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ORIGINAL PAPER
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BROWNFIELDS IN THE SLOVAK REPUBLIC – THE CURRENT STATUS AND A PROCESS MODEL OF THEIR REVITALIZATION

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ABSTRACT

Motives: The current trend in the European Union is the 'densification of cities'. This means that attempts are being made to use built-up areas that are abandoned, dilapidated, or not fit for purpose for new investment projects, with the aim of not expanding cities and not developing green spaces. Brownfield sites are ideal in this respect because they do not serve their original purpose and their transformation does not require the use of new land. Decontamination and revitalization of such areas must be ensured where necessary.
Aim: The aim of this study was to identify the status of degraded areas in different Slovak regions and to develop a process model for their revitalization. The research included an analysis of a brownfield database, the use of indicators of biodiversity status and protection, a literature review, a relational comparison, and a focused interview with city representatives.
Results: The results of this study provide new valuable insights into the current status of degraded sites in Slovakia, which may subsequently contribute to the regeneration of urban areas and the improvement of urban life.

Keywords: sustainable development, urbanization, revitalization, brownfields, regions, Slovak Republic

INTRODUCTION

Nowadays, along with the continuous exponential development of society, is also increasing our consumption and demand for various kinds of goods and services. However, there is not just consumption reason, but also for creating what we want to consume – work hubs, creative hubs etc. Related to this, stakeholders may face challenges with the space – free lands and buildings are needed, but often it is not possible to build something new, because of the zoning plan of each city. This is a one-sided view. The next point of view is, that in each country, in each town there are big old buildings that are not used and are crumbling and losing their value. National and regional policymakers need to set priorities and choose if they want to revitalise and refurbish, or if they want to build new objects and expand the cities. At first sight, it seems as a simple solution – to combine existing needs and opportunities. But it has some

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challenges and questions, which must be answered first – if we have enough resources to repair existing buildings – brownfields, or if we want to build something new – greenfield. In this paper, we focused on the first alternative – brownfields in general, with the pointing out to status in the Slovak Republic.

LITERATURE REVIEW

The term brownfield became common in the 1990s in various political documents, but also in public spaces on the local government level, or journal articles (Mehdipour et al., 2024). According to the Cambridge Dictionary, a brownfield could be any place in a town or city, which has been used as factories in the past and now could be used for new purposes (Cambridge Dictionary, 2024).

Brownfields are connected to the lands and buildings, which are desolated and abandoned. These objects have been used in the past for example factories, warehouses, dry cleaners, railroads, etc. (Alker et al., 2010; Tomerius & Feber, 2003). They are parts of historical background, cultural or architectural heritage included (Pelčák & Korytárová, 2020). Brownfields are underused for some reason – most often because of worries of pollution or contamination and need to be revitalised. Revitalisation means the process of making something to improve actual status and become again prosperous (Cambridge Dictionary, 2024). After revitalisation and reconstruction, many of brownfields have the potential to find their use and purpose to exist in the future (Environmental Law Institute [ELI], 2024).

Accordingly, Cabernet (2006) the brownfield revitalisation policy combines three components – ecological (related to space), economic (support the investments) and social (new job opportunities, enrichment of identification with place) (Tomerius & Feber, 2003).

The story of Brownfield starts in New York; in the past, there were a lot of old buildings used as a gas station, factories, etc. They featured some disadvantages for use – for example, contaminated with chemicals from their previous use. At the same time, the policies in New York were focused on economic growth on the one hand, but also included the importance of the environment on the other hand (Nager, 2012).

In Europe, in the countries that were communist with managed economic and five-year plans economic recession was not considered an option. Untapped potential as abandoned buildings and areas was unimaginable (Dannert & Pirisi, 2017). But now it is our reality. What was unimaginable, in every city we can find a building whose importance has disappeared and whose prosperity has ended. These countries have some characteristics and features, for example, unique urban places that combine historical heritage with current urban development, joining the European Union, and transitioning to a liberal market economy (Sandu, 2023; Tsenkova, 2006). Transformation is reflected not just in economic growth but also in mindset in civil participation, or current challenges related to the climatic crises. These changes required a re-evaluation of urban planning (Jamecny & Husar, 2016). Revitalisation of brownfields becomes part of the sustainable development of the area and a prerequisite for urban revitalisation and development (BenDor et al., 2011).

In 2019 held a conference in Brussels relating to the revitalisation of brownfields. The participants pointed out the need to have policy frameworks at each level of administration (European Commission, 2019). Related to this, professor Vanheusden (2019) summarized some reasons for brownfield redefinition, for example, protection from contamination of the environment and health reasons, lack of industrial places, or avoiding new land taking.

Currently, one of the strategic goals of Agenda 2030 is related to contaminated places, concretely, goal 15.3 said: "By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world" (Undesa, 2024). Considering all points of importance, nowadays many countries have started to be open to new opportunities for the revitalisation of existing places.

Morar et al. (2021) constants that there is no formal definition of brownfield in Europe. According

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to Vojvodíková et al. (2021) one of the first concepts in Europe relating to the brownfield was connected to workgroup Clarinet (Contaminated Land Rehabilitation Network for Environmental Technologies). Clarinet network was from 1998 to 2002 as a programme of the European Commission, made up of several working groups. The main purpose of its existence was to bring information and recommendations for decision–making processes related to contaminated sites in Europe, including work groups (Bardos, 2003). The next European work group is Cabernet (Concerted Action on Brownfields and Economics Regeneration), consisting of various stakeholders focusing on complex brownfields topic (Cabernet, 2006).

During the steps and processes related to the brownfield regeneration involved plenty of subjects and key players:

– from the public administrative perspective – for example, state or regional environment, developing, local authorities, government, planning agencies, subjects responsible for urban planning, policy and lawmakers, EU, etc.;
– from the private sector perspective – for example, developers, investors, banks, service providers, etc.;
– other subjects – for example, owners, experts, non-profit organizations, public, citizens, etc. (Cabernet, 2006; Dvořáková et al., 2016; ELI, 1999; Rizzo et al., 2015).

Cabernet (2006) offers multiple perspectives on the categorization of brownfields, one of which is the ABC model. That model classifies brownfields into three types based on their economic and financial costs:

1. type A includes all sites highly economically viable, in good conditions with private funding participants;
2. type B include all sites which are on the break-even point of profitability, with private and public funding participants;
3. type C include all sites for which revitalisation is not profitable, with the expectation of support from the public sector (Cabernet, 2006).

This classification is also applied and modified in the next part of the article – analysis of brownfields in the Slovak Republic. It is adapted to the current conditions in the eight regional cities as a representative of the cities in Slovakia.

Issues related to the brownfield revitalisation

The revitalisation of brownfields could be a good way on how to use the potential of town and place with the development in any area – a combination of already existing objects with current needs, plans, and strategies (Hombre, 2014; Li et al., 2019). It could be a win-win situation for all involved parties. According to ELI (1999) if the brownfields are cleaned, they could be ready for use to start something new, what is missing and what is the answer for needs. Also, it could be helpful from an environmental point of view, cleaning up forgotten places eliminates the risk arising from contaminated areas. Finally, the revitalisation of brownfields could help to the overall visual well-being.

Brownfield revitalisation is a long–term process involving multiple actors. The municipal representative of towns should aspire to eliminate the barriers to brownfield revitalisation connected with responsibility for the contamination of sites and their cleaning, funding source and regulations steps (McCarthy, 2002). The role of public administration represented by the government on the national level and on the local, and regional levels relates to managing the process – thanks to laws and controlling mechanisms. In this case, it must consider not only economic, safety, and environmental impact, but also must deal with political influence (Turečková & Chmielová, 2018). Apart from the above, the studies, analysis, rules, and methodologies are more than needed across all levels of public administration. It may seem that the issue of brownfields and their revitalisation is a local problem of each city, but it is necessary to consider the context of national interests (Jamecny & Husar, 2016). General government and public administration have possibilities on how to motivate or demotivate all involved subjects – investors, owners, developers etc. Decisions related

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to national and regional politics, or directly by the support for new objects on Greenfields influence the current situation in towns and municipalities. It is important to have good management to ensure effective use of existing lands and places (Chen et al., 2009). Also is necessary to consider the very specific characteristics of each country or city. It is inappropriate to define the success of the repair and revitalisation process of brownfields in general terms. Each location has its unique characteristics that must be considered (Silverthorne, 2006).

Revitalisation of brownfields is associated with investment costs mostly of the local government. They are mainly related to cleaning the whole area and with the infrastructure (or its repair and reconstruction) (Pelčák & Korytárová, 2020). Also, the subjects on the local level (towns, self-government units) are focused on the controlling process related to change of land use and the practical steps are secondary (Jamecny & Husar, 2016).

The next point of view is that it must be considered that in many cases is brownfield revitalisation limited by the lack of information. It is not common to provide various kinds of analysis of old buildings and abandoned places, and public community is not interested in this. Also is necessary to consider the question of ownership and urban planning and community relationships. Nowadays there are many rules about what can be done with the land and some restrictions (impossibility of changing land for new purpose of use). Also, neighbours are unwilling to tolerate the constraints of potential future revitalisation. Is important to consider cultural heritage and nature wealth (Ferber et al., 2006).

MATERIALS AND METHODS

The issue of brownfields in Slovakia has been in recent years handled only marginally, as a part of other projects at the local level. International experiences show that the most efficient solution is a comprehensive approach through all levels (local and national).

The research includes a literature review of issues at home and abroad. The main aim of the research was to identify the state of degraded areas in the regions of the Slovak Republic and to design a process model for their revitalisation. The research focuses on the analysis of the brownfields database with application to regional towns in the Slovak Republic as the main representatives of brownfields – demonstrated on Fig. 1.

Fig. 1. Self-governing regions of Slovakia (SK8)
Source: The Association of Self-Governing Regions of Slovakia (2024).

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In the purpose of identifying the status of degraded areas in each regional cities are applied the indicators of the status and protection of biodiversity. This indicator evaluates the area and number of degraded areas – brownfields in cities. The indicator is modified in perspective of achieving the main goal of the research by the median and the time comparison (2015–2024) of the number of brownfields in analysed regional cities in Slovakia. Based on this research is carried out structured interviews with the representatives of regional cities to map the main barriers related to the regeneration of brownfields, considering their urban potential.

The result of the research is the proposal of an effective model of the revitalisation process, evaluation of the mapping of brownfields in selected cities in Slovakia, with a proposal of own evaluation scale for brownfields. Thanks to this they can be revitalized and reused, including financial support from EU structural funds. These results have the potential to strengthen the regional cities on the one hand and eliminate the pressure to take agricultural land for greenfields on the other hand.

The Model of Brownfields Revitalisation was created based on the principles of business process modelling. Process modelling is used in both the private and public sectors. In Slovakia, modelling in the public sector is mainly used in the optimisation of processes in public administration (e.g. the national project "Optimisation of processes in public administration" implemented by the Ministry of the Interior of the Slovak Republic). In this paper a detailed model of the brownfield's revitalisation process is constructed. The sources of data for the construction of the model were inquiries through interviews with representatives of regional cities and representatives of the Ministry of Transport of the Slovak Republic, valid legislation, internal regulations of regional cities and documentation of completed revitalisation projects.

The model uses BPMN notation. The primary goal of BPMN is to provide a notation that is easy to understand for all users. The following sets of graphical elements and their elements are used in this paper:

– Flow Objects – Events, Activities, Gateways,
– Connecting Objects – Sequence Flow,
– Artifacts – Data Object, Text Annotation,
– Swimlanes – Pool, Lanes.

RESULTS

In the Slovak Republic has been dealing with the issue of brownfields since 2012 The Slovak Environment Agency. Based on field research processes the identification and inventory of brownfields. The results of this are reflected in the database in GIS environment. Currently have been mapped 139 towns with 440 brownfields with a total area of 1 692,3 hectare (SAŽP, 2024).

The indicator of the status and protection of biodiversity

This indicator evaluates the area and number of brownfields in cities in the Slovak Republic. Used their mapping and passporting, as well as the state of their revitalisation. The size of the built-up area is one of the important attributes in terms of the possibilities of further use. In many cases, the financial budget for possible future revitalisation depends not only on the condition of the building but also on their size, built-up area, number of floors, etc. Applying this indicator, which will be modified for the research, is possible to analyse the number of degraded areas in the regional cities in Slovakia. It's important to mean that the reason for including objects in the mapping of brownfields is the time of non-use for at least two years.

According to the presented methodology in Table 1, we identified 172 brownfields in eight towns in 2015. The most brownfields are in the capital city of Bratislava and the second largest city – Košice (at all 77 sites which represents 44,8% of the share of all analyzed cities).

In 2024, 131 cities in Slovakia with 448 brownfields with a total area of 1 308,59 hectares. From this count represented regional cities 29% in the same year. Is interesting to compare the share of regional cities

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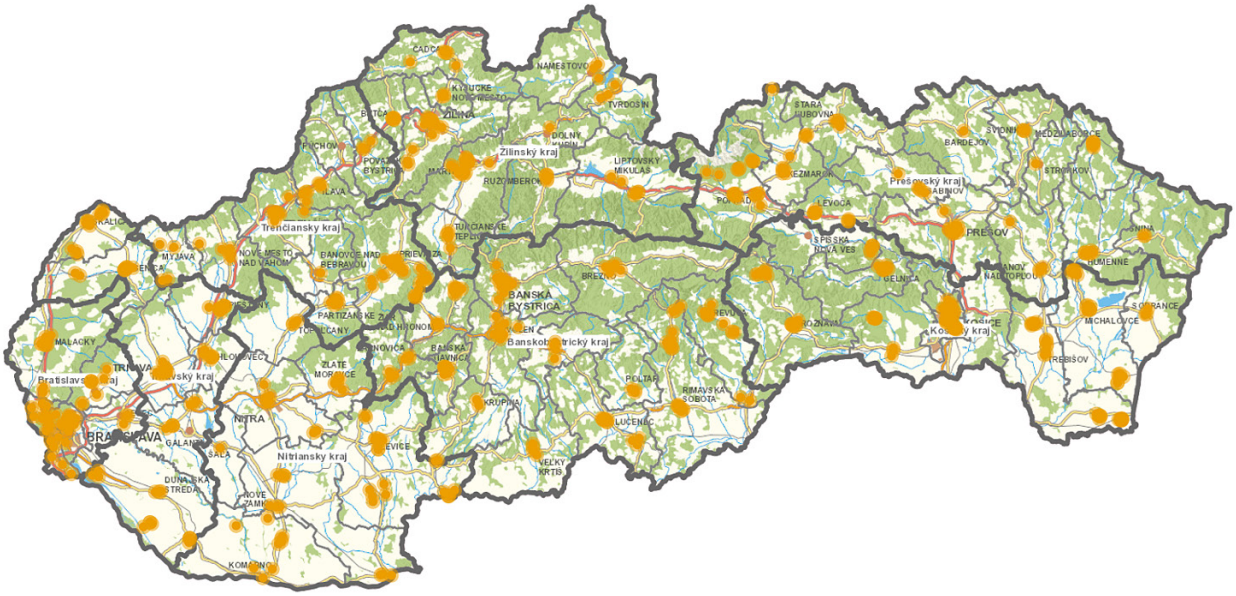

Fig. 2. Brownfields in the Slovak Republic
Source: SAŽP (2024).

Table 1. Mapping of the brownfields in the regional cities in the Slovak Republic

Regional Cities	Number	Number	Trend	Hectare	Hectare	Total area of the city
	2015	2024	2024	2015	2024	%
Bratislava	51	38	↓	221.97	150.16	0.4
Košice	26	39	↑	239.71	319.37	1.3
Prešov	14	9	↓	72.85	60.38	0.9
Žilina	14	11	↓	97.93	79.32	1.0
Nitra	15	6	↓	47.11	11.02	0.1
Banska Bys.	21	14	↓	47.71	39.74	0.4
Trnava	15	10	↓	44.44	41.73	0.6
Trenčín	16	7	↓	29.69	17.52	0.2
Total	172	134		801.41	719.24	
Median	21,5	14,3		100.17	89.90	

Source: own elaboration based on data from SAŽP (2024).

also in loner time – with 2015 – more than 38%. So, we can constant the positive trends in regional cities during that time.

Related to the regional cities, in 2024, 134 brownfields, so again the positive trend of decrease in comparison with 2015. During the 10 years revitalized 38 brownfields in eight regional cities. There is a positive trend of removal and revitalisation in all regional cities, except one – Košice.

In **Košice** there has been an increase of 13 new degraded sites with a total area of 319,37 hectares, which represents 1,3% of the total area of the city. In 2024, the most brownfields were in Košice, on the contrary, the smallest number were in **Nitra and**

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Trenčín (together it represents 0,1–0,2% of both cities area). In these analysed regional cities (Nitra, Trenčín), the number of brownfields has been reduced by more than 50% in comparison years 2015 and 2024. A very positive trend in the removal and revitalisation of brownfields can also be mapped in the capital city of **Bratislava**. There has been over the last 10 years decrease of only 13 brownfields but with the largest area. On the other hand, in **Žilina** these objects with large areas are not revitalised.

In other regional cities during the 10 years, we can identify a slow trend in the removal and revitalisation of degraded sites. This trend can be caused by several factors such as lack of interest from city leaders, problems with changes in the city's zoning plan, the degree of degradation of the building, owner's relations, heritage value, potential of the building, etc.

In the next part of the research, we have focused on some of the mentioned factors. In Table 2 we have summarized our modified scale of evaluating the degree of brownfields into 3 basic levels. The scale characterizes the condition and state of the site and the degree of degradation of the objects and areas and surrounding areas. This scale is based on objective criteria established at the level of the capital city of Bratislava and the Slovak Environmental Agency, which have been modified from 5 to 3 levels for our research.

Table 2. Mapping of brownfields in regional cities of Slovak Republic according to the degree of degradation

Regional Cities	1 Weakly degraded	2 Average degraded	3 Strongly degraded	Total
	Abandoned areas and objects, but preserved	Partly dilapidated areas and objects	Devastated areas and objects	
Bratislava	10	11	17	38
Košice	17	9	13	39
Prešov	4	4	1	9
Žilina	7	3	1	11
Nitra	2	1	3	6
Banska Bys.	5	6	3	14
Trnava	6	3	1	10
Trenčín	0	4	3	7
Total	51	41	42	134

Source: own elaboration.

From the results of mapping the degree of degradation in the regional cities in Slovakia, it's clear that the largest number of brownfields suitable for revitalisation is in Košice (26), Bratislava (21) and Žilina (10) (in Žilina there are total 11 brownfields and 10 are suitable for regeneration).

The highest share of devastated areas and objects is in Nitra (50% of all). A similar situation is also in Trenčín, where we have 7 brownfields and 3 of them are heavily degraded. Heavily degraded brownfields are very challenging to remove and rehabilitate. They require significant investment costs and incentives and very strong social interest and justification. On the contrary, 68,8% of all brownfield sites in all eight regional cities are from the degree of degradation point of view weakly or average degraded and 31,2% strongly degraded.

In Table 3 we evaluated the economic potential of brownfields in the analysed regional cities based on scales that were modified for research purposes. These three levels describe the overall condition of the site. Forecast related to the difficulty of its revitalisation, reuse in terms of ownership, investment costs of the whole process, transportation infrastructure or heritage, and cultural and historical value of buildings and areas are included. These criteria are the result of the authors' own analysis.

1. Level A is characterized by the fact that the objects do not need public financial support, they are capable of revitalisation and regeneration by the owners' own sources. They are well located and settled without liabilities, have few owners, few, or no zoning constraints (historical potential, protection zones) and without contaminations.
2. Level B is characterized by the fact that the objects have identified problems with their owners, are unsettled, and are lightly contaminated. Likewise, there are some zoning constraints. Nevertheless, they have good accessibility and affect the development of the surrounding areas.

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3. Level C is characterized by the fact that the objects are distant from commercial locations and have poor accessibility and infrastructure. They are heavily contaminated, have difficult ownership relations and their development is not possible, or meaningful. Their existence discourages other investments in the surrounding area. Many sources are needed for their revitalisation and this fact determines a strong social interest, reason, and benefits.

Table 3. Mapping of brownfields in regional cities in the Slovak republic according to their economic potential

Regional Cities	A	B	C	Total
Bratislava	21	9	8	38
Košice	29	10	0	39
Prešov	5	3	1	9
Žilina	11	0	0	11
Nitra	4	2	0	6
Banska Bys.	12	2	0	14
Trnava	9	1	0	10
Trenčín	7	0	0	7
Total	98	27	9	134

Source: own elaboration based on data from SAŽP (2024).

From the results, the largest part of the object's requiring revitalisation is in Bratislava, with 8 brownfields. In the other cities, only Prešov identified such a C level. The largest representation in the regional cities are sites belonging to level A. Out of a total of 134 brownfield sites in the county's cities, up to 98 objects fall into category A, which represents 73.1%. There are 27 in category B, which is also considered suitable with economic potential for revitalisation. The economic potential of brownfields in analysed cities is 93,3% (Level A, B). This means that all the cities have sufficient potential for the transformation of their area. Brownfields in Level C are not suitable for revitalisation in terms of economic potential. The biggest barriers related to the revitalisation of the regional cities in the Slovak Republic are illustrated in Fig. 3.

In Bratislava, the biggest barrier is related to the number of owners of the land on which are the sites located. Next is the issue with the environmental burden of objects, which caused significant problems in its possible revitalisation. In Košice there are main obstacles same as in Bratislava – several owners (it is the most visible of all cities, more than 60%). The third city where the number of owners causes issues is Žilina. Whereas in the other regional cities, the same aspect makes up a negligible part of the barriers.

Problems related to the zoning and environmental burden are in Prešov, around 80% of all. Zoning is also the biggest and the only barrier in Nitra – there are no issues with owners, historical values of buildings etc. However, the biggest barrier connected with the historic value of brownfields is in Trnava and Banská Bystrica, together with the problem of environmental

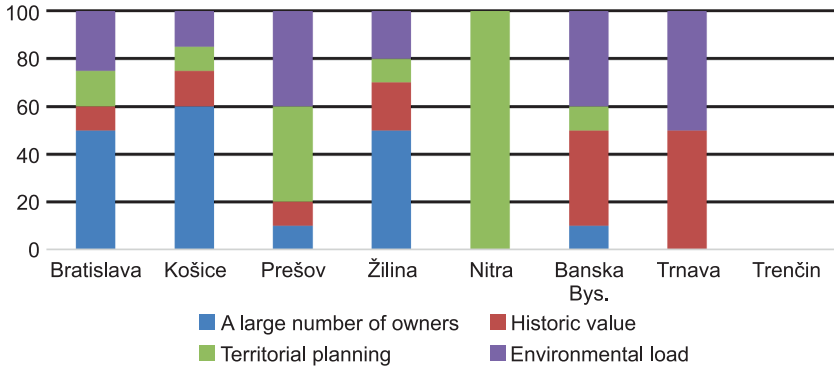

Fig. 3. The biggest barriers in brownfield revitalisation in the territory of regional cities of the Slovak Republic
Source: own elaboration.

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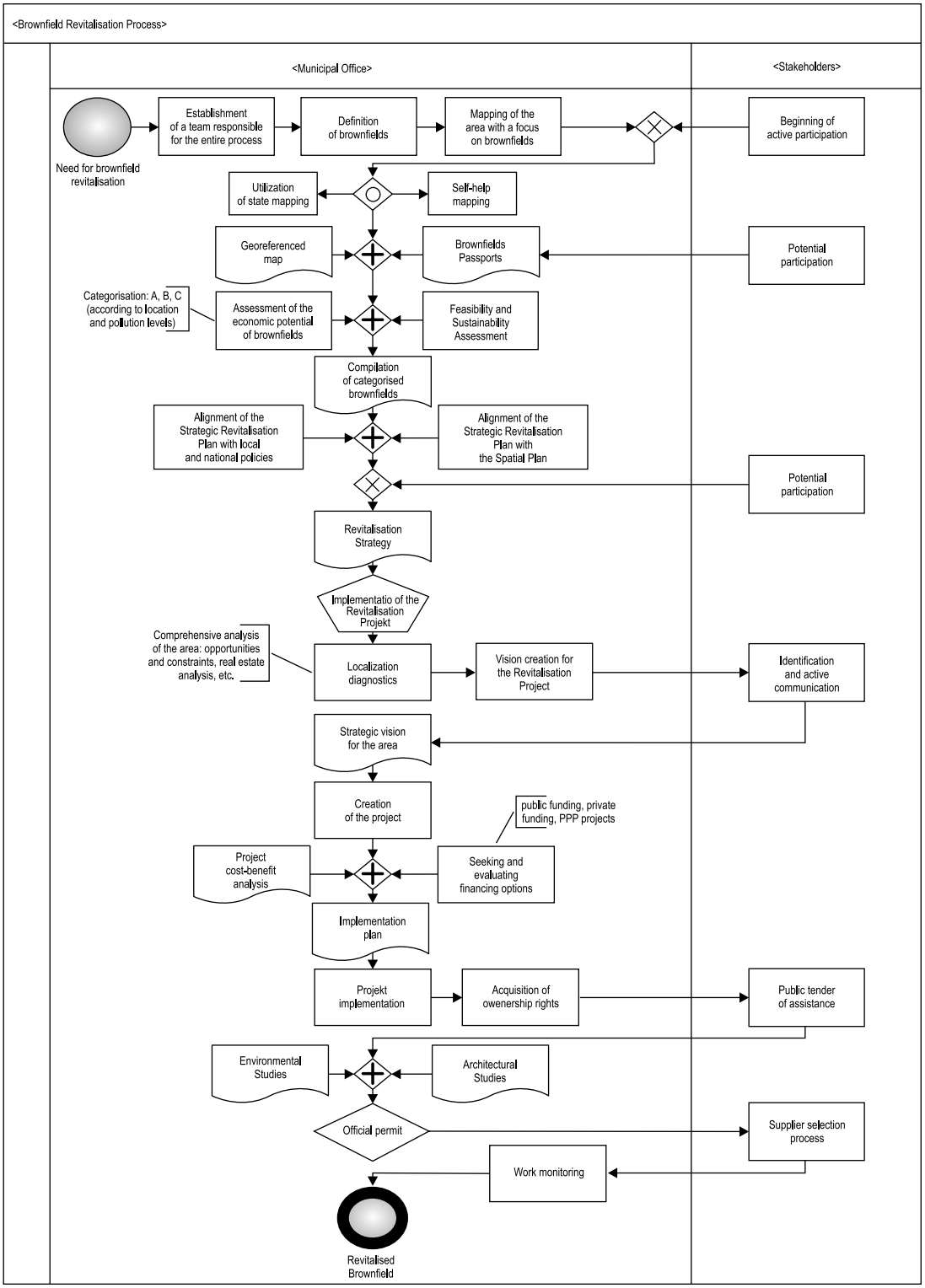

Fig. 4. The Model of Brownfields Revitalisation Process in regional cities in Slovakia
Source: own elaboration.

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burden. Is interesting to see that Trenčín doesn't have to face any problems.

In the next part of the research is focused on the aforementioned optimal model of the brownfield revitalisation process.

The Model of Brownfields Revitalisation Process in regional cities in Slovakia

The Model of Brownfields Revitalisation Process in regional cities in Slovakia is achieved through process modelling as a tool for process management. The modelling process involves replacing a real system with a model using established graphical modelling techniques. The model represents a simplified view of the analysed object, and the main purpose of creating it is to study, understand and optimize its characteristics. The model is created using a process diagram that records the detailed steps of the brownfield revitalisation process. Basic BPMN notation symbols are employed in the modelling process.

The brownfield revitalisation process in Slovakia is under the competence of the Ministry of Transport of the Slovak Republic at the national level. However, this process is mainly dependent on the specific local conditions and possibilities of local governments: political will, financial, personnel, territorial and other possibilities. It is a complicated and complex process that primarily requires initiative from local government authorities. The intention of the model is to create a logical and clear procedure, based on the experience of regional cities, which can help representatives of all local governments in Slovakia to navigate the process (2 890 local governments). The model is created from the point of view of the competence possibilities of the local government in the current conditions and it's presented in figure 4.

This process has two phases. The first phase involves monitoring the area, and the second phase involves the preparation, implementation, and control of the brownfield revitalisation project. Each part of the process is of equal importance in terms of the targeted output, but the most challenging step may be the alignment of the Strategic Revitalisation Plan with the spatial planning documents.

It is important to involve stakeholders (e.g. citizens, neighbourhood associations, architects, historians, environmental experts, urban planners, and developers) in the entire process. However, stakeholder involvement is not always necessary or mandatory (in the current context). Based on the research, it can be concluded that local governments should use local stakeholder involvement as much as possible. Their involvement contributes to strengthening participation and democratic principles. Local authorities gain many benefits from involvement: better insight and understanding of local needs and expectations, new visions for revitalisation solutions, avoiding potential conflicts during and after the revitalisation process, promoting awareness and satisfaction of residents, benefiting from the experience and expertise of external experts, gaining valuable partners for the future, etc.

It can be concluded that the Model of Brownfields Revitalisation Process in regional cities in Slovakia can serve as a methodological guide for local government representatives. This process is not comprehensively described in any legal regulation and is the result of recommendations from practice. The model identifies the main steps of the process, where stakeholder participation is a key factor for the success of a revitalisation project (However, in the interest of effectively setting up the process, it is advisable to involve them throughout the entire process.).

SUMMARY

A brownfield is defined as a disused, dilapidated or environmentally affected property that lost its original use. The main vision should be to transform brownfields in the Slovak Republic into economically productive, ecologically, and socially healthy areas. It can be done thanks to coordinated efforts at all levels of public administration, with cooperation with private sector and non-profit organizations. Brownfield revitalisation should be one of the basic goals of urban development. It should be included in various kinds of conceptual documents, for example in the Concept of Urban housing policy, Urban plan, etc.

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However, half of the regional cities do not even have this concept defined in their strategic documents, or it is not clear that this is an object suitable for revitalisation. Although there is some legislation affecting brownfields, it is often insufficiently specific and impractical. There is no obligation to systematically identify brownfield sites and include them in strategic development plans at local and regional level. Currently, brownfields are often identified only as part of broader spatial plans, and this is not sufficient to effectively address their revitalisation. The definition and mapping of these objects in their territory as well as the way of their transformation should be a basic step in solving this problem in the territory of the city. These objects could subsequently become a suitable place for an investor (FDI), who would prefer them to an investment in a green field. Although the construction of new buildings on vacant areas is usually cheaper than the possibility of converting brownfields into production units, nevertheless, the direct revitalisation of brownfields can pay off from the point of view of the sustainability of territorial development. The restoration of abandoned properties often also brings about an improvement in the level of public safety, the transport accessibility of the territory, and the arrival of new business activities that will improve the services provided in the region.

However, there is a huge difference in the possibilities, opportunities, and approaches to face this complex issue. Local governments in Slovakia face a lack of resources (financial, professional and personnel) to address brownfields issues. For example, financing such as EU programmes or funds for revitalisation is usually limited or administratively difficult. There are not sufficiently developed methodological guidelines to help cities and municipalities identify, analyse and revitalise brownfields. There is also no central database of brownfields, except in the capital city of Bratislava, which would allow better coordination and information sharing. However, there is often a lack of willingness and courage at the local level to embark on such projects, as they do not bring immediate results. In the acute programming period 2021–2026, a call (2Q-2024) from the Just Transition Fund of the Ministry of Investment, Regional Development and Informatisation of the Slovak Republic has been launched for the rehabilitation and change of use of industrial sites (brownfields) with a funding allocation of EUR 5 000 000. This call could help municipalities with the process of financially challenging the revitalisation of brownfields on their territory.

Growing urban centres with favourable locations are in different positions as smaller municipalities outside of the strategic location. Areas like this are often affected by population decrease and high unemployment rate. Nevertheless, this fact does not mean that disadvantaged villages or towns should take a latent approach to handling their issues. They should be much more involved in promotion, revitalisation, reuse, or the elimination of negative impacts on them. With the ever-growing urbanization and expansion of individual cities, the issue of brownfields, which are often located in strategic locations of city centres, will play an important role in their further development, so that they serve the needs of the city and its residents.

The research included an analysis of a database of brownfield sites, the use of an indicator of the status and protection of biodiversity, a literature search, a relational comparison, a focused interview with city representatives, and process modelling. The results of the research show that uncovering these findings generates a wealth of new information useful in interpreting the current state of degraded sites in Slovakia. These new insights can subsequently contribute to the regeneration of urban areas and improve urban life.

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valuable insights into the current status of degraded sites in Slovakia, which may subsequently contribute to the regeneration of urban areas and the improvement of urban life.

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