Industry as a Determining Factor of Sustainable Development of Settlements by the Danube

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Abstract. The success of a city has always been largely determined by its ability to provide jobs for its inhabitants. The essential in this process is its location - determining the relationship between a city and the main transport routes. A special category in this context presents port cities. Thanks to their strategic location, port cities have become the focus of trade, crafts and production. The water transport network was a key impulse for the development of industrial towns of the 19th and 20th centuries, allowing these areas to boom their industry sector. With its downturn and the shift of economic focus to the tertiary and quaternary sectors by the end of the 20th century, much of the industrial heritage today remains unused and it has been deteriorating. Saving this industrial heritage today presents a great opportunity for new developments that could be driven by a more sustainable direction and more sensitive urban development interventions. Within the European context, the most significant element has been the Danube - a strong geographical determinant that has influenced industrial development. Its catchment area reaches the territory of eighteen states and directly flows through ten or forms the state border. It thus becomes the most international river in the world with significant potential, economic, cultural and natural as well. The most important current discussions on a sustainable urban development deal with restructuring industrial areas and reworking the Danube riverbank. Researches approach this complex issue by analyzing the changing relationships among the river, city and industry. This paper focuses on case studies of three cities from different countries (Komárno - Slovakia, Óbuda - Hungary, Galati - Romania), which combine similar social, economic and political developments. Paper introduces natural development and transformation of industrial sites in relation to the Danube and their impact on urban development while mapping its further potential. The similarity of the port cities by the Danube is not accidental. Historical developments and specific events have had an impact on the position of city ports and shipyards, whether preserved in the form of industrial heritage, stagnant or functioning industry, continue to have a high share of urban development. These sites are advantageous not only for their geographical location, but also for their tangible and intangible cultural heritage. In the discussion, the paper combines findings of the overall transformation of settlements in a post-socialist context with industrialization tendencies and local specific factors such as peripheral and historical events. The article deals with the importance of temporary or permanent urban and architectural solutions for improving the attractiveness of the river environment, promoting historical industrial identity, enhancing ecological mobility and, in particular, integrating the whole Danube region into everyday life. Finally, the current needs of finding environmental solutions for industry and transport in the context of sustainable urban development are discussed. The environmental program of industrial and commercial development based on the strategic planning of urban development is the foundation of the prosperity of the urban society.
1. Introduction

1.1 History of industry development of industry in a settlement

From a historical point of view of human society, the industry is a very young sector. The form which we all know today was preceded by individual craft production, which was part of the settlement. The manufactories established subsequently have become the building blocks and economic basis for the first industrial objects. Already in this period, it was becoming very important to properly place such an object within the settlement. This was determined by several factors such as good commercial connections, proximity to the raw materials needed for production, but mainly the presence of water as a source of energy.

The first industrial revolution brought a radical change at the end of the 18th century. The advent of the industrial revolution varied considerably across the whole world depending on the overall situation in the individual countries. Production has become a social character. The rapid development of factories, supported by the introduction of machines, had a major impact on forming settlement structures. The social, economic and proportional differences between the town and the countryside increased. The development of transport, telecommunications and a wave of new patents launched a second industrial revolution in the second half of the 19th century. This was characterized by factory production. It required not only new architectural design solutions, but also changes in the organization of urban structures and new transport solutions.

The extent and complexity of the new tasks of industrial buildings placed increased demands on their constructional, operational and aesthetic aspects. There was a strong demand for simplicity, speed and maximum economy in the overall construction of objects. Due to the complexity of technical requirements and construction details new construction procedures were created for special engineering constructions. The form of objects did not coincide with the contemporary compositional principles of the creation of architectural works based on history. Their location within the settlements also differed. Larger businesses were looking for places on the edge of the settlements. These places provided ample room for future expansion and the economic operation. An important aspect was to ensure adequate pedestrian and car access, which has been facilitated by an increasingly mobile population. Architecturally patchy buildings were established on the outskirts of societies and these fully reflected the contemporary era of industrialism. These impulses provided an opportunity for the birth of the architectural identity of industrial buildings. [1]

The separation of recreation, housing and work during the turbulent years after World War II had a decisive impact on urban planning. Numerous rules and regulations provided for sufficient distances between residential areas and workplaces. Increasing distances were not a problem due to the development of motorization and transport infrastructure. With the development of industry, the need for space also increased. In practice, this meant that industry businesses were being pushed out to the outskirts of urban areas. Adaptation of the original objects to new technologies became more complicated mainly due to the increasing price of land and complicated access. The location of new sites for workplaces was, therefore, more advantageous in the outskirts with lucrative land in the center left for services and housing development. Such a procedure facilitated external outsourcing while alleviating the city's logistical burden.

Along with the evolution of industry during the period from the first to the fourth industrial revolution, the approach to the location of the industry within the settlement has also evolved. In the last 20-30 years, there have been major changes in thinking in the cities. Industrial enterprises are again highly valued and there is a strong emphasis on their successful integration into the country. In 1993 the requirements for the recovery of cities were put together as part of the Athens Charter. The idea was to guide design and definition requirements for short distances or the creation of green belts which separated the residential areas from industrial ones and helped eliminate emissions. At the same time the services, authorities and craft workshops were supposed to be easily accessible within residential areas. These requirements are still valid today, of course, with slight adjustments resulting from technological advances. [2]
2. Methods and methodology

The methodological starting point was the analysis of the town of Komárno as a settlement and its continuity. On the basis of numerous analyzes of the premises and situations currently arising in the town, it was assessed that it is necessary to investigate the influence of the port and its associated industry on the establishment of the town of Komárno in the past, and what influence it has today, only in the form of historical heritage. The development of the settlement was examined by means of graphical analysis of the territory, i.e. by marking individual functional units and comparing their representation in various historically significant periods. These analyzes established a need to explore other towns in the defined research area. In order to draw a conclusion, the same procedure was used for two other towns with similar economic, social, historical and geographical backgrounds.

The selection and comparison of the cities of Komárno, Óbuda, Galati is based on their industrial character - the location of the shipyards and their particular location on the Danube. Although these are towns of different sizes, the article points to some parallels in the development of their urban structure influenced by industrialization. These are all towns for which the industrialization process was a decisive moment in terms of urban development economy. This process also directly influenced the process of urbanization. The development of industrial production was also related to the rapid growth of the population in these towns. During the first half of the 20th century, the rapid development of housing construction in production centers was realized and this also led to radical changes in the structure of size groups of municipalities. In the second half of the 20th century, the central settlement network and its higher settlement structures such as agglomerations and urban regions were formed. The changes occurring after 1989 led to fundamental changes in social and economic relations in states. The most significant relation to territorial and settlement development can be seen mainly as a result of changes in:

- restructuring the economic base,
- demographic trends,
- housing construction,
- property issues related to real estate
- social differentiation and value preferences of the population.

3. Case studies

3.1 Komárno (Slovakia)

Komárno represents a typical example of a medium-sized town the development of which was conditioned by localization factors linked to the rivers of Danube and Váh which form important communication arteries. Strategic location Komárno has already been an advantage in the past. This included the location of the town on water and land routes and its proximity to Vienna and Budapest, which represented the focal points of political, economic and cultural life Hungary, or Austria-Hungary. This was also reflected in the economic development of the town, complemented by an important defense-military function... The article focuses primarily on the economic development of the town and its projection into its physical structure. It can be divided according to individual stages into: historical center - linked to the development of trade and crafts, the urban structure of the turn of the 19th century affected by the beginning of industrialization (the area of the ammunition factory and the old shipyard) and the area of functional-planned construction from the period of socialism (industrial shipyard, port, working district, housing development). Today, the town with its strategic location within the wider region has the potential to become an important distribution center in Central Europe.

The period of the town, marked mainly by the function of trade and crafts, was related to its strategic location at the confluence of the rivers Danube and Váh. The formation of the town was influenced by these rivers, which connected the territory of Upper Hungary with Austria-Hungary and the whole of Europe. In the course of history, the construction development oriented mainly along historical roads were gradually becoming denser and created compact block developments consisting of single-story developments of craft-peasant houses. In a later period, this uniform structure was enriched by the three-wing objects of aristocratic mansions and subsequently in the 18th century, but
especially at the end of the 19th century the burgher houses, public house as well as sacral buildings were added as a manifestation of the prosperity of the town.

The construction of the Škoda shipyards and the ammunition factory at the turn of the century was only a logical outcome of the trade-craft tradition of the town, as well as the strength and military importance of the city.

At the beginning of the 20th century, the state socialist planning and development in Komárno followed the model of concentric development. The town was divided into zones with specific functions according to local economies: central historical business district, gradually built housing developments, recreational areas, industrial districts, individual family home areas and agricultural land. At the beginning of the 1950s, modernist reconstruction of the town began with the pre-socialist buildings demolished and replaced by housing developments. The growing rural population has been stimulating the increasing pressure on the housing stock and the resulting pace and extent of modernization. It is worth mentioning a dramatic change in the character of the urban structure of the town during the period from the 1950s to the 1980s. In the 1950s, this mainly included the development of New Shipyard and the development of residential structures for the growing workforce in these shipyards. From 1960 to 1990, the town's population increased from 23,000 to 37,000 due to the construction of new flats. In the 1960s, the process of redevelopment of the original urban structure was started. This enabled the construction of housing developments for the increasing number of employees, especially in the shipbuilding industry. During this period, we can observe the demographic transformation of the town through the heights of house structures - from the 1950s with three-story buildings to ten-story apartment buildings constructed in the 1970s and 1980s. [3]

Paradoxically, Komárno - a town connected to the river Danube - is currently characterized by the inaccessibility of its urban structure to the most valuable areas of the city, the Danube embankment and partly to the Váh embankment. This state was started by the development of the port and the subsequent industrial production from the turn of the centuries. The victims of this process included the waterfront park - Darányi Park / 1891 / and the eastern tip of Elizabeth Island. During the interwar period, the port expanded along the entire length of the Danube embankment. This was also reflected in the gradual degradation of the town core.

The functionalist town is characterized by a loose form of housing developments or facilities which have disrupted the original compact historical structure. It is worth mentioning that there is a considerable extent of residual areas along the roads and railway routes, or areas of industrial sites, which are not fully utilized now and create characteristic brownfields.

3.1.1 Potential of industrial heritage. The industrial heritage which has the potential for further use has differentiated forms which condition the above-mentioned developmental stages - industrial heritage from the turn of the century, the industrial heritage of the Communist past, ports, traces of trading... At the same time, their location within the city plays an important role, as well as their architectural originality and flexibility of use. Representations of the industrial heritage with the potential for transformation include: the area of ammunition factory, shipyard complex - Old and New shipyard and port. This includes a large area with several objects for which it is not easy to identify a new function. The objects with the greatest potential include the old power plant building and the hall building of the old Škoda plant. The industrial areas which are suitable for transformation include mainly the waterfront part of the town, which serves the needs of the port, the area of the ammunition factory as well as the old shipyard premises. These areas have the potential for multifunctional use and the implementation of an esplanade along the Danube riverbank, with a connection to the town center and its system of streets. Due to its attractive location, the visions of the peninsula area with Škoda plant - the old shipyard are directed to recreational use with a private port with facilities.

Verification studies of possible transformation, especially of the town's waterfront areas, were carried out at The Faculty of Architecture of the Slovak Technical University in Bratislava in the years 2017 to 2018.
The Komárno zoning plan also provides for a new functional use of these areas. However, the question remains whether the current port can be relocated to a new location in Veľký Harčáš. The concept is connected to a vision of implementation of the Transcontinental Logistics Center. However, the reality of such a major investment still needs to be confirmed (Figure 1).

Graphical comparison of urban development with an indication of the industrial area during the history.

![Graphical representation](image)

Figure 1. Schematic representation of the city Komárno (Slovakia) 1935 vs 2020 (Figure by Dominika Štrbíková, Eva Vdolečková)

3.1.2 Summary of the development of Komárno related to the period of industrial development and subsequent decline. As part of this development, especially in the 20th century, the following stages are evident:

- The gradual development and growth of industrial areas culminating in the 1980s and the associated relocation of the shipyard complex within the town towards its edge
- Gradual inclusion of Danube embankments for port function, including damming of the Danube for use of the New shipyard
- Degradation of industrial sites: “Old shipyard” (due to the transfer of production to “New shipyard” (40s to 50s), New shipyard (90s to today) due to the dramatic production restrictions.

The development of the industrial zone, especially in the period from the 50s to the 80s, was related to the extensive housing construction in the unbuilt areas within the urban area, or near the industrial area of the shipyard. This also included the subsequent construction of housing developments in areas after the massive redevelopment of the original structure.

3.2 Óbuda (Hungary)
The city district of Óbuda, even though its location factors were similar to Komárno’s, is very specific. The formation and existence of once an independent city was significantly influenced by its contact with the Danube River. The combination of well-functioning marine and ground-based infrastructures provided favorable conditions for the running of the city and economic development. This paper will provide a brief overview of historical events that affected the former city of Óbuda in terms of territory, politics and economics. These events, to a greater or lesser extent, shaped the development of economic, industrial and residential zones in the city. The paper divides them into three main phases, the beginnings and formation of a young city, the unification of independent cities of Óbuda (Old Buda), Buda and Pest into Budapest, the capital of Hungary, and the evaluation of the current structure of the III. Óbuda district and its role in the city of Budapest. The history of Budapest has been influenced by many diverse cultures and each of these periods contributed to the unique character of Budapest.

The traces of the first settlements in the Budapest area date back to the Stone Age, however, the known history of Budapest begins with the Roman city of Aquincum on the site of an old Celtic settlement near the city of Óbuda. Numerous historical events that took place in this area over the next years would change the population structure and layout of the city of Óbuda. It was the
The beginning of industrialization and urbanization in 1805 that significantly influenced the development of the city when the first comprehensive regulatory plan to control land development and ensure trade conditions for the growing population was created in Pest. [4] Due to the regulated industrialization and urban development, the area of Pest was rapidly changing. On the Danube embankment, the first real company was the Óbuda boat factory which was opened in 1835. The Óbuda shipyard, founded in 1835, was one of the oldest industrial enterprises in Budapest. The first boat manufactured there – a wooden steamboat named Árpád – was launched in 1836. Since that moment, the formation of industry and the whole city structure in Óbuda was strongly connected with the port area. Despite the unification of Buda, Óbuda and Pest, this area phenomenon did not change.

Budapest, founded in 1873, became the capital of Hungary. An important factor in the city development was not only the marine infrastructure but also ground-based infrastructure. It was the construction of the railway that was crucial to the industrial development of the capital. The objective was to connect to the growing European rail network and an easy access to Hungary’s ports and mining areas. After the completion of the rail network, the country’s main supply lines changed; Pest became the center of the national transportation infrastructure and the importance of the city in Central Europe increased. [5] The continued demand for available land for industry kept increasing steadily and resulted in new development areas. At the same time, the most important railway station along the Danube was built. Industrialization and urbanization changed the economic, social, physical and natural context of the city in the space of several decades. Distance, growing population and lifestyle required new needs in the areas of mobility, housing and activities. In every way, the industry was able to develop easily between the waterway and railway. [6] At the end of the 19th and the beginning of the 20th century, the capital was surrounded by industrial zones that markedly determined urban development. The beginning of World War I was also influenced by industry since a large workforce was required for military production. The Austro-Hungarian government decided that the Óbuda shipyard would become the main shipbuilder of the imperial navy. In 1910, numerous investments were made to support modernization in order to make it suitable to implement the most ambitious visions of sea-going ships. In 1911, the shipyard emerged under the name “GANZ & CO. DANUBIUS”. World War II damaged the Budapest industry significantly. Although the production resumed relatively soon after the war, the lack of work, raw materials and energy was constant. The Communist system established in 1949 had a contradictory effect on the industry. The commercial and ownership structures completely changed, the factories were nationalized. [7]

In the 1960s, the high concentration of industry in the capital required restrictions for new industrial complexes that affected industrial areas near the river. Along the Danube, the areas near the inner city gradually underwent a functional change, while in the peripheral areas an expansion of industrial areas was typical. During this period, the development of industry was at its highest in the history of Budapest. Environmental and social issues caused by industry were recognized in the 1960s. This resulted in the deindustrialization of the historic city center. For this reason, the factories in Lipótváros and Óbuda-Újlak disappeared from the banks in the 1970s and industrial land use was replaced by large housing estates. New industrial areas emerged on the outskirts of the city to produce prefabricated concrete panels used to build modern housing estates, e.g. in Óbuda and Újpest. However, the urban landscape of the Budapest agglomeration changed dramatically. In addition to new industrial buildings, modern functional urbanization also brought globalized urban elements: large housing estates and endless suburbs. [8]

Since the 1990s, there has been a significant decline in both industrial production and investment. Large companies dissolved and as a result, production came to a complete stop in several factories; meanwhile elsewhere, production continued under a new profile. [6] This period resulted in the official closure of the Óbuda shipyard in 2000. The last ship to leave the shipyard was the Széchenyi icebreaker in 1988. (Figure 2)

Graphical comparison of urban development with an indication of the industrial area during the history.
3.2.1 Industrial Zone Potential. The city currently spreads on both banks of the Danube River and is considered to be the economic, transportation and cultural center of the country. The integration of Óbuda into Budapest has had a large territorial impact, in both political and social terms. The hierarchy of urban areas has taken on a new dimension. The scale of the assessed area has changed; the city center has become the district center. The political, economic and social perception of the overall area has changed. It is natural for industry to be located at the periphery in such large cities. The presence of a strong watercourse with the support of rail and road connections continues to play a very decisive role in the localization of industry. This is why there is still a strong industrial background in this area, with a positive outlook for the future and the potential to reopen the shipyard.

3.2.2 Summary of the city of Óbuda’s development related to the industrial development period and subsequent decline. In the context of the above discussed development, especially in the 20th century, the following stages are evident:

- The gradual development and growth of industrial areas culminating in the 1960s and the capital was surrounded by industrial zones that markedly determined urban development
- In the 1970s, housing estates gradually replaced industrial use factories.
- Degradation of industrial complexes; since the 1990s, there has been a significant decline in industrial production. Large companies dissolved and as a result, production came to a complete stop in several factories.

3.3 Galati (Romania)

Galați is a border city, one of the developing cities of Romania. It is Romania’s largest inland port and it is located approximately 80 kilometers from the Black Sea. The city, whose strategic location is bound to the Danube River, was in the past nicknamed the “City between the East and the West” It is an important administrative center which is connected to the national and European transportation networks, with considerable economic development that brought along, in particular, the industrialization process. [9] On the one hand, Galați is a developing city; on the other hand, it is an important trading hub. It creates favorable conditions for polycentric regional development and good conditions for reducing regional imbalances with respect to development in the context of the EU – some regions are predominantly monocentric. The contribution is focused on the urban and economic development of the city. The physical structure of the city may be divided by individual phases into: historic center – until the 18th century, the municipality of Galați did not exceed the borders of today’s historic center in contact with the Danube floodplain; urban structure from the end of the 19th and the beginning of the 20th century – with the arrival of industrialization, the city saw two directions – integration of villages from the city valley and development of new working-class neighborhoods
[10]. functionalist area – development of new residential areas (housing estates), development of industrial complexes, shipyards, port. All references to the land development of the city of Galați are connected to the city’s relationship to the Danube River via its harbor, which, in fact, is the main factor of urban growth.

The first written mention of Galați describes it as a fishing village; a reference was found a century later to “Schela Galați” (Schela is an old word for a place where boats are tied up for loading and unloading). The port was important for the Turks who occupied it since the beginning of the 16th century until 1829. At the end of the 18th century, the city of Galați did not extend beyond the boundaries of today’s historic center. [11] Between 1840 and 1860, the port area rapidly expanded into the urban organism in accordance with the systemization plans of architect Rizer, led by Costache Negri and Alexandru I. Cuza. The expansion of the city focused mainly on the north and northwest; the central point (“La Răspântie”/At the Crossroads), located at the south-east city border of the Danube terrace, was considered to be the starting point [12]. After 1859, the development was represented also by numerous piers, warehouses, stores, factories, and the compact development of one-story family houses exceeded the historic center and the population was gradually attracted to the suburban periphery. The ever-increasing industrial activity and population growth led to a progressively higher number and size of suburbs, including also Vadu Ungurului in the northeast, Lozoveni and Sf. Împărați in the northwest, Bănești and Trei Ierarhi in the southwest of the city. [13] Its rapid development in the 19th century was stimulated by adopting the status of a free port between 1837 and 1883. The economic and social boom of the city was dominant in port activities as well as in trade.

After the “period of stagnation” between 1860 and 1900 [11], the interwar period saw new growth following two directions – the integration of villages from the city valley and the development of new neighborhoods. [10] In 1859, the Romanian modern state was created and at that time, Galați was even considered for the capital. The 19th century rooted Europe deeply in turmoil and the port of Galați became an important place for the construction of large warships. Since 1893, the importance of Galați as a shipyard had steadily increased, new investments were made and the overall Romanian shipbuilding group expanded. It was originally founded in 1893 as a small foundry and repair shop under the name of G. Fernic et Comp and in 1897; it was expanded by the addition of a shipyard. In the course of 125 years, the shipbuilding company had become an important part of the shipbuilding industry across the country. After the events of the 20th century, the city of Galați began to seize the opportunities for industrialization and was rebuilt according to communist ideologies; a steel mill was built, which was named the “Diamond of the Romanian economy”.

After World War II, the city underwent a period of reconstruction, after which, from the 1950s-1960s, plans for modernization and systemization were made to incorporate the territory extended to the west and southwest. In reality, systemization had various forms, such as: restoration of old neighborhoods (Mazepa and city center), development of new neighborhoods (linaiglina I-IV, Dunărea / Danube) and partial or complete modernization of several existing neighborhoods (Portului / Port's, Republicii / Republic's, Brăilei/ Brăila's). [12] The period was deeply marked by industrialization policy that drove the city, which was then able to compete with large industrial giants, also thanks to the steel mill and the countless companies that cooperated with it. From the urban point of view, the city profile on the vertical is significantly changed. In the 1960s, the city and its surrounding area were at the forefront of development in Romania; with the largest volumes of industrial investments in the country concentrated here.

The process of industrialization brought along a large influx of rural population into towns. It triggered a phenomenon of imbalance and an extensive program for the construction of collective apartment buildings, and adequate solutions needed to be sought. This was the case of more than 40 towns with a mono-industrial profile whose functional weakness led to their socio-economic failure. After 1990, after decades of functional changes, several new residential areas were built in the city in the new phase, including the most representative areas of Arcașilor (Archers)/Traian nord (Traian North) and Dimitrie Cantemir. [12]
The port and shipbuilding industries have centuries of tradition in Galați. With more than 1,300 vessels built since its inception, the port in Galați can legitimately celebrate its rich heritage of professionalism. To date, the shipyard has delivered approximately 1,300 vessels, out of which more than 400 have been built since 1999 by the Romanian-Dutch shipbuilding Galați group for customers from 70 countries, making the Galați shipyard the largest Romanian exporter of vessels.

3.3.1 Industrial Zone Potential. Currently, Romania has significantly developed water (the Danube) and maritime transport (the Black Sea). In terms of water/maritime transport, Romania ranks 12th in Europe, with 1,731 km in length. With regard to the Danube River, Romania, out of the Danube countries, uses approximately 30% of the riverbed. With an area of 55 hectares and approximately 2,500 employees, the port of Galați is currently one of the largest production units of the Dutch Damen Group that operates 35 shipyards for shipbuilding and ship repair worldwide. Since joining the Damen Shipyards Group in 1999, the shipyard has evolved into a highly efficient production yard. Since 1999, Damen Shipyards Galati has delivered more than 400 vessels to clients around the world, including 29 seagoing vessels for 13 different countries, including NATO and EU countries. (Figure 3)

3.3.2 Summary of the city of Galați’s development related to the industrial development period and subsequent prosperous growth. In the context of the above discussed development, especially in the 20th century, the following stages are evident:
- Gradual development and growth of industrial areas, culminating in the 1960s – the city and its surrounding area were at the forefront of development in Romania, with the largest volumes of industrial investments in the country concentrated here, and the capital was surrounded by industrial zones that markedly determined the urban development
- Since the 1970s, after decades of functional changes, several residential areas of the city have been built
- Thriving industrial complexes to this day; since the 1990s, there has been a significant impulse in industrial production.

4. Conclusion
This paper describes three case studies of how a city can cope with the potential of a watercourse and the industry associated therewith. Despite these sites, having a very similar location, as well as social and political factors, their development progressed in a diametrically opposed manner.

Komárno, Galati and Óbuda, however, have the same goal for the future: to try and revitalize the shipyard premises and take full advantage of their potential, to fill the capacities of ports and port premises, to improve port infrastructure and to offer opportunities for economic growth. The
potential of inland water transportation on the Danube River is very strong, not only for industry but also for the overall functioning of the city. Inland water transportation is very environment-friendly and, therefore, also economic means of transportation of people, materials, fuels, or raw materials.

Historically, industrialization has always led to the creation of a kind of a boomerang with environmental impact. The lack of balance among economy, social life and ecology has led to environmental degradation in the EU. Today, a number of strategies are taken into account to balance all three areas of sustainability (economic, environmental and social), with a view to improve the quality of life at national, regional and local levels. These strategies are derived from the drawn-up European documents on sustainability in the Leipzig Charter adopted in 2007.

It is therefore important for the city authorities to currently focus on developing environmental protection measures, action plans to reduce noise in the vicinity of industrial areas, and integration of strategic plans into land development planning to improve the quality of housing. Cities should endeavor to adopt the strategies and experience of other European urban centers with the same specific natural and economic conditions.

Applying sustainable development requirements is the only way for society to provide equal conditions and opportunities for the development of future generations. In order to successfully implement the principles of sustainable development, it is necessary to keep analyzing the current situation and set up a high-quality plan of short- and long-term goals. The future of sustainable development requires changes in people’s behavior, value systems and lifestyles.

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