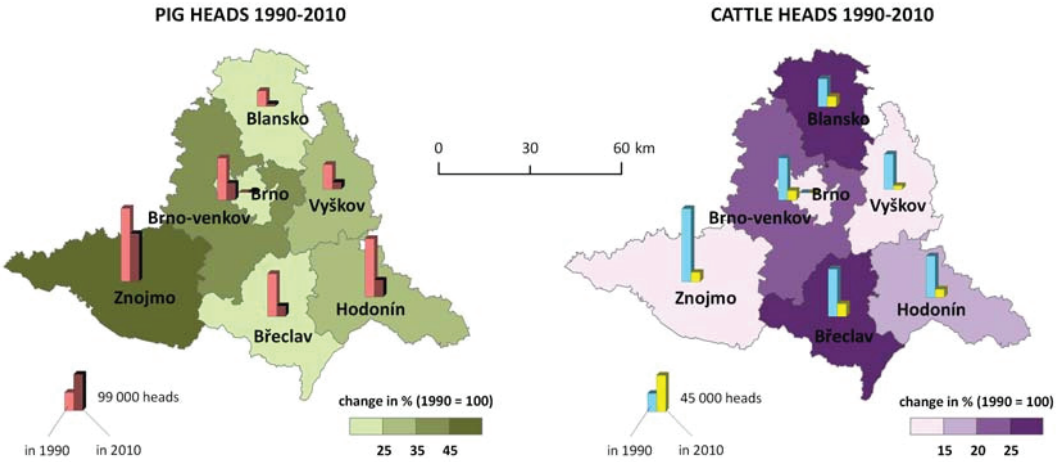
followed in Tab. III and Fig. 3. Such dramatic decline of livestock (more than 80% in case of cattle heads and more than 70% for pig heads) can be explained as shift of agriculture of the South Moravia to its more crop production oriented structure that is more in accordance with majority general natural conditions of the case study area. In comparison to decreases for whole country (more than 60% decrease for cattle and pig heads) the South Moravia Region show much more dynamic decays.

On the other hand, more detailed and valuable view on livestock changes can be applied, if smaller units of the South Moravia are studied (Tab. IV). As for cattle heads, Vyškov and Znojmo districts show the most dramatic, almost 90% decreases, only district where more than one third of cattle heads survived, was Blansko as example of more hilly area where cattle breeding was kept the most. Analysis of pigs heads change indicates much more diverse results. While in more hilly areas of Blansko district, where conditions for pigs breeding were limited (just 17% of pig heads were here in comparison to 1990), Znojmo district experienced specialisation on pigs breeding in last two decades (just one third decrease). Based on simple analyses above it can be stated, the South Moravia Region experienced region wide decay of animal husbandry breeding (mainly pigs and cattle breeding) in last two decades

IV: *Decrease of the selected categories of animal husbandry in districts of the South Moravian Region (1990–2010)*

District	1990		2010		index (1990 = 100)	
	cattle heads	pig heads	cattle heads	pig heads	cattle heads	pig heads
Blansko	34,501	42,750	12,607	7,167	36.5	16.8
Brno-město	0	0	256	974	0.0	0.0
Brno-venkov	52,025	114,756	11,596	45,938	22.3	40.0
Břeclav	58,653	117,058	15,819	29,115	27.0	24.9
Hodonín	50,775	157,893	9,577	46,606	18.9	29.5
Vyškov	43,349	67,018	4,359	18,506	10.1	27.6
Znojmo	89,359	198,593	11,286	129,747	12.6	65.3

Source: Inventory of animal husbandry of the Czech Republic (as for January 1, 1990), Farm Structure Survey of the Czech Republic (2010), Czech Statistical Office



4: *Development of pigs and cattle breeding in districts of the South Moravian region between1990–2010*
Source: Inventory of animal husbandry of the Czech Republic (as for January 1, 1990), Farm Structure Survey of the Czech Republic (2010), Czech Statistical Office

which concludes in appearance of number of agricultural brownfields, especially in districts where the most dramatic decreases of animal heads appeared (Vyškov, Blansko, Znojmo). The spatial differences in development of pigs and cattle breeding are visible in Fig. 4. Unavailability of data on animal husbandry for lower spatial units (municipalities with extended competences of even municipalities) do not allow us to conduct deeper spatial analyses.

As already stated above, since data concerning numbers of piggeries and cowsheds are not available for early 1990, we are made to use data from 2000 (Agro census 2000) as base for further comparison (Tab. V). We had to be very careful with interpretation of this data because of more flexible potential reuse of such facilities (storages, reuse for activities of small rural non-agricultural firms). On the other hand, reuse of these building is usually accompanied by contamination problems that remained after animal breeding. But generally it can be stated that largest amount of abandoned (or partially abandoned) cowsheds is supposed to appear in Vyškov district (more than two thirds of cattle heads disappeared in last decade here) and in Znojmo districts (almost one half of cattle heads), in case of pigs heads it is Blansko, Vyškov, Hodonín and Břeclav districts.

Another perspective for potential appearance of agricultural brownfields in the South Moravia Region can be applied if employment in agriculture and its change between last two censuses (1991, 2001) is followed (Tab. VI). Availability of this indicator on lower spatial units (municipalities with extended competences) enables more detailed selection of areas where potential for appearance of agricultural brownfields is increased. If we compare decreases in absolute numbers, more than 45,000 people lost their job in agriculture in this first transition decade. The highest absolute numbers show city of Brno (decrease for working in agriculture for more than 15,000 people, where even in the beginning of transition period worked in agriculture just 2,9% of economically active people (in 2001 just 1,1%). It was caused by decay of periurban agricultural that formed important part of South Moravian agricultural sector until mid-1990s. Closure of facilities for production of flowers and production of vegetables from glasshouses made former employees in agriculture to search

V: *Decrease of the selected categories of animal husbandry (2000–2010) a numbers of cowsheds and piggeries (2000) in districts of the South Moravian Region*

District	Decrease of cattle heads (2010/2000) index (2000 = 100)	Number of cowsheds (2000)	Decrease of pig heads (2010/2000) index (2000 = 100)	Number of piggeries (2000)
Blansko	66.7	416	20.3	204
Brno- město	29.6	29	58.3	17
Brno-venkov	77.8	288	69.8	315
Břeclav	111.4	370	29.7	433
Hodonín	72.8	757	39.7	276
Vyškov	31.2	127	33.4	103
Znojmo	52.7	1,432	60.0	586

Source: Farm Structure Survey of the Czech Republic (Agrocensus 2000, 2010), Czech Statistical Office

VI: *Development of employment in agriculture, forestry and fisheries in municipalities with extended competences within the South Moravian Region (1991 and 2001)*

municipality with extended competences	1991		2001		
	employment in agriculture, forestry and fisheries (abs.)	employment in agriculture, forestry and fisheries (%)	employment in agriculture, forestry and fisheries (abs.)	employment in agriculture, forestry and fisheries (%)	index (1991 = 100)
Blansko	3,661	10.0	1,443	4.5	39.4
Boskovice	3,217	16.2	1,266	7.2	39.3
Brno	26,082	2.9	10,305	1.1	39.5
Břeclav	3,976	17.6	1,647	7.2	41.4
Bučovice	1,015	21.9	415	8.1	40.9
Hodonín	4,152	12.5	1,685	6.0	40.6
Hustopeče	2,222	27.4	899	11.5	40.5
Ivančice	1,463	13.3	576	5.1	39.4
Kuřim	1,179	7.2	480	3.3	40.7
Kyjov	3,631	19.4	1,428	7.5	39.3
Mikulov	1,304	26.4	542	12.7	41.6
Moravský Krumlov	1,458	33.3	581	12.8	39.9
Pohořelice	816	29.2	329	11.9	40.4
Rosice	1,476	12.3	568	5.1	38.5
Slavkov u Brna	1,295	16.9	532	7.0	41.0
Šlapanice	3,348	12.4	1,356	4.4	40.5
Tišnov	1,329	14.5	527	5.6	39.6
Veselí nad Moravou	2,707	18.6	1,054	6.1	39.0
Vyškov	3,313	15.5	1,369	6.0	41.3
Znojmo	5,751	26.1	2,403	11.5	41.8
Židlochovice	1,792	19.6	716	7.3	40.0
Total	**75,188**	**12.8**	**30,121**	**5.3**	**40.1**

Source: Censuses (1991, 2001), Czech Statistical Office

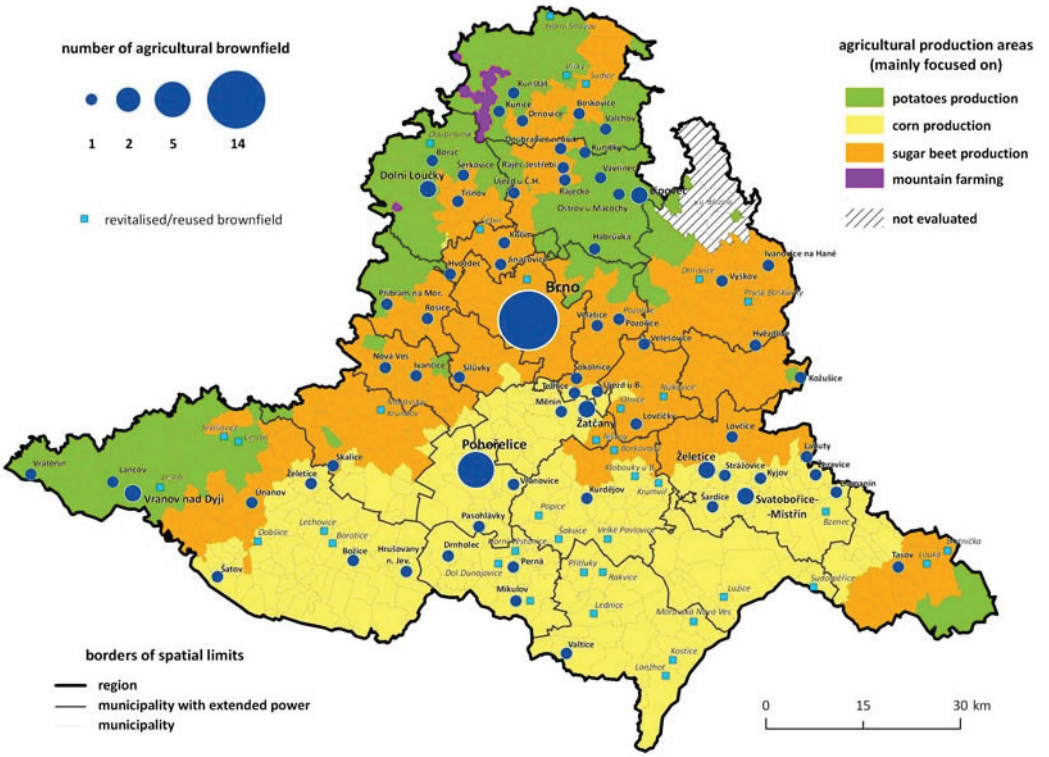
new jobs in other sectors, in case of Brno mainly in services. Other regions where number of people had to change sector of their employment from agricultural one were Znojmo (with more than three thousand persons, Hodonín, Břeclav, Blansko Kyjov with more than two thousand persons). On the other hand, Pohořelice, Bučovice and Kuřim were regions, where absolute numbers of such people were very low (less than 700). In the early 1990, in 5 regions more than one quarter of their employees worked in agriculture (Moravský Krumlov, Pohořelice, Hustopeče, Mikulov and Znojmo), ten years later just 11–12% of people worked in agriculture here.

Analysis of agriculture brownfields on the territory of the South Moravian Region

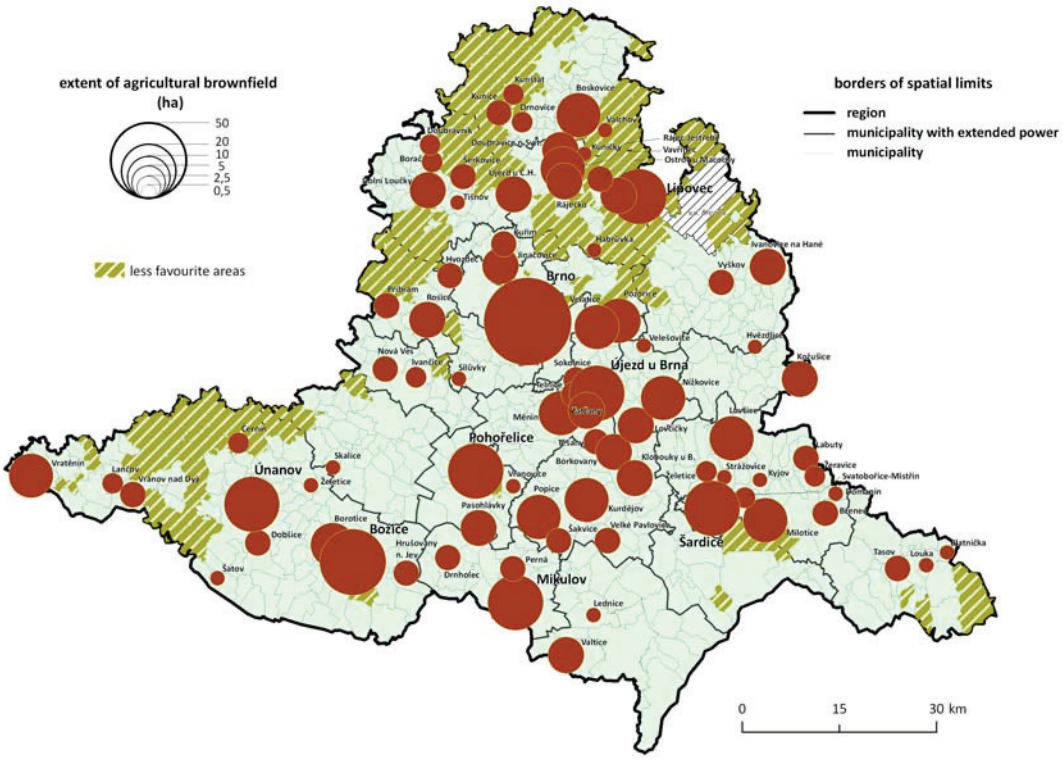
This part is focused on case study area of the South Moravian Region and brings more detailed and on municipal level oriented analysis of 121 non- regenerated agricultural brownfields (collected by the Czechinvest Agency in period 2005–2007). The spatial distribution of the agricultural brownfields within the different agricultural areas is showed in Fig. 5. The information about the areas of agricultural brownfields (Fig. 6) provide the more objective perspective than number of brownfields – agricultural brownfields with larger size are usually located in municipalities, where large facilities (e.g. agricultural cooperatives, state farm) were spatially gathered before 1989. The basic categorisation of these agricultural sites (Tab. VII) show that number of brownfields previously used for animal husbandry (especially former cow-sheds and piggeries) was again higher than number of agricultural brownfields previously used for the vegetable production.

The selected examples of the fully regenerated agricultural brownfields

At the beginning it is necessary to emphasize that it is probably almost impossible to find an objective and by all different groups of stakeholders (e.g. owners, investors, local citizens, representatives of public administration etc.) accepted definition of a regenerated brownfield. According to Doick *et al* (2009) in brownfield regeneration, success has been described generically as economic benefit (e.g. De Sousa, 2003), or as civil infrastructure renewal, tax-based development, economic development and neighbourhood revitalization (e.g. Amekudzi and



5: *Spatial distribution of the agricultural brownfields in municipalities of the South Moravian Region*
Source: CzechInvest Agency dataset (2005–2007) updated according the dataset of the Regional Development Agency of the South Moravia (2010), own elaboration



6: *Agricultural brownfields in municipalities of the South Moravian Region according to their areas*
Source: CzechInvest Agency dataset (2005–2007) updated according the dataset of the Regional Development Agency of the South Moravia (2010), own elaboration

VII: *The main categories of agricultural brownfields in the South Moravian Region according to their previous use*

Category according of previous use	Number of brownfields sites	Share of brownfields sites (%)
Non-specified	57	47.1
Vegetable production	9	7.4
Animal husbandry	21	17.4
Former farm-houses or agricultural cooperatives buildings	12	9.9
Other types of agricultural brownfields	22	18.2
Total	**121**	**100.0**

Source: CzechInvest Agency dataset (2005–2007) updated according the dataset of the Regional Development Agency of the South Moravia (2010), own elaboration

Fomunung, 2004). Furthermore Doick *et al* (2009) mention that in specific terms, success has been described as local community involvement, job creation or relative to environmental remediation (Amekudzi and Fomunung, 2004) and they continued with quotation of Silverthorne (2006) who noted that definitions of success of brownfields regeneration varied between countries, academic disciplines and regeneration projects, recognising that different concepts of success emerged from the different values. The issue is more complicated by the fact that successful development could be replaced (especially in the conditions of market economy) by unsuccessful development very fast.

In spite of the above-mentioned difficulties, the different samples of the "best-practices" are analysed or characterised in many different scientific texts (e.g. Mirea, 2011; Klusáček *et al*., 2011), publications of the international institutions (e.g. The Management of Brownfields Redevelopment 2010) or national institutions or bodies (e.g. for Germany the pages 14–27 in the brochure Kalberer *et al.* 2005). For the South Moravian Region in the Czech Republic, there have been published several brochures of the regenerated brownfields for the period 2006–2011, which are available at http://www.rrajm.cz/publikace. There is not doubt that analysing of "best practices" is perceived generally as very important for regeneration of brownfields.

The look at this information sources shows that there are three basic types of projects related to the completely regenerated agricultural brownfields. The first group of the regenerated agricultural brownfields, which had origins in the period before 1948 and they could be perceived as effort to preserve the heritage (architectonical, historical) of the pre-socialistic agriculture production era – as typical example could be given the former corn-loft in Jevišovice (Fig. 7), where the detailed characterisation of the regeneration process is available (Case Studies of Brownfields Regeneration – Případové studie regenerace brownfieldů 2010: 8–11). The second group of the regenerated agricultural brownfields, which had origins in the period 1948–1989 and they could be perceived as effort to reuse the "heritage" of the socialistic or central planned agriculture production – as typical example could be given the former cow-

7: *Former baroque corn-loft in Jevišovice regenerated as cultural and sport centre*
Source: J. Kunc (2010)

8: *Former cow-shed from 1960s in Ohrada Vísky regenerated for recreational and tourism purposes*
Source: J. Hladík (2006)

9, 10: *Example of the successfully regenerated brownfields from Spělkov municipality (Vysočina Region) – site with former cow-shed (left) was regenerated for needs of the private housing (right)*
Source: A. Řezníčková (2012)

shed in Ohrada Vísky (Fig. 8), which is described in detail as well (ibid:12–15). The third group of the regenerated agricultural brownfields is created by the sites, which were completely regenerated without preservation of original agricultural buildings and other structures, which were simply demolished, removed and the locations were reused for development of new activities. Figs. 9 and 10 show one example, which comes from the Vysočina Region (Spělkov).

DISCUSSION OF RESULTS AND CONCLUSIONS

The number and types of agricultural brownfields in the Czech Republic was strongly influenced by previous historic development, which were more turbulent and complicated in the territory of the Czech Republic in comparison to the West European countries (e.g. France) where the agriculture facilities were developing continuously in the conditions of the market economy. The period of the central planned economy (1948–1989) inspired by Soviet patterns of collectivisation and nationalisation of agricultural lands and properties was leading to the centralisation and industrialisation of agricultural

production and caused significant damages on the traditional agricultural structures – it was reason for creation of the many abandoned and neglected traditional agricultural facilities – for example traditional farm houses. The return of the market economy in 1989 caused problems to the many agricultural facilities related to centrally planned economy and many of these centralised agricultural plants were not able to compete effectively and became agricultural brownfields. Government of the Czech Republic decided to solve the problem and this is the reason why research on brownfields was conducted by the CzechInvest Agency in the period 2005–2007 focused on monitoring of the different types of brownfields (including the agricultural brownfields as well). The analyses of the CzechInvest Agency brownfields dataset from (2005–2007) updated according the dataset of the Regional Development Agency of the South Moravia from 2010, which were conducted in this paper, show that agricultural brownfields are located especially in the municipalities where the agricultural facilities from the period of the centrally planned economy (1948–1989) were concentrated. This issue is probably influenced by the fact that the CzechInvest Agency collected only brownfields with minimal size of 1 hectare and it is necessary to presuppose that agricultural brownfields from this socialistic period have usually larger area than the agricultural brownfields, which have origin in the period before 1948. The CzechInvest Agency is currently organising the second and more detailed research of brownfields on the territory of the Czech Republic. From perspective of the agricultural brownfields, it would be useful to decrease the minimal size for collection of brownfields lower than to 1 hectare (e.g. to 0.5 hectare). We believe that even agricultural brownfields of small size could be a serious problem for small rural municipalities and both central and regional authorities should help the local governments with regeneration and redevelopment of these sites. In this context, it is necessary to appreciate the sample of regenerated brownfields (which are called "best practices") published by the Regional Development Agency of the South Moravia. These samples describing the regeneration processes of the concrete brownfields sites are very important for sharing of knowledge and experiences among different groups of stakeholders involved in regeneration process. In our opinion, there would be useful if there were more examples of regenerated agricultural brownfields in future brochures planned for the next years. In other words if the share of regenerated brownfields ("best practices") in the future brochures were more corresponding with the share of non-regenerated brownfields.

SUMMARY

The paper pays attention to the issue of brownfields in the Czech Republic with special attention to the case study area of the South Moravian Region. It brings the different kinds of analyses: (a) basic analysis of the agricultural brownfields for the whole territory of the Czech Republic based on the CzechInvest Agency dataset of 2,355 brownfields collected during the period of years 2005–2007, (b) analysis of the selected statistical data showing the decrease of the intensity of the agricultural production in case study area of the South Moravia Region (c) detailed spatial and to local issues oriented analysis of non-regenerated brownfields, which were collected for the South Moravian Region by the CzechInvest Agency for the 2005–2007 and by the Regional Development Agency of the South Moravia in 2010, (d) analysis of selected information related to the regenerated agricultural brownfields. The final conclusion discus the main results of research and includes some concrete recommendations for improvement of methodologies used in future collection of data and information associated to the agricultural brownfields in the Czech Republic.

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