

INTERLINKAGES BETWEEN STRATEGIC, FINANCIAL AND REGIONAL FRAMEWORKS OF BROWNFIELD REGENERATIONS: THE CASE OF THE CZECH REPUBLIC

Michal TVRDON¹ , Petra CHMIELOVÁ¹ 

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ABSTRACT:

Brownfield regeneration is one of the key measures for sustainable development and it combines three pillars – economic, environmental and social. The aim of this paper is to identify interlinkages between strategic, financial and regional frameworks of brownfield regeneration in the Czech Republic. The first part of the paper consists of literature review associated with brownfield regeneration. The second part of paper focuses on practical aspects of brownfield regeneration in the Czech Republic during the period 2000 to 2020. This empirical part is based on analysis of strategic documents, financial instruments and regional disparities. In this paper, national level and regional level data were applied (7 NUTS II regions excluding the region of the capital city Prague). Data summarizing the drawn funds or allocated financial amount to support the regeneration of brownfields from EU funds were obtained from secondary sources mainly (national strategies, websites of individual operational programs or national programs). The results show certain time delay in solving this issue in this post-socialistic country in comparison with Western European countries. Data also indicate noticeable differences between regions, both in terms of the number of brownfields and their regeneration, especially in terms of a number of projects or financial resources. Another finding is that the Czech Republic significantly improved the strategic planning of brownfield regeneration and as this problem is cross-sectional more institutions are involved both in strategic and financial dimension.

Key-words: *Brownfields regeneration, Czech Republic, EU funds, Regional disparities, Spatial analysis.*

1. INTRODUCTION

The structure of the economy transforms over time. This process has a number of consequences, both positive and negative. One of the negative impacts is the formation of brownfields that can be characterized as sites (land or premises) completely or partially abandoned. We can find relatively many definitions of brownfield. Moreover, these definitions differ among countries. For example, in the US, a brownfield is considered (according to United States Environmental Protection Agency – cited in Ahmad et al. (2018) “*abandoned, idled, or under-used industrial and commercial facility where expansion or redevelopment is complicated by real or perceived environmental contamination*”. According to Franz et al. (2006) the EU defines brownfield as (through Concerted Action on Brownfield and Economic Regeneration Network – CABERNET): “(i) *sites that have been affected by the former uses of the site and surrounding land; (ii) re derelict and underused; (iii) may have real or perceived contamination problems; (iv) are mainly in developed urban areas; and (v) require intervention to bring them back to beneficial use*”. As this paper deals with brownfields regeneration in the Czech Republic it is necessary to mention definition of brownfield in this country. We can find it in the National strategy of brownfields regeneration 2019-2024, which is the joint document of Ministry of Industry and Trade, CzechInvest, Ministry of Regional Development, Ministry of Agriculture and Ministry of the Environment: “*brownfield is a property (territory, complex, land, or building) that is unused, neglected and can be contaminated. It arises as a remnant*

¹Silesian University in Opava, School of Business Administration in Karviná, 73340 Karviná, Czech Republic, tvrdon@opf.slu.cz; chmielova@opf.slu.cz.

of industrial, agricultural, residential, military or other activities. Brownfield cannot be used appropriately and effectively without a regeneration process”.

If we look at the process of brownfield formation, we realise that they arise due to structural changes in the economy mainly – according to Kunc et al. (2014) they are perceived as scars on the faces of cities, as commitments reducing the value of the surrounding land, and as obstacles to local development, which municipalities or other self-governing units are often unable to revitalize from their own resources. In other words, brownfields are most often localities which were originally used for agricultural, industrial or military purposes; however, due to changes in the structure of the economy, they have lost this original use. Moreover, the existence of brownfields means a serious problem in many ways – political, social and economic.

According to Alberini et al. (2005) the problems associated with the existence of brownfields began to appear in the countries of Western Europe and the USA in the early 1970s as a result of two concurrent factors: the numerous plant closings and downsizing as these regions experienced a structural change of their economies away from manufacturing, and the passage of environmental legislation holding specified parties liable for the cost of cleanup at contaminated sites. As these processes took place in these regions for a long time their impact has not been as strong as in post-socialist countries, where these processes began to appear with a certain time delay (approximately 20 years), but with much greater intensity due to the complexity of the transition process focused on restructuring of traditional industries and following globalization trends (Osman et al. 2015). In addition, Matlovič et al. (2001) also mentions that apart from standard agricultural or industrial brownfields, many military brownfields occurred in the Czech Republic after the withdrawal the Soviet Army and military sector restructuring. The number of these types of brownfields has decreased over time and Navrátil et al. (2019) find out that some of these brownfields had been utilised for non-agricultural purposes. According to Garb and Jackson (2010) there was estimated that economic transition left close to 10,000 brownfields in the Czech Republic alone with over 2,000 of these in the larger size category, some in prominent urban positions (Klusáček, 2005; Wirth & Lintz, 2006; Filip & Cocean, 2012). Moreover, Tureckova et al. (2019) mentioned that this generally used number is underestimated. Klusáček et al. (2018) find out that structural changes affected regions of the Czech Republic in different way – most affected regions were Moravia-Silesia Region and Ústecký Region which had to cope with intense deindustrialization. According to Gwosdz, Domański & Bilaska-Wodecka (2020) some Polish regions have had a similar experience accompanied by rising unemployment. Although there is great development potential in the regeneration of these properties, however, this is often not possible without the initiative and support of the state and the public sector. Moreover, public intervention is all the more necessary if it is an area with social and environmental problems associated with the transition process. Unfortunately, post-socialist governments and markets were unable to ‘metabolise’ these unused properties in the first decade of transition. Recognition of the importance of the existence of brownfields as a societal problem and the subsequent implementation of pilot projects occurs only after the year 2000. This was followed by the relatively dynamic development of the legislative, institutional and financial framework for tackling this problem in the first two decades of the 21st century. According to Garb and Jackson (2010) the brownfield issue is now strongly (though often only formally) embedded in EU, national, regional and local policies and strategies.

According to National Strategy of Brownfields Regeneration 2019 – 2024 brownfields regeneration is defined as the process that results in the possibility of reusing the property or entire locality. The extent of remediation and construction work depends on the degree of damage to surfaces, buildings and equipment and on the need for modifications for new use. Brownfield regeneration projects may include the removal or reconstruction of original buildings, their completion and extensions. The following activities may be part of regeneration and revitalization projects: (i) restoration = return of natural functions to the territory; (ii) remediation = elimination of defects (technical, soil and water contamination); (iii) reconstruction = restoration of the original state, from the point of view of technical condition the objects will be as new; and (iv) modernization =

achieving a new technical standard, including achieving a higher standard of technical and transport infrastructure.

Bartke et al. (2016) mentioned that each brownfield represents specific challenges for the environment and adjacent community as it has been affected by former uses. As shown in Loures & Vaze (2018) the presence or absence of contamination is a crucial aspect of brownfield regeneration - if no significant contamination is detected, the value of the area increases, allowing for relatively rapid public or private remediation. Conversely, when pollution is detected, there is a significant reduction in the value of this place, depending on its extent and severity (see **Figure 1**).

According to Kadeřábková & Piecha (2009) brownfield regeneration depends on many factors. These factors include location, environmental burden, property relations, the existence of infrastructure, the relationship between the municipality and citizens, and last but not least, financial resources. According to Turečková et al. (2018) it is even more complicated to ensure that particular brownfield regeneration will be successful.

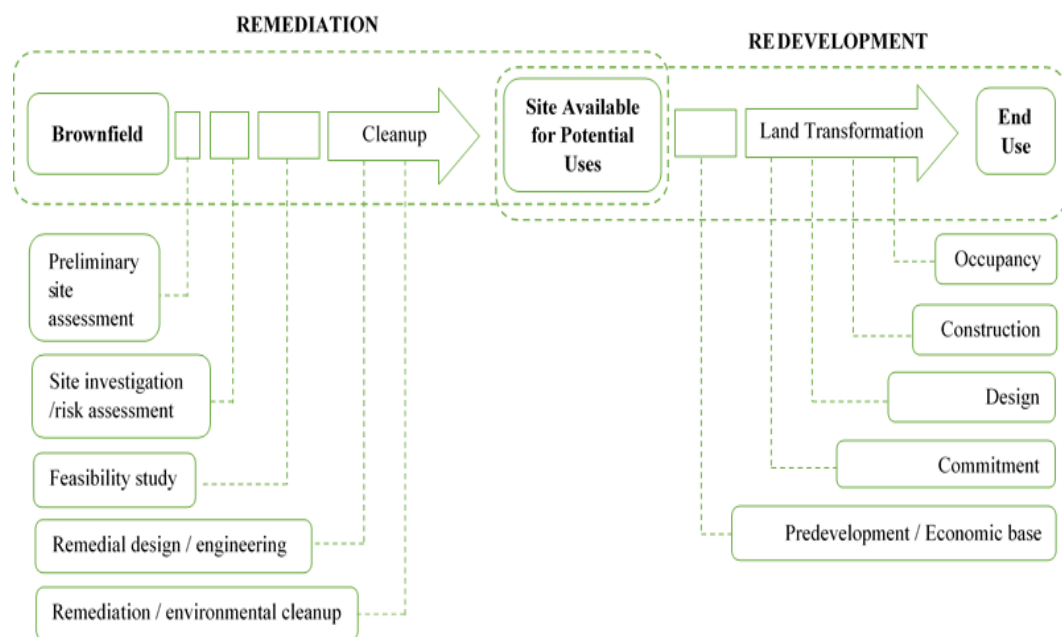


Fig. 1. Stages of brownfield redevelopment processes considering both contaminated and non-contaminated sites. (Source: Loures & Vaz 2018)

Last but not least brownfields have been associated with foreign direct investment as a potential location of investment in last decades - at the local planning level, where there is pressure to attract new developers with the aim of generating tax revenues and creating jobs, greenfields are often perceived as being more attractive to investors and are therefore willingly earmarked for development (Bartke & Schwarze, 2015). Investors usually prefer greenfield projects due to lower costs associated with construction, better localization outside the municipalities' centres or agglomeration aspects. On other hand brownfields regeneration has some advantages compared with greenfields: (i) they are often well located; (ii) infrastructure is available in these premises; (iii) originally degraded areas come back to live after regeneration and (iv) revitalised areas could bring people back to originally abandoned areas. The discussion is usually directed towards whether it would not be appropriate to make more use of existing industrial areas instead creation of new industrial zones. However, the disadvantage of brownfields is the fact that regeneration is a complex and costly process that also requires financial and administrative support from the public sector. In addition, brownfield

development in some countries have been set at the national level, with the twin objectives of furthering urban regeneration and reducing greenfield development (Ganser & Williams, 2007). On the other hand, this complexity requires considerable efforts to successfully initiate and complete brownfield revitalisation processes, including a proper strategy for the involvement of a considerable number of stakeholders with potentially divergent interests (Rizzo et al. 2015). In addition, brownfield regeneration could be a part of economic policy at both national and regional levels and some of them can be used by public sector (Schädler et al., 2011). As we know that brownfield regeneration is a challenge for regional and national authorities, the research question of this paper is whether there is a functioning strategic, financial and institutional framework in the Czech Republic to support brownfield regeneration.

In the present paper we analyse strategic, financial and regional links of brownfields regeneration in the Czech Republic. The authors' motivation is to summarize the need to support the regeneration of brownfields as a significant measure of socio-economic development which is much more environmentally friendly than greenfields. Another motivating aspect is to provide the summary of the contribution of European financial resources. The paper is organised in these parts: (i) the introductory part is based on literature review which contains the theoretical background associated with brownfields and their regeneration in the Czech Republic; (ii) the second part focused on empirical results – it consists of strategic, financial and regional aspects of brownfields regeneration in the Czech Republic; (iii) and the last part recapitulates findings.

2. DATA

Empirical part of this paper is based on data obtained from national databases like National Brownfield Database which is coordinated by the CzechInvest (a state contributory organization subordinate to the Ministry of Industry and Trade of the Czech Republic). We focus on NUTS II regions which are the relevant regions for EU financial support within the main objectives of the EU cohesion policy. The region of the capital city Prague is excluded mainly due to statistical bias - as mentioned in Skrabal (2020) there is only one abandoned building registered in this database and it does not reflect the reality and problematics of the brownfield incidence in the capital city. The figure below (**Figure 2**) shows the number of brownfields and their area (in hectares). As seen from table we can see higher number of brownfields in North-West (123) and North-East (117). On the contrary, the lowest number of brownfields is in the Central Moravia and Central Bohemia regions.

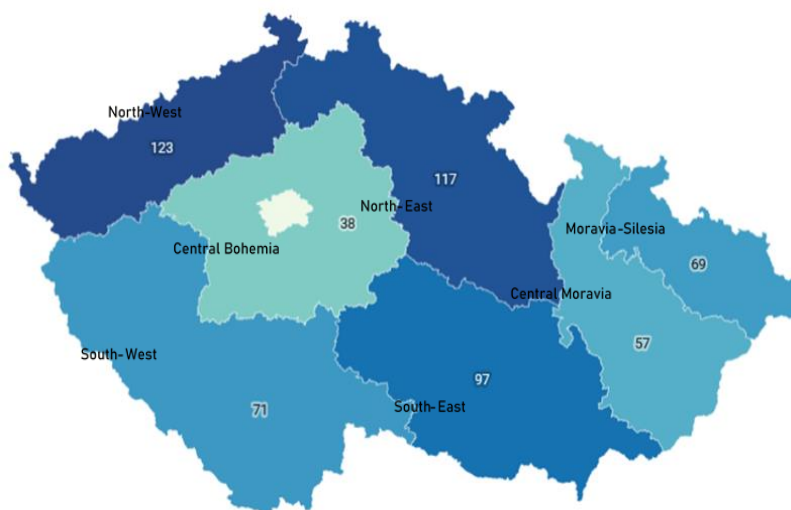


Fig. 2. The number of brownfields in NUTS 2 level (year 2020, excluding Prague region) (Source of data: CzechInvest).

Figure below (**Figure 3**) shows previous use of current brownfields – data are in hectares and the second number express the share of each category. It can be seen from the figure below that the three main categories of previous use dominate – industrial premises with the share of 42 %, military areas with share of 30 % and agriculture areas with the share of 14 %. Remaining uses of these abandoned areas represent a marginal percentage.

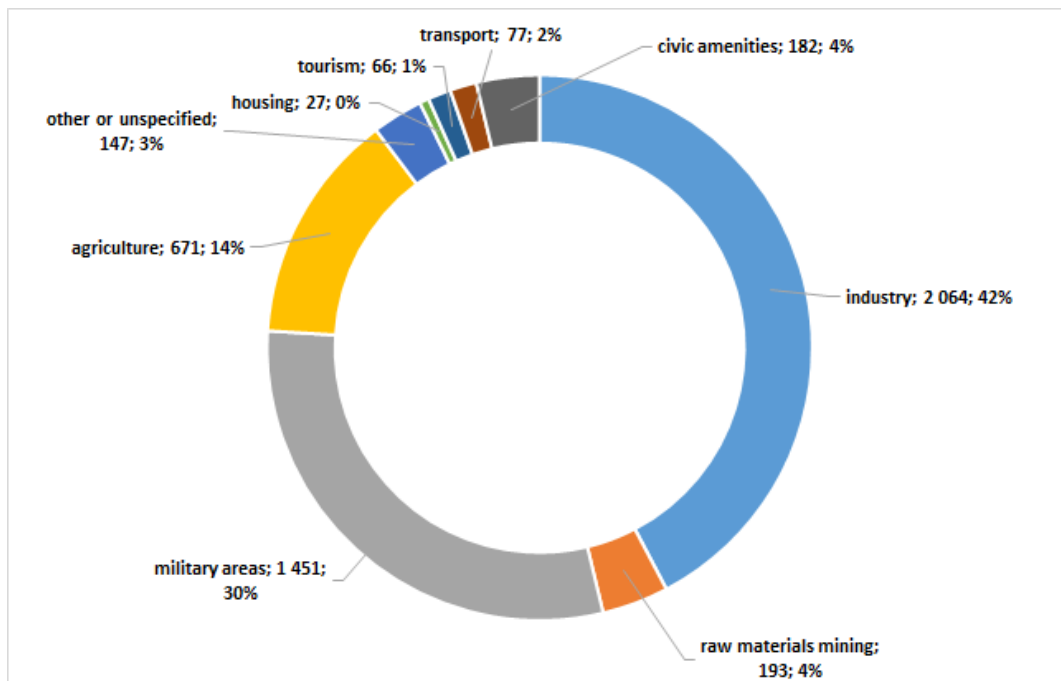


Fig. 3. Previous use of current brownfields (Source of data: CzechInvest; Ekonom).

3. STRATEGIC, FINANCIAL AND REGIONAL ASPECTS OF BROWNFIELDS REGENERATION

This part of the paper deals with strategic, financial and regional aspects of brownfields regeneration during the period 2000 to 2020. This part of the paper is based on publicly available strategic documents defining the development of the Czech Republic's strategy regarding brownfield regeneration. Data summarizing the drawn funds or allocated financial amount to support the regeneration of brownfields from EU funds are obtained mainly from secondary sources (national strategies, websites of individual operational programs or national programs).

3.1. Strategic documents and institutional framework

The brownfield regeneration strategy in the Czech Republic is derived from the National Brownfield Regeneration Strategy, which was first developed in 2004 and the last update took place in 2019 with a view to 2024. The pilot strategy was created as part of PHARE pre-accession assistance and the UK's experience with brownfield regeneration served as an example of a good practice. Moreover, another goal was to identify key characteristics and sizes of brownfields in the Czech Republic. According to Grulich and Gargoš (2009) development of this strategy was problematic, as it turned out that the British experience is not fully transferable to the Czech environment, mainly due to the different functioning of local governments. Therefore, the government commissioned the Ministry of Trade and Industry and CzechInvest (business and investment development agency) to

develop a strategy that reflects the specifics of the Czech legal environment. CzechInvest began preparing an Exploratory Study for the Localization of Brownfields, which was also to serve as supporting material for the upcoming programming period 2007-2013, in which the Czech Republic could already fully draw on EU funds.

The first conceptual strategy was adopted in 2008. The basic goal of the Strategy was to create a suitable environment for fast and efficient implementation of regeneration projects and prevention of new brownfields. In addition to the main goal, three medium-term goals were defined, the fulfillment of which was expected by the end of 2013: (i) maximum involvement of available EU resources for brownfield regeneration in the programming period 2007-2013; (ii) taking into account the possibility of regeneration of brownfields for non-industrial use (e.g. mixed urban function, civic amenities, agriculture, housing) and (iii) development of an education system in the field of brownfield regeneration and ensuring the professionalization of public administration in this area. The following long-term goals were set: (i) reduction of the number of brownfields and occupation of agricultural land for new construction in accordance with the principles of sustainable development; (ii) prevention of brownfields; (iii) improving the quality of the urban environment and socio-economic development of the affected regions; (iv) improving the quality of the environment and removing old environmental burdens in brownfield sites (this goal has both a medium and long-term dimension); (v) targeted and effective use of public funds to support the regeneration of brownfields, where public intervention is necessary and justified; (vi) introduction and ensuring the application of best practice in the implementation of brownfield regeneration projects, support for professionally managed implementation of regeneration.

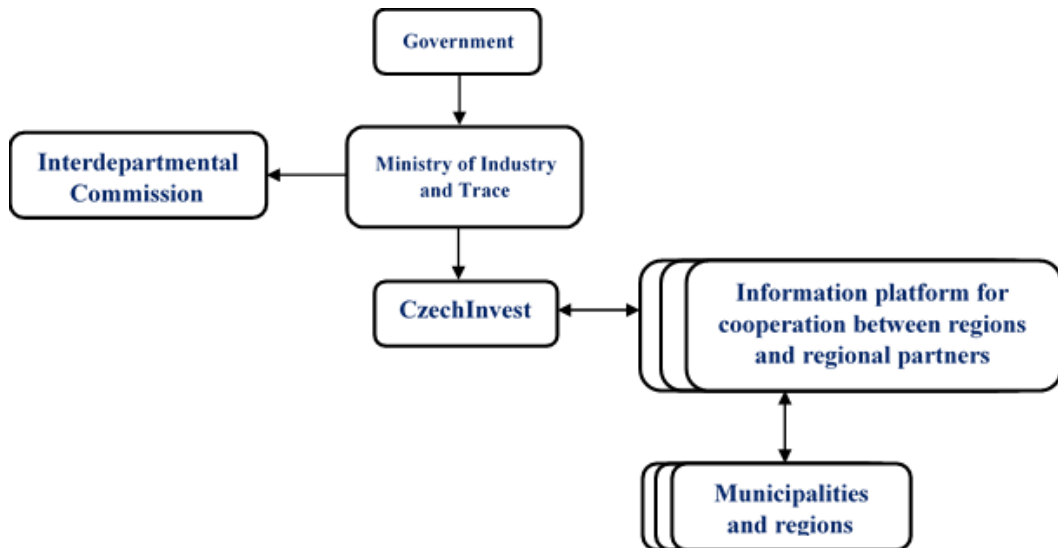


Fig. 4. Initial institutional framework (Source of data: *National Brownfield Regeneration Strategy, 2008*).

This strategy is followed by another, which is for the period from 2019 to 2024 (National Strategy of Brownfields Regeneration). The vision of this strategy is to make brownfields competitive areas for new uses and development. The main goal is developing a coordinated approach to brownfield regeneration through state policies, financial programs and appropriate conditions that will enable brownfields to find new economic or public benefits. The reuse of brownfields will contribute to the economical use of the built-up area and the development of towns and villages. The strategy emphasizes the involvement and coordination of all stakeholders (Ministry of Industry and Trade, CzechInvest, Ministry of Agriculture, Ministry of Regional Development, Ministry of Environment) both horizontally and vertically (see **Figure 4**). Other priorities are Financial Support, Territorial

Measures and Education, Research and Awareness. All these areas proved to be key for setting up support for brownfield regeneration in the Czech Republic.

Moreover, as brownfields regeneration is cross-sectional problem it is mentioned in several national documents that overlap in both programming periods: (i) Regional Development Strategy of the Czech Republic 2014-2020; (ii) Strategies to support the use of the potential of cultural heritage, 2014; (iii) Territorial development policy, 2014; (iv) Program for the support of business real estate and infrastructure, version 2015; (v) Strategic Framework for Sustainable Development of the Czech Republic, 2010; (vi) State Environmental Policy of the Czech Republic 2012-2020; (vii) Principles of Urban Policy, 2010. Current institutional framework is shown in **Figure 3** below.

The one of NSBR measure is the "National Brownfields Database", which registers selected localities corresponding to the definition of brownfields. It is divided into a public part of the database serving as an offer of sites for investors. The non-public part is used for statistical purposes on the monitored phenomena and creates overviews on the support of brownfield regeneration.

3.2. Financial sources

If look at financial sources that could be used for brownfield regeneration in the initial phase (years from 2000 to 2006) there existed few EU sources. As mentioned in Garb and Jackson (2010) study Czech Republic as the candidate country (till April 2004) and the member state (from May 2004) could draw funds for the regeneration of brownfields from these funds which are listed in a **Table 1**.

Table 1.

EU programme titles and priorities available for brownfield regeneration during the period 2000-2006

Programme name	Priority
PHARE 2001	Border regions assistance - best practices
ISPA	Reuse of agricultural brownfield property
Cohesion fund	Remediation of environmental damage
OP Industry	Industrial premises
OP Infrastructure	Removing environmental damage
OP SROP	Urban regeneration
OP Development of Human Resources	Regionally based education (included support for training and promotional activities on brownfields)
JPD2 Prague	Measure 1.2: Regeneration of damaged and unsuitably used areas

(Source: Garb and Jackson (2020).

As the Czech Republic is the EU Member State from 2004, in addition to national financial resources, it could also fully draw funds from European structural and investing funds for the regeneration of brownfields. No specific program was designed to support brownfields regeneration during 2007-2013 programming period. However, it was possible to draw subsidies within several operational programs. Brownfield regeneration requires a relatively large number of financial resources and as written in 2008 Strategy; maximum use of EU funds was expected. In addition, national resources are used to regenerate brownfields. First, we will focus our attention on funds obtained from EU funds. If we look at the programming period 2007 to 2013, we will find that a specific program designed directly for the regeneration of brownfields has not been develop. Thus, funding for brownfield regeneration took place across programs. Brownfield regeneration was financed from Operational Programme Environment (OPE), Operational Programme Enterprise and Innovation (OPEI), Regional Operational Programmes (ROPS) and Rural Development Programme (RDP). As written in National Strategy of Brownfield regeneration 2019 – 2023, the accuracy of the statistics seems to be a problematic aspect in the evaluation of the used financial resources from EU

projects - in addition to the mentioned OPs that has been used for brownfield regeneration, brownfield regeneration in other areas and programs was supported at the same time as reconstruction projects. In some OPs, it was not possible to separate the reconstruction of buildings from the regeneration / reconstruction of brownfields.

In general, projects of public entities (especially municipalities and regions) using European subsidies most often concerned the re-use of brownfields for public facilities. As can be seen from **Table 2** subsidies for this type of project were provided from seven Regional Operational Programs. In total, there were 211 projects with a subsidy of over EUR 214 million. **Table 2** below shows that 531 brownfields regeneration projects in the amount of EUR 259 million were supported from the OPEL. Another important program for the regeneration of rural brownfields was the RDP, which supported projects of regeneration and reconstruction of real estate serving agricultural business, civic amenities and business in rural communities (total of 3,330 reconstruction projects of used and abandoned properties were revitalized with subsidies in the amount of EUR 266 million). Subsidies in the amount of EUR 111 million were allocated to projects related to the removal of old environmental burdens from the OPE.

Table 2.

Support from EU funds for projects of reconstruction, revitalization, regeneration and removal of old environmental burdens (years 2007-2013)

Programme	Reconstruction – number of projects	Number of brownfields	Subsidies for brownfields (in millions EUR)
OP Environment	156	33	111.24
OP Enterprise and Innovation	975	531	259.22
Rural Development Programme	3 330		267.16
Regional Operational Programmes		211	214.61
Total			852.23

(Source of data: National Brownfield Regeneration Strategy 2019-2024).

If we look at these specific OPs more deeply, we can see that the vast majority of brownfields revitalization projects focused on removing old environmental burden (see **Table 3**). In the case of the OPE brownfield revitalization was financed through the area of support called Properties mainly. In this context, it is important to mention the significant regional impact of this support, which is shown in **figure 5** below. It shows that the most projects were financed within NUTS II regions in the east of the Czech Republic (Moravia-Silesia, Central Moravia, South – East or North – East), where there are a large number of agricultural brownfields that have just been the subject of regeneration projects.

Table 3.

Allocation from Operational Programme Environment (years 2007 – 2013)

Area of support	Total allocation (in mil. EUR)	Number of brownfield projects	Allocation for brownfield projects (in mil. EUR)
4.2 Removing old environmental burden	248.23	32	111.22
6.5 Regeneration of urban landscape	0.050	1	n.a.
Total	248.28	33	111.22

(Source of data: National Brownfield Regeneration Strategy 2019-2024).

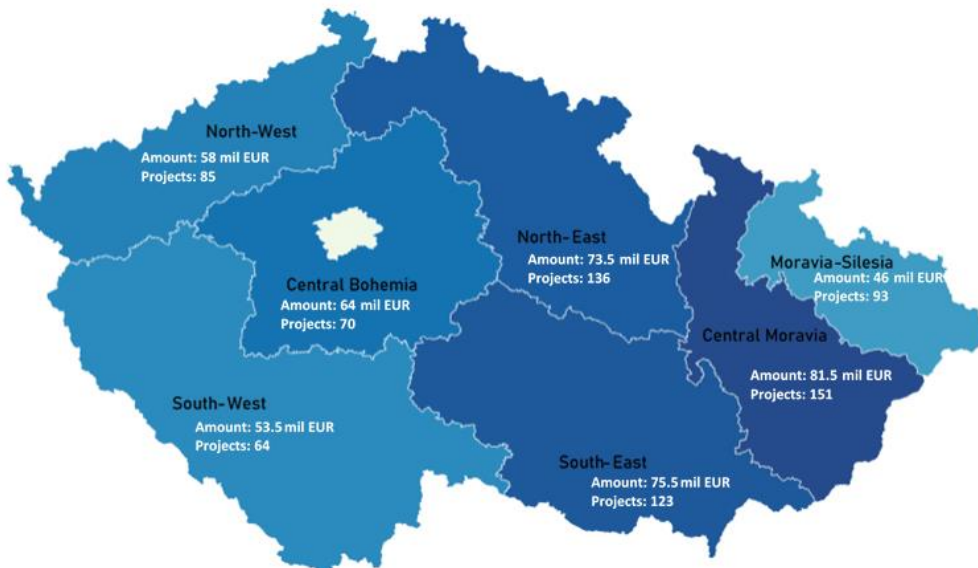


Fig. 5. Brownfield projects support in cohesion regions from OP Enterprise and Innovation (years 2007 – 2013). (Source of data: National Brownfield Regeneration Strategy 2019-2024).

Within the RDP, it was possible to use several areas and sub-areas of support for the regeneration of brownfields, which is illustrated in **Table 4**. It is evident that the largest number of brownfield revitalizations was financed under axis 1.1 Modernization of agricultural holdings. The second largest number of projects falls under Axis 3 Diversification of the rural economy.

Table 4.

Brownfield regeneration from the Rural development programme (years 2007 – 2013)

Area of support/programme	Total allocation for sub-area (mil. EUR)	Number of brownfield projects	Allocation for reconstruction (mil. EUR)
I.1 Modernization, vč. I.3.2.	386.88	2 613	169.15
III.1 Business diversification	284.43	535	60.99
III.2 Rural areas	196.45	182	51.06
Celkem	867.76	3 330	281.20

(Source of data: National Brownfield Regeneration Strategy 2019-2024).

If we look at the support of brownfield regeneration from regional operational programs, we see that the largest number of supported projects was in the NUTS II Moravia - Silesia and North-East regions, but the largest support was provided by brownfield regeneration in North-West and Central Bohemia (see **Figure 6**).

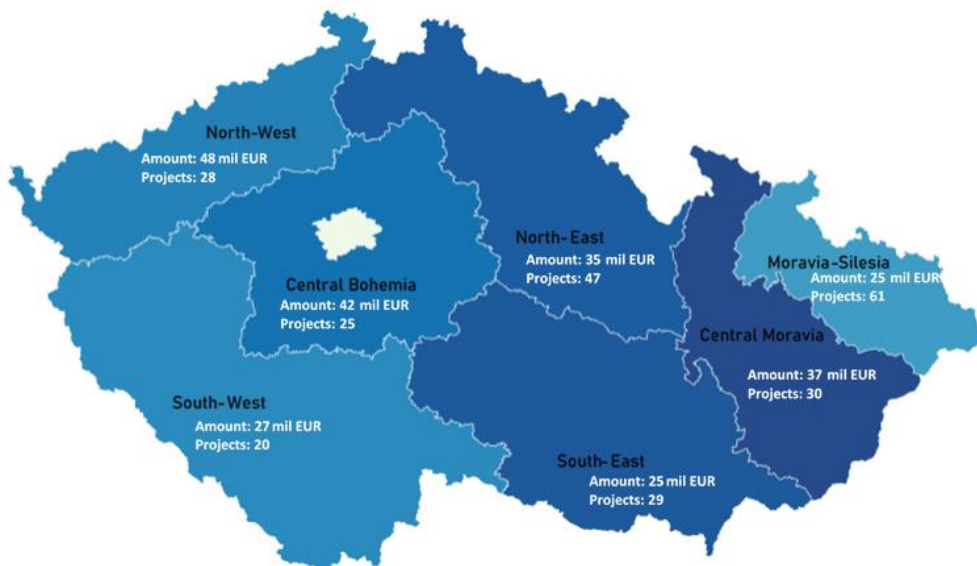


Fig. 6. Brownfield regeneration subsidies from ROPS (years 2007 – 2013) (Source of data: National Brownfield Regeneration Strategy 2019-2024).

3.3. Financial sources 2014 to 2020

Similar to the previous period it is possible to draw subsidies within several operational programs. Although the setting of OPs is similar, the financial amount that can be drawn for the regeneration of brownfields has been reduced. Due to the fact that this period is still running, this section only contains estimates based on publicly available information as of end 2019. **Figure 7** below shows institutional and financial framework of this programming period 2014 – 2020.

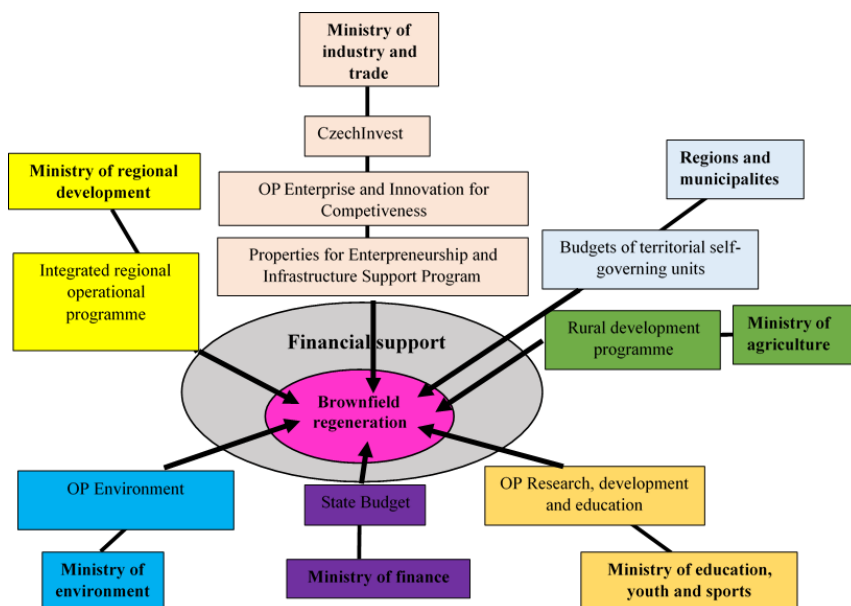


Fig. 7. Current institutional and financial framework (Source of data: National Brownfield Regeneration Strategy 2019-2024).

The OPEI was replaced by the Operational Programme Enterprise and Innovation for Competiveness (OPEIC) – Program Properties. The aim of the program is to facilitate the modernization of obsolete, spatially and technically unsatisfactory buildings for small and medium-sized businesses, for the implementation of supported economic activities or their replacement by new buildings for business in all regions except the region of the capitol city Prague, thus enabling the maintenance and increase of employment in the region or contributing to the improvement of the environment or working conditions of employees. An important circumstance is that this program only supports comprehensive reconstructions (not partial interventions and repairs) and also previously supported "greenfield" constructions were excluded. Within this program five calls were announce till mid 2020: (i) call 1 to 3 which had general setting focusing on brownfield regeneration; (ii) call 4 named Tourism which aims exclusively at the modernization of obsolete, spatially and technically unsuitable facilities, buildings and premises, which will be used for the development of business activities and services of SMEs in tourism; and (iii) call 5 named Coal Regions that which aims to facilitate SMEs in the modernization of obsolete and technically unsuitable buildings for the implementation of supported economic activities, or their replacement by new business buildings. The sum of current calls represents 5.8 billion CZK, which is almost 83 % of the total allocated amount for this program (EUR 200 million). If we focus on individual calls, the financially largest calls were 1, 3 and 5. **Table 5** also shows a relatively different maximum allocation per project – it varies from EUR 36,000 to 7,272,00.

Table 5.

Operational Programme Enterprise and Innovation for Competiveness – Program Properties (years 2014 – 2020)

Call	Total allocation possible for brownfields regeneration (in mil. EUR)	Minimum and maximum amount for one application (in thousands EUR)
1	54.5	Between 36 and 7 272
2	34.5	Between 36 and 1 818
3	51.0	Between 36 and 1 090
4	29.0	Between 36 and 3 636
5	51.0	Between 36 and 3 636
Total	220.0	

(Source of data: Operational Programme Enterprise and Innovation for Competiveness).

Available statistical data relate to calls 1 and 2 only (details on calls 3 to 5 were not known at the time of writing) - 270 projects were supported under this program with a current allocated subsidy of EUR 91 million.

Another operational program that can be used for the needs of brownfields regeneration in this programming period is the Operational Program Environment (OPE 2014-2020), which follows on from a similar program in the previous period (OPE 2007-2013). The OPE 2014-2020 is involved in the remediation of severely contaminated sites for which there is evidence of risk to human health and ecosystems. The program is divided into five priority axes, of which in the case of brownfield regeneration, priority axis 3 can be used: Waste and material flows, environmental burdens and risks (Specific Objective 4: To complete the inventory of and remove environmental burdens). In relation to commercial real estate, support can be obtained under Priority Axis 5: Energy savings (Specific Objective 1: To reduce the energy intensity of public buildings and increase the use of renewable energy sources and Specific Objective 3: To reduce the energy intensity and increase the use of renewable energy sources in buildings of central government institutions). The total number of calls and total available allocation for brownfields regeneration is shown in **Table 6**.

Table 6.

Operational Programme Environment (years 2014 – 2020)

Call	Specific objective	Total allocation available for brownfields regeneration (in mil. EUR)
6	3.4 To complete the inventory and remove environmental burdens	11.0
7	3.4 To complete the inventory and remove environmental burdens	20.4
19	5.1 To reduce the energy intensity of public buildings and increase the use of renewable energy sources	109.1
36	3.4 To complete the inventory and remove environmental burdens	21.8
39	5.1 To reduce the energy intensity of public buildings and increase the use of renewable energy sources	109.1
44	3.4 To complete the inventory and remove environmental burdens	18.2
65	3.4 To complete the inventory and remove environmental burdens	14.5
70	5.1 To reduce the energy intensity of public buildings and increase the use of renewable energy sources	109.1
75	3.4 To complete the inventory and remove environmental burdens	14.5
77	3.4 To complete the inventory and remove environmental burdens	5.5
86	3.4 To complete the inventory and remove environmental burdens	7.3
99	3.4 To complete the inventory and remove environmental burdens	7.3
100	5.1 To reduce the energy intensity of public buildings and increase the use of renewable energy sources	109.1
121	5.1 To reduce the energy intensity of public buildings and increase the use of renewable energy sources	91.0
135	5.3 To reduce the energy intensity and increase the use of renewable energy sources in buildings of central government institutions	72.7
146	5.1 To reduce the energy intensity of public buildings and increase the use of renewable energy sources	72.7
152	5.3 To reduce the energy intensity and increase the use of renewable energy sources in buildings of central government institutions	18.2

Other operational program that allows financial support for the regeneration of brownfields is the Rural Development Program for the period 2014 to 2020 (RDP 2014-2020), which builds on the previous RDP program 2007-2013. The supported areas of the Program are divided into six priorities. Real estate concerns in particular priority axis 2: Increasing the viability of agricultural holdings and the competitiveness of all types of agricultural activity in all regions and promoting innovative agricultural technologies and sustainable forest management. Within this priority axis these activities are supported: (i) - investment in agricultural holdings; (ii) forestry infrastructure; (iii) start-up of young farmers; (iv) investments to support energy from renewable sources; and (v) investments in non-agricultural activities.

5. CONCLUSIONS

The paper dealt with the issue of brownfields regeneration in the Czech Republic during the year 2000 to 2020. In comparison with Western Europe countries, the problem of brownfields began to be solved with a delay of approximately twenty years, which resulted from the existence of a centrally planned economy.

After 1989, the main activities focused on the process of transition to a market economy and the problem of abandoned areas seemed to be marginal at that time so no strategy was developed. Opening of economy, the loss of traditional consumer markets, low competitiveness vis-à-vis foreign producers have led to traditional sectors such as industry and agriculture starting to clear their positions in many sub-sectors, which has led to the emergence of abandoned sites defined as brownfields. The government began to address this serious phenomenon only after the years 2000, when there was a huge expansion of greenfield projects and the centers began to deepen problems with abandoned industrial areas, in the case of rural areas it were agricultural areas.

The first analysis and strategies had been developed in the first decade of this century. As the Czech Republic joined the European Union, it was clear that financial support was possible not only from national sources. Firstly, the Czech Republic use pre-accession funds (PHARE, ISPA). Afterward it was possible to prepare measures to solve the problem of brownfields regeneration within specific operational programs. It can be stated that brownfields regeneration is the cross-sectional task so there are more subjects responsible for this process especially the Ministry of Industry and Trade, Ministry of Agricultural, Ministry of Environment and also the Ministry of Regional Development.

If we look at regional differences (on the example of cohesion regions (NUTS II regions) other than the region of the capital city of Prague) in the existence of brownfields or the number of projects implemented for their regeneration, certain differences can be seen – e.g. most projects were implemented within the brownfield projects support in cohesion regions from OP Enterprise and Innovation in South-east region, North-East region and Central-Moravia. In addition, if look at the total number of implemented projects within individual Regional operational programs we can see that the most successful regions were Moravia-Silesia and North-East regions. In comparison in the case of total spent money we can see that leaders were North-West and Central Bohemia regions.

Moreover, within the brownfields regeneration, a relevant regional distribution appears to be key factor of the national approach to this problem, with an emphasis on addressing this issue in structurally lagging-behind regions or rural regions where there is an insufficient supply of private capital that prevents the natural regeneration of these abandoned sites. The important task is to evaluate the number of implemented projects and the total amount of funds intended for the brownfields regeneration in this ending programming period. Another challenge is to effectively combine national and EU financial resources in the next programming period 2021 to 2027.

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