

The Revival of Industrial Heritage _ Business and Production Complex "Trepča"

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ABSTRACT

The subject of this paper is the urban regeneration of Business and Production Complex "Trepča", its industrial heritage, and the possibility of its renewal. The focus is placed on the industrial complex that is territorially situated on the boundary zones of Zvečan and Kosovska Mitrovica, which has a complete physical structure that has lost its function, but has a historical, social, and architectural value today. The paper examines conceptual solutions and the proposed model for future revitalisation of the Business and Production Complex "Trepča" from the theoretical and methodological levels, as well as applied ways of improving business-production complexes in international practice in the field of regeneration of neglected industrial systems. The approach and processes of urban regeneration, in the context of both the individual complexes and the whole Business and Production System "Trepča", can be revived by a collaborative programming model and transformed into new forms of industrial business according to the model of a technology park, whereby successful realisation requires the gathering and compliance of all stakeholders at once, from the international, regional, national, and local-city level. The modern model of the technological park, as a result of the urban regeneration of Business and Production Complex "Trepča" is a unique example of a comprehensive spatial and urban planning solution for sustainable development of this area.

KEYWORDS

industrial heritage, Business and Production Complex "Trepča" (BPC Trepča), urban regeneration, transformation, technology park

1 Introduction

This paper examines, on a theoretical basis, and on the basis of experiences of industrial heritage as the driver of urban renewal, the possibilities of the transformation of BPC “Trepča” as an urban area, through the categorisation of the potentials of an abandoned, or partially abandoned, industrial site, which can serve as an initial step in the process of reuse.

In order to categorise some industrial objects or artefacts as industrial heritage, they need to possess some values, in terms of having marked some space or society in a certain period, whether in architectural, social, technological, or historical terms. Industrial heritage consists of industrial buildings, but also machines, mines, infrastructure, housing facilities built for workers, and similar. It is the memory of the life of workers, often a symbol of progress and pride for the local community, a part of local history and identity, which nowadays means that many buildings represent important landmarks in the city (TICCIH, 2003). Although stories about the difficult position of the working class were linked to the period of industrialisation, many industrialists were trying to improve the living conditions of workers, so the construction of factories was followed by the construction of apartments, public buildings such as bathrooms, schools, and hospitals, and the industry has also influenced the development of infrastructure, and therefore the overall development of cities. Many of the old industrial plants and machines are still preserved and can be used to follow the development of science and technology. All these values and potentials of industrial heritage have been used in urban renewal in the last few decades, especially in cities that have experienced a decline in industry and economy, and are now looking for new development options (Cizler, 2011).

BPC “Trepča” was a source of progress for a long time, not only for Mitrovica and Zvečan, but for the wider region. Its value extends to a symbolic meaning of great value for the local population. BPC “Trepča” is an important benchmark in the region, and the role of this industrial heritage is an option for new regional urban development and promotion aiming at achieving social and economic benefits.

2 Modern Experience and Practice of Urban Regeneration

There are many examples of reuse and regeneration of abandoned industrial complexes in the world, where the potentials of these spaces are realised in different ways. In order to attract investment, areas that once relied on industry had to re-create their own identity and dominant function. Culture is considered a magical substitute for all factories and warehouses, as an instrument that will create a new image of urban environment making the city more attractive to capital and professionals (Hall, 2000). In this way, the industrial heritage of the city is used for the development of cultural and educational tourism. The development of

this type of tourism involves the opening of the Museum of Industry and the integration of cultural and educational routes and programmes that connect industrial monuments, such as the European Cultural Routes and the European Route of Industrial Heritage - ERIH.

A good example of the regeneration of an industrial site in a tourist and recreational centre is Castlefield in Manchester, England, established in 1982. The history of this site dates back to the Roman period. In the industrial sense, the significance of this location is reflected in the first built industrial channel in the world in 1764, and the last station of the first passenger train, built at this location in 1830, with the first railroad warehouses built in 1831. This area was designated for conservation in 1980 and was granted the status of the first United Kingdom Urban Heritage Park in 1982. The area, marked by the beginning of the industrial revolution, became defunct and was abandoned during the 20th century, exactly when the conversation about this significant space began. Although most of the facilities were devastated, the potential of this area was recognised and acknowledged by the local plan of 1982, which was actively supported by the Museum of Science and Industry. £40 million sterling from the public sector was invested in the first park of urban heritage and its regeneration. The Central Manchester Development Corporation was established in 1988, and had the task of designing a regeneration policy for about 187 hectares of the central Manchester area, as well as integrating the private and public sector in the regeneration process. The entire Castlefield development policy was based on strengthening tourism, consolidating and supporting political activities, as well as establishing a housing community. It was planned to regenerate the objects, channels, viaducts, and open spaces in accordance with high standards of urban design. The former industrial area is now fully revived with new functions. In this area, warehouses have been turned into modern apartments, bars and catering facilities, and television studios, as well as several radio stations. A well-known music festival is also held here. A number of archaeological excavations were performed here, which revealed numerous data on the earlier history of the city, as well as the emergence of Manchester. Today, this revitalised part of the city is an obligatory tourist attraction, as well as a summer destination much visited by both tourists and by residents of Manchester. Industrial buildings of red brick construction, interesting bridges, viaducts and canals, Roman excavations (fortification and granary), the Museum of Science and Industry, and numerous bars and restaurants, have fully revived the former industrial space that testifies to the roots of the city of Manchester, the industrial revolution, and the first passenger railroad in the world.

Successful examples of the transformation of industrial sites are St. Katharine Docks in London, where the abandoned storage facilities were closed in 1968 due to insufficient capacity and inability to handle contemporary ships. They have been transformed into modern office buildings, while some warehouses were later transformed into luxury apartments. The regeneration of the London docks was primarily initiated for economic and social reasons, but on that occasion, the industrial heritage of a large part of eastern London was preserved.

When the regeneration of this area began, many facilities had already been destroyed and demolished, and for the remaining facilities, the view was taken that they should be preserved and integrated into a massive investment programme, in order to contribute to the constant regeneration of the area and retain the memory of “The Greatest Port in the World”. Donations and legal agreements enabled the preservation of the most of the buildings of historical significance. During regeneration, the entire area was divided into eighteen conservation areas, groups of buildings, and land and water areas. Six of these areas were classified as areas of national importance. Some objects, such as Wapping, Limehouse, Bermondsey, and Rotherhithe, were protected by conservation. The buildings and areas protected by conservation have maintained the character of industrial sites. All newly designed objects in this area were of a high design standard and gave a positive contribution to the conservation area and the character of the area. Preservation of the architectural and industrial heritage of the docklands was accepted as a key part of the London Docks Rehabilitation Strategy.

The Czech Republic, a former socialist country, possesses many industrial facilities, and has a highly developed industry, primarily in beer and sugar. It took a long time for the Czech Republic to change perspective regarding industrial heritage and to recognise the potential of abandoned industrial buildings. The Czech Republic has provided good examples of the transformation of abandoned former industrial facilities. Vanjkova, a former machine factory of Friedrich Vanjek’s in Brno, was registered in 1992 on the list of significant monuments of the architecture of the Czech Republic. As a very important symbol of innovation and technological progress of the city and the area that was originally outside the city, it later found itself in the central zone by means of the expansion of the city core. The local population - the Citizens’ Association Vanjkova, in cooperation with the non-governmental organisation from New York, Project for Public Space (PPS), played the main role in the regeneration of this complex, which began in 1994. The Foundation was set up in the same year in order to support the idea of the reconstruction and revitalisation of the complex, and its conversion to cultural, educational, and commercial purposes. This foundation dealt with the information and animation of other participants and stakeholders, and during the long-term work, it collected funds from the City of Brno, the Open Society Fund, and the Partnership Foundation. In addition, they organised many workshops and exhibitions in order to introduce many visitors to their objective. Thus, the idea of regeneration was joined by many other social and interest groups, as well as institutions. In 1997, they launched the pollution research in the Environmental Protection Department of the City of Brno, which confirmed suspicions about the level of pollution and threats of even higher levels of pollution. Through joint work, associations began reconstruction and reconstructed the facility bit by bit, with minimal interventions. The work of students at workshops, and professors from New York, Dortmund, and Vienna, crystallised the idea of the future purpose of the building: the modelling room and the moulding room were kept for non-commercial purposes while machine workshops and smelters were converted into commercial facilities. Only

when the issue of ownership was solved, an investor emerged. With the activities of the associations, the revitalisation project included not only the local population, local authorities and investors, but also experts from around the world, and their active participation contributed to the quality of the project. The whole building has been turned into a large mall; only the mechanical workshop and the administrative building have been retained, while the facades of the moulding room and smelter have been integrated into the new construction. A former mechanical workshop was equipped with a multi-purpose hall, and a public competition was announced for its use. The association that was the initiator of the entire project received a space on the ground floor of a former smelter, with a long-term lease under very favourable conditions.

The salon Vanjkova, a space for the use of the NGOs of Brno and its surroundings, was also opened, as well as the information centre, the cafe club, shops selling products from the workshops, the hall for non-profit actions, and many open public spaces within the complex.

Industrial heritage can be used to improve the ecological image of the city and neutralise the experience of BPC "Trepča" as an ecological black mark. In recent times, ecology was the most important problem of the city, and this can be a motive for future strategic development. In the time of global warming, increased resource consumption and waste production, the reuse of objects allows resources to be saved. Preservation of old buildings prevents construction on green and arable land. The Emšer Regional Park, in a large former industrial area of Germany, spans 116 km in the east-west direction and 67 km north-south, and has 53 towns. The main reconstruction strategy was to connect industrial buildings and nature to a continuous network - a park where green surfaces interweave with industrial remains that have been given new functions. This example is significant due to its integrative approach to renewal and the great commitment to the issue of ecology. It shows that even polluted industrial areas can be converted into green and sustainable areas, with the preservation of the material remnants of the former industry. Environmental issues in this project were as important as the economic and functional, and their treatment was consistently implemented in all aspects of planning, design, and construction (for example, using clean energy sources, rainwater utilisation, healing the soil, etc.) (Bajić-Brković, 2009). Furthermore, this project shows how a negative perception of places with a long industrial history can be overcome. The above-mentioned methods of promotion and re-use of industrial heritage could be applied to the example of "Trepča", together with measures such as the introduction of filters, emission control, afforestation, and solutions for waste water, which would all contribute to solving the ecological situation in the city.



FIG. 2.1 Position of the BPC "Trepča"-
wider area



FIG. 2.2 Position of the BPC "Trepča"-
inner area

3 **Business and Production Complex "Trepča" - Formation, Development, State**

From its very formation, the Business and Production Complex "Trepča" was located in the crude material resource core of the Kosovo-Moravian region. It was created on the basis of its original raw material capacities and developed into a mega-structural production system, which was the backbone of the development, not only the significant for the region, but for Serbia as the whole, and indeed the whole Balkan region. In some of its segments, it even developed into a business-production network with elements of European and world importance. The head office of the business and production system "Trepča" is located in Zvečan. The municipality of Zvečan is located in the north of Kosovo and Metohija, in the Kosovo basin of the Ibar River, which is bounded by the volcanic cone of Zvečan, Mali Zvečan, Sokolica, and the Majdan mountain in the southeast. The municipality is surrounded by the slopes of Kopaonik, Mokra Gora, and Rogozna mountains. Zvečan has a favourable transit position as it has a connection with central Serbia through Leposavic, with central Kosovo through Kosovska Mitrovica, and with Montenegro through Zubin Potok.

The business and production system "Trepča" was organised through mines and flotations, lead and zinc metallurgies, chemical product factories, and gold and silver haberdashery which are located in different areas of Kosovo and Metohija.

The Kosovo-Morava mining area is very old. The settlements around the mines in which objects from the Roman era were found testify that even the Romans exploited the ore in these areas. Exploitation of mineral resources in this area began in 1303, in the time of King Milutin (1282-1321), and lasted until the end of the 17th century. Between the two world wars, the British company - Trepča Mines Limited - started the works in the Trepča area in 1927, opening the mine in 1930 and constructing a lead smelter in Zvečan in 1940. After the Second World War, its property

was nationalised and a Mining-Metallurgical-Chemical Combine of Lead and Zinc Trepča was made, which, at one time, employed about 20,000 workers and produced about 70% of the mineral resources of the former Yugoslavia. Due to the specific situation in that part of Kosovo, most of the Trepča combine is not operational, and has the added problem of obsolete and worn out equipment.

Business and Production Complex “Trepča” is an integral part of this industrial giant and represents an industrial complex of extinguished production located on the edge zones of the municipalities of Zvečan and Kosovska Mitrovica, along the main road connecting them, and surrounded by the Ibar River.

3.1 BPC “Trepča”: Problematic–Spatial Situation on the Ground

The causes that led to the decline of BPC “Trepča” have been shaped by complex circumstances, which took place over time in the surroundings of this area, more intensively in the last three decades. These causes can be seen from various aspects, especially the technical and technological. The process of abandoning the BPC “Trepča” occurred as a result of accelerated modern technical and technological development, changes in political and doctrinal approaches to urban and economic development, social, demographic, economic, and built structures, and the disappearance of entire economic branches, plants, market constraints, and the emigration of qualified labour. In the end, the process of transformation of the socio-economic order that has been ongoing since the 1990s, and especially after 1998, has led to its abandonment, and the insufficient and inadequate use of this industrial system as a whole.



FIG. 3.1 Business and Production Complex “Trepča”



FIG. 3.2 Facilities within the BPC
"Trepča"

After 2000, this industrial complex became non-productive and now accepted tertiary activities while production plants were physically collapsing, and the equipment became unusable and obsolete in technical and technological terms.

The area in which the Business and Production Complex "Trepča" is located includes three functional units: business-technical block, production and technology block, and a waste ash-gravel tailings area. The business-technical block includes the administration building, and the institute's building, or Research and Design Centre. Both buildings are functional but with a reduced capacity of employees. The production and technological block or lead metallurgy includes a smelter with a lead pellet, a refinery, and a recycling plant for accumulative waste, as well as a power plant. Within the lead metallurgy, only the recycling plant for accumulative waste is periodically operational. Two chimneys that are part of the lead metallurgy are not operational. In the immediate environment, in direct contact with the industrial complex, is the landfill of waste ash-gravel. This landfill represents potential sources of environmental pollution, and it is very interesting from the aspect of valorisation.

The area in which the BPC "Trepča" is located is shadowed by the ecological load that was caused by the pollution produced by the previous method of use. The intensity of the pollution of this location depended on the industrial activity that was previously performed in that area, as the production processes produced by-products, and their consequences were reflected on health and the environment. In the period when the BPC "Trepča" was in the process of production, depending on the workload of the production facilities, huge amounts of pollutants and other toxic gases, ash, soot, tailings, and slag from flotation were released, which have endangered and degraded all elements of the eco-system of working and living environments. Bearing in mind the dominant position of urban parts of the city, the

north-south direction, which is also the dominant direction of airflow, meant that the municipality of Kosovska Mitrovica was exposed to a number of pollutants emitted by these plants from industrial sources as products of industrial metabolism. Unofficial sources say that this level of pollution is significantly lower today.

This industrial complex, with its physical built structure that is typical of the industrial character of the 1970s and 1980s, still has a dominant visual effect in relation to the surrounding architecture and its accompanying structures. Furthermore, it is located along the strongest transit road, which contributes to the experience of this complex as “the city in the city” – complete and isolated. It has all the archetypal, constitutive, and symbolic spatial elements of the city: several entrance gates, fence-walls, a street network, and typologically different objects and common open spaces. An authentic design of the facility within the fence makes it a material and immaterial testimony of an epoch in the disappearance.

The image of the damaged area is completed by the “medieval city as a whole that was the expression of the characteristics of the Middle Age in its spatial organization with its own individuality, where the correlation of forms in the city as well as of the city and nature is the imperative of fundamental principles” (Božović, 2015, pp. 152), where, simultaneously with an industrial complex, it forms a comprehensive totality - a *place* that, according to local outlook, has a special identity.



FIG. 3.3 Panoramic view of the BPC
“Trepča”

4 Theoretical and Methodological Basis of Urban Regeneration

Urban regeneration in its essential meaning is a comprehensive and integrative vision and set of activities aimed at solving urban problems and achieving the required improvement in environmental, social, economic, and technological and physical conditions in space (Perić, 2013).

The main direction of urban regeneration is towards improving conditions in the space, through the introduction of different types of transformation, such as:

- Economic, in terms of introducing new production activities, new companies, and new managerial models of the organisation
- Ecological, improvement of environmental conditions by reducing or “abolishing” the negative effects of waste materials and degradation of the environment
- Urban-planning, in the form of modernisation of urban spaces, restructuring of urban space, renovation of building structures, as well as redesigning of all the engaged space
- Social measures in the form of improving living conditions, as well as employment opportunities

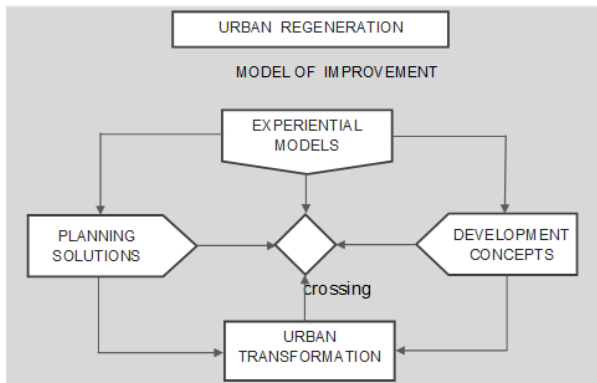


FIG. 4.1 Model improvements of urban regeneration

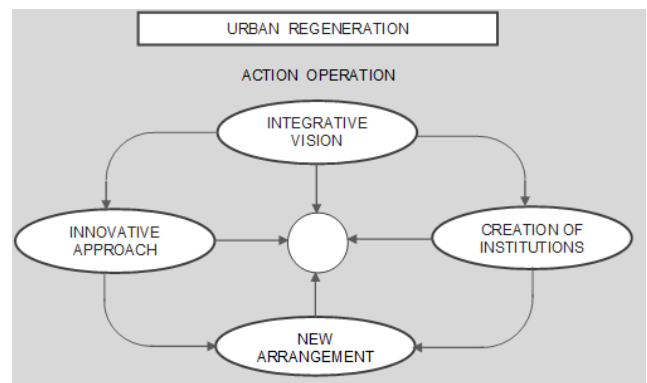


FIG. 4.2 Action operations of urban regeneration

It is important to note that urban regeneration represents the basic vision and form, instrument and mechanism of the sustainable development model, from which it follows that the essential meaning of urban regeneration is management, rehabilitation, environmental soundness, economic viability, institutional strength, and social acceptability within a certain regional context (RESCUE, 2003). In order to study trends and improvements, and the development of a region, it is worth mentioning the definition of urban regeneration by the Toledo Declaration (IMMUD, 2010) where the term “integrated” urban regeneration is introduced as a key approach in creating a “model of an intelligent, sustainable and social city”, which represents an introduction to the design of the “creative city” model (Rivas & Bravo, 2013).

Methodical-modelling coverage of urban regeneration can be seen as:

- comprehensive vision of future urban model in space;
- integrative activities aimed at achieving the previous vision;
- urban transformation of structure aiming at improving the urban conditions;
- improvement of economic, social, and technological living conditions;
- innovative approach, through a range of different formulations of various development policies;
- improving institutional forms of action;
- expanding the offer of procedure of arranging various stakeholders, interested stakeholders, and other actors in the decision-making process;
- changing the development policy and conceiving a new urban policy of integrated development, by introducing new (creative) development concepts;
- introduction of a land policy concept for the purpose of rational management of the territory;
- comprehensive transformation of existing urban structures in order to improve the economic, social, and environmental development requirements; and
- offering new planning solutions at all urban levels, and regeneration such as:
 - reorganisation of purpose, activities, and contents
 - reconstruction and restructuring of physical and technological structures
 - reprogramming
 - remodelling... and all other forms of urban renewal.

4.1 Possible Directions of Urban Regeneration of the Industrial Heritage BPC “Trepča”

Business and Production Complex “Trepča” represents a “passivated” complex; though production has stopped, the intention of being able to restart it soon has not been abandoned. Therefore, in the present and in the near future, it may become one of the further explored “theoretical models”, interpretations, ways of solving and revealing developmental strategies for improving this area, such as:

- **Industrial heritage treatment model**, which, according to the large number of experience models, represents a consequence of the accelerated development of cities and even more accelerated technological development of industrial production. This resulted in either lagging behind in the monitoring of industrial innovations so industrial production became obsolete, or due to the rapid expansion of cities, there was an annihilation of a suitable location.
- **Brownfield location model** implies land in urbanised areas that was previously built and used for industrial or production purposes, to be abandoned in the meantime, thus adversely affecting its wider environment in an ecological, economic, aesthetic, psychological, and social sense. It is important to note that the negative effects of brownfield

locations on the environment in ecological terms are mainly studied in developed countries, while the economic and social risks of brownfields in a sustainable urban environment are expressed within the context of developing countries. Regeneration of brownfield locations is a priority due to the decontamination of the specified zone and the preservation of the wider area, as well as public health in general (Damjanovic, 2008).

- **The model of industrial-technological-scientific parks** primarily contains the concept of urban design of production areas and zones and their development into highly regulated urban areas with multifunctional facilities in the area, all with the aim of forming a business complex that includes, in addition to scientific- educational facilities, accommodation-urban and business-distribution facilities.
- **The recycling process model** is based on modern technology capabilities and primarily includes the recycling of waste materials and their reconversion into “new raw materials”, as well as the ecological revival of the entire area, which is primarily based on concepts and models of re-greening and revitalisation of natural resources following the examples of “green” architecture and urban spaces.
- **The model of market-location treatment** of the business and production complex and their evaluations of market value and comparative value, which it possesses in relation to the natural-raw material, technological-entrepreneurial, and social-qualitative resources that exist in that area.

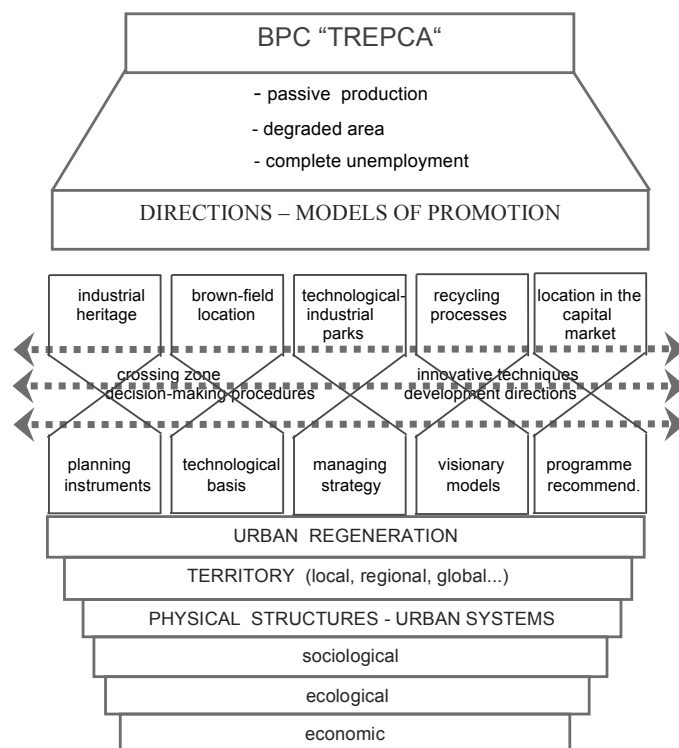


FIG. 4.3 The proposed structure of the regeneration process of BPC "Trepča"

All of the above elements are absolutely integral and necessary parts of the approach to urban regeneration comprehensiveness in the relation to:

- A technological-production basis
- B types and forms of planning
- C managing strategic scenarios
- D relevance to local, regional, and international level

4.2 Systematic Approach to Urban Regeneration of BPC “Trepča”

In the theoretical-model classification, BPC “Trepča”, by its characteristics, is the closest to the model that includes the term brownfield location, in terms of the importance of coverage, content, and treatment of problems of industrial heritage.

The basic approach to solving brownfield location is a sustainable development model that is considered a basic component in order to achieve sustainable urban regeneration, which implies sustainable land use in the first place. What makes the brownfield regeneration distinct to other forms of urban regeneration is the complexity of the process itself, which is particularly reflected in the demand for compliance of interests of different stakeholders, as well as the integration of all sectors, disciplines, and institutions (Garb & Jackson, 2010). Sustainable brownfield location regeneration involves the management, rehabilitation, and appropriate repurposing of the brownfield, which ensures the achievement of the goal, and meets the needs of present and future generations in an environmentally sound, economically viable, institutionally strong, and socially acceptable way within a particular regional context (Perovic & Kurtovic-Folic, 2012).

Problems and obstacles in the revitalisation of brownfield locations are numerous, such as lack of education, information and experience, coordination and motivation, and insufficient understanding of the size and essence of the brownfield problem. This problem relates to the economic and social aspect, low level of political commitment to land reuse, lack of reuse strategy, lack of cooperation and exchange of information between different sectors and institutions, lack of potential interest in the regeneration of brown-field sites, investors, local administrative bodies and representatives of ministries, absence of unique records of these locations as well as records in general, absence of analytical instruments and principles for determining priority investments in locations, insufficient financial instruments and incentives, unresolved property-legal relations, environmental burdens and damage, and lack of tools for solving, which is evident in the case of BPC “Trepča”.

A systematic approach to BPC regeneration requires the compliance of the interests of different stakeholders, and involves the integration of different sectors, disciplines, and institutions. The regeneration of this industrial complex along with the entire physical structure should be carried out within the framework of plans and strategies, at the regional, state, and local levels. Establishing the right link, linking the individual and creating common objectives of all stakeholders and actors of revitalisation, co-organisational planning, and monitoring and coordination of the regeneration process, are key elements of the successful realisation of BPC "Trepča". In order to efficiently conduct planning according to the principle of collaborative approach, it is very important to strengthen the horizontal and vertical ties of all participants in the planning process, where the competencies of all participants are clearly defined, and to harmonise the planning policy among different sectors and disciplines. It is very important to make connections at the national, regional, and local levels, in the state, regional, and local self-governments, agencies, and between all institutions, governmental and non-governmental organisations, citizens' associations, citizens' representatives, investors, construction companies, foundations, etc.

In case of the regeneration of BPC "Trepča" as a brownfield site, ecological analysis of site pollution, assessment of the value and creditworthiness of facilities should be made, on the basis of which it would be decided whether the objects will be preserved or demolished. After that, measures would be taken to eliminate possible pollution, and then proceed to possible demolition. If the buildings are not demolished, the next step is their regeneration, by reconstruction, conversion, and other methods that will ensure new life will be brought to the location in new conditions, and in accordance with urban plans, strategies and action plans that are primarily focused on the needs of the population and the interests of all actors in the regeneration. A strategy of preservation instead of demolition, adaptation, conversion and reuse – in other words, transformation – would have great significance for the environment and the region where this industrial complex is located. It would also prevent further suffocation of valuable surfaces with new buildings, while preserving and reusing materials from historical buildings, saving the energy that is required for demolition and rebuilding, and prevent the accumulation of large amounts of waste material that needs to be removed. In times of increased costs of energy production and the use of natural resources as well as construction materials, where there are conditions of increased waste production, a completely different approach is needed: energy savings, preservation of valuable resources, and reduction and rationalisation of waste. In the long run, preservation and careful management of resources would improve the environment and significantly reduce costs.

A very good example of industrial heritage regeneration is the attitude of the administration of Liverpool City, which is clear from the noteworthy Liverpool Management Plan of 2003. Conscious of the historical and industrial significance of the city, they preserve and regenerate their industrial heritage. Significant funds in foreign countries are given to the

purpose of registering and maintaining national cultural heritage, and are used for analysis, projects, and heritage interventions, such as the Historic Preservation Fund HPF, founded by the US government. There are also numerous non-governmental organisations whose goal is the registration and care of the heritage, the Save organisation in England, as well as Europa Nostra, which brings together several European countries. In 1995, the first foundation dedicated to the protection of industrial culture monuments and their re-use was established in Germany – the North Rhine-Westphalia Foundation.

4.3 Technological – Scientific – Industrial Park: Urban Transformation Model of BPC “Trepča”

The modern model of technology parks represents the creation of new - and transformation of existing - industrial complexes (which is the nearest closest thing to BPC “Trepča”) into multifunctional business-production zones. These are based on the urban concept of organising, arranging, and designing spaces, which, in addition to production, necessarily include science, development, business, distribution, marketing, as well as the introduction of city support services, housing for employees, central functions, recreation, sports, culture, entertainment, and thus could be seen as a small city in itself.

The Technology Park is a new form of entrepreneurial infrastructure (Petković, 2006). Physical infrastructure (buildings and other regulated business premises), science (research centres, innovative centres, laboratories, etc.) are functionally connected within it, along with new business entities (new small enterprises, new production units of large corporations, financial and accounting services, etc.), and is the most recognisable form of transformation of the BPC “Trepča” at the moment.

The first technological parks appeared in the USA in the middle of the 20th century. Today, they are being developed in both developed and developing countries, representing attempts to move and encourage the development of entrepreneurship through the establishment of knowledge - based small and medium-sized enterprises within a country (Ilic, 2006). Therefore, the participation of scientists from the institute and university is almost obligatory in these parks. They introduce innovations (the latest technological achievements) into enterprises, raise their competitiveness in the market and form incubation centres (for the development of new enterprises), and at the same time transform universities from classical and lecture-oriented to entrepreneurial. They are considered the most profitable and most effective forms of development of the area, which function on the principles of innovation and technology transfer. This is a suitable model as there is a University in the vicinity of BPC “Trepča”, in Kosovska Mitrovica, which has top professional staff in all areas. This urban model of transformation or *re-activation* is closest to reality and it would gradually, in the best and fastest way, solve the problem of the existence of the population and economically re-activate the entire area.

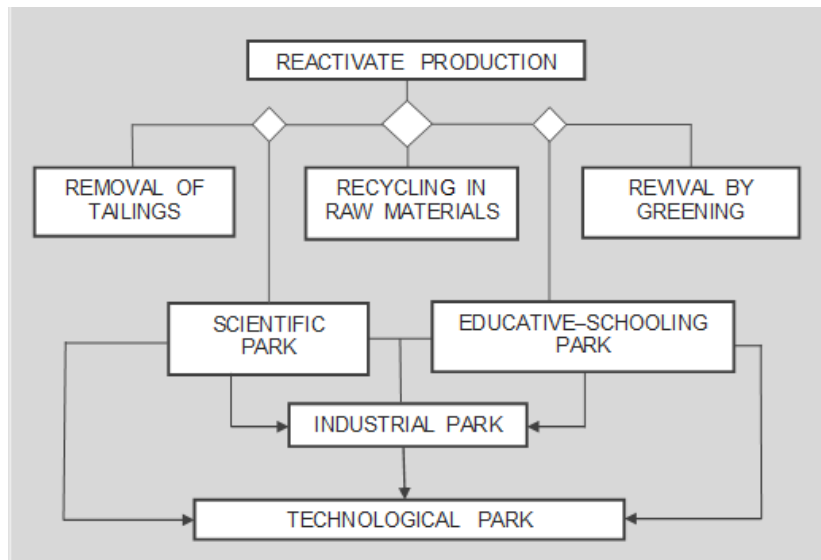


FIG. 4.4 The model-based development concept of the BPC "Trepča"

Development directions would be oriented towards the following model concepts:

- Improvement in the direction of modernisation of existing tertiary technological production and "deconstruction" of existing obsolete business structures;
- Introduction of technological forms of impermeable filters, large protective capacities for environmental protection;
- Establishment of a Research and Development Centre for the improvement of production and operations in the spirit of modern technologies of industrial production;
- Converting the whole complex into a technology park, which would include a part of the "waste tailings" along with environmental protection interventions;
- Introduction of educational function of technical and technological development, precisely because of the proximity of the existing University Centre in Kosovska Mitrovica;
- Converting the entire complex into a reception camp in the form of a university campus (in the area of the recycled "waste" zone);
- Formation of accompanying service - cultural contents with the possibility of accommodation capacities for young researchers;
- Forming accommodation capacities for business management (and possibly for employees);
- Development and establishment of an institution for inter-regional development.

5 Conclusion

The vulnerability of industrial heritage can lead to destruction or improper use, so it is important to point out the importance and possibilities of its conservation and reuse. The aim of the paper was to point out the problem and examine the possible ways of restoring the industrial heritage of BPC "Trepča". In the context of studying from the theoretical and methodological level, and having already applied ways of improving business and production complexes in international practice, it can be seen that similar industrial heritage restoration principles were applied in most projects. Current trends in this area are mainly based on retaining and promoting the aesthetics of industrial spaces, with the introduction of new activities. Thus, new functions often involve a combination of commercial and cultural content, the former to achieve economic sustainability, the latter in the aforementioned goal of promoting the industrial past and creating a particular image. The actors involved in the reconstruction process are different, but implementation of projects by local communities or the creative sector has proven to be a frequent and good example. In all renewable projects, industrial heritage has been recognised as a value and potential for the sustainable development of the local community. Accordingly, they seek to preserve as much of the original remains of the industry as possible and, in general, to preserve the specific characteristics of the space. This is the possible direction to be taken in the transformation of the BPC "Trepča", which would be directed towards modern forms of industrial operation, according to the technology park model. The modern model of technological parks represents the creation of new, and transformation of existing, industrial complexes, which is the nearest applicable example for BPC "Trepča" to follow. It would mean its conversion to multifunctional business-production zones, based on the urban concept of organising, arranging, and designing spaces which, in addition to production, necessarily includes science, development, business, distribution, marketing, as well as the introduction of supporting city service, housing for employees, central functions, recreation, sports, culture, entertainment, which would represent the design of the creative city model.

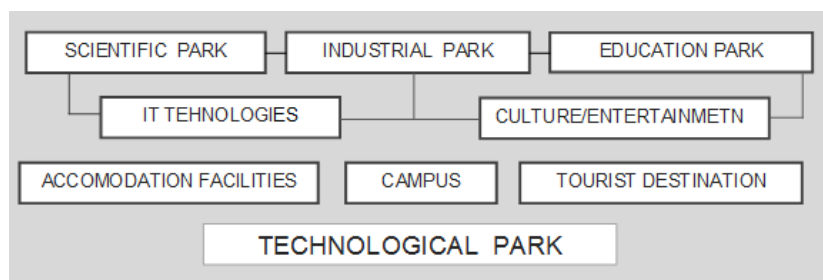


FIG. 5.1 Transformation of the Business and Production Complex "Trepča"

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