External Image of the Viticultural Towns Located at the Foot of Little Carpathians

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Abstract. One of the main development axes of the city of Bratislava, the capital of Slovakia, is set through the viticultural region of Little Carpathians. The “Wine Road” leads through the settlements that include Old Rača, now part of the Bratislava city, and adjacent small towns of Sv. Jur, Pezinok and Modra. Throughout centuries, these have developed naturally in the characteristic landscape dominated by the vine growing activities and therefore have strong cultural values for the region, as well as for the whole country. The proposed article deals with the problem of finding the right planning tools, helping in establishing the balance of sustainable development of this micro-region - the balance between the protecting specific cultural and natural values of the area and the increasing pressures on the rapid expansion of the new suburban zones into the characteristic landscape. The article initially looks at the transformation of the external image of these viticultural towns through three stages: 1. The period of the first Industrial Revolution, when the construction of factories and chimneys changed the panorama. 2. The period of the second half of the 20th century, which is the most significant period of changing the external image. The original vineyards were transformed into building plots and the “Old Rača” was absorbed in the development of a modernist panel housing neighborhoods. Sv. Jur was in the era of socialism at the edge of interest due to its sacral history. Modra also stands outside of the main development zone, due to the diversion of the railway towards Trnava and is struggling with individual construction of the family houses. Pezinok has served the role of a district town as an administrative and territorial center and underwent the greatest transformation of its original character. 3. The period of modern history that continues to this day, it is characteristic with the suburbanization, urban sprawl and the destruction of the natural landscape. As one of the possible solutions, the article proposes the use of the “first line” concept - a new method of regulating and planning the city - that reflects also on the ecological and economical size of the town. This line represents the external boundary of the town which should not be crossed in order to maintain the contrast between the natural and cultural environment. Furthermore, the proposed contribution deals with the changes in the external image of the viticultural towns in general, especially in the context of Slovakia, which is nowadays under the pressure of suburbanization and transformation of their natural environment and their characteristic landscape. This process is in the long run unsustainable, as the contrast between the natural and cultural environment diminishes, together with all their values.

1. Introduction
The three towns - Svätý Jur, Pezinok and Modra - are united in their viticultural traditions of Little Carpathians region, while lying on one of the main development axes of the capital Bratislava. Just as...
in other Slovak towns, since the second half of the 20th century have in these areas taken place various architectural and urban transformations. Towns began to spread outside their fortifications, initiating with the construction of the railway. In the vicinity, industrial complexes were constructed together with residential neighborhoods and housing estates. Currently, on the regional level, the whole area is under the pressure of developers, because of the intense suburbanization of the areas near the capital city. The extensive areas of urban sprawl are further changing the image of these towns. These transformations have also significantly influenced the state of urban, architectural, artistic and natural values of the region. (figure 1).

The contribution deals with the transformation of the original viticultural environment in the past 100 years and analyzes the current state of the external image of the region. Furthermore, the strategic documents are analyzed from the perspective of the protection of the cultural landscape. The aim of the paper is to find possible solutions targeting improvement the possibilities of protecting values of the viticultural landscape and the original external image of the towns.

![Figure 1. Vineyards of the Little Carpathians, 2018](image)

2. Materials and Methods

During the elaboration and research of the problematics, we used standard scientific research methods. The main approach was to analyze the current state of the natural and cultural values of the studied viticultural region and the legal framework of preservation of these values. This involved analysis of current area strategic documents, with a special focus on the regulation of the development and the protection of the cultural landscape - vineyards. During the examination of the impact on the external image of the region, the following documents were used:

- The Fund of Historical Cadastral Maps from the end of the 19th century and their imprints from the first half of the 20th century, which showed the development of urban structures in relation to their surroundings.
- The fund of military satellite images from the 1950s, capturing the state of the territory before the waves of industrialization in Czechoslovakia.
- Real Estate Cadastral Fund - map sheets of urban settlements from the 1960s, 1980s and 1990s and Topographic Map Funds from these periods
- Contemporary ortho-photos and photo documentation
The second part of the paper analyses and evaluates the current state of protection of the natural and cultural heritage, with a special focus on the specific landscape of vineyards. This part of the research also analyses the regulation of urban development and new construction in the region. This represents other data source, such as the strategic documents at all levels:

- Planning documents at the level of the region, city and zone.
- Documents of protected natural areas of the region.
- Documents of protected monuments.

The third part is the application of the principles of the compact city to the studied town Pezinok and the design of the so-called First Line.

One of the many benefits of a compact city is the preservation of the natural environment through concentration and effective use of build-up space [3]. The method of the First line was developed by Roman Koucký, who used it in designing urban and regulation plans for many Czech towns and cities [4]. The basic idea of this principle is to create a contrast between the build-up space of the town and the natural environment surrounding it. The First Line represents the economic and ecological size of the town. Behind this line, no development should be allowed. The result is creating requested contrast and higher density compact cities.

![Figure 2. The North-eastern development axis of Bratislava [5]](image)

### 3. Natural and Cultural Heritage of the Little Carpathians Region

The Little Carpathians viticultural region forms an important vine growing area in Slovakia. The vineyards are situated on the southeast slopes of the mountain from the capital Bratislava to the village of Horné Orešany. The characteristic image of the region is formed by the symbiosis of the human activity with the surrounding landscape. This character was created in the Middle Ages and some of its features are still preserved today. The traditional external image is made up of terraced vineyards, orchards, gardens and forests, which are completed with church towers and roofs of small vineyard houses. Despite the current trends, the region's image still refers to the harmony between cultural and natural lands. This image is thus reflecting a principle that changing the country does not always devastate the landscape and its values, but a unique symbiosis with adding new values can be achieved (figure 2).
3.1. Historic Context of the Region

The historical development of Sv. Jur, Pezinok and Modra combine several characteristic features. The natural conditions of the Little Carpathians region have provided a good condition for developing settlements. Archaeological sites and findings document the first habitation of this area as early as in the 4th-3rd century BC. Hundreds of years before our era, the Slavic fortifications from the Great Moravian period and the Romanesque period at the foot of the Little Carpathians illustrate the continuity of occupation of this region. The first written mention of emerging settlements comes from the 13th century. Many important trade routes leading from and towards today's Bratislava passed through this land. This important route catalyzed the formation of the serf towns which were economically linked to the growing viticulture, but also to the craft industry. In the 17th century, all three of them were promoted to the Free Royal cities, which ensured their economic and building growth for the next two centuries. Furthermore, thanks to the production of quality wines, Pezinok has become an important city of former Hungary. Old Rača is a specific example of the transformation of the original vine-growing country as it was not historically significant as Sv. Jur, Pezinok and Modra. The area of Old Rača was initially a rural village that later became a part of the capital during the 20th century [6].

![Figure 3. Historical photo of Pezinok with chimneys of brickwork factory, 1950](7)

The historic core of these towns is outlined by the remnants of the fortification system, which illustrates the rich and continuous development of this area. The town centers are represented by burgher and viticultural architecture with dominant and extensive sacral complexes. A distinctive feature and significant value of these sites is their location in the country, which forms an integral part of them. The characteristic image is formed by a historical urban structure surrounded by vineyards that naturally pass into the oak-beech forests of the Little Carpathians [8].

3.2. Transformation of the Viticultural Region since the 20th Century

3.2.1. First Period of Change. In the 19th century, the development of the railway infrastructure initiated gradual industrialization. First in 1840, the horse railway began its operation connecting the capital with the city of Trnava. Later it was upgraded into a steam-powered railway. The towns of Sv. Jur and Pezinok were part of this connection. However Modra, despite many efforts to find a viable solution, still has no connection to the railway infrastructure. This has made Pezinok the center of the region’s industry. The first sulfuric acid plant in Hungary was built there and the Kriser’s Brickwork factory was constructed in the south-eastern part of the town [9].
New industries stimulated further new development of areas of individual family and terraced houses in the first half of 20th century, located in the outer parts of the fortifications of the town. This new development is now mainly located between the historic city core and the railway. However, some parts of the town walls were since that demolished.

Old Rača, which was also not directly connected to the railway transport lines, have remained intact together with its immediate surroundings and the vineyard terraces. Also, there can be found a new development of family houses, but have been located mainly on the edges of the settlement, currently occupying an area along the railway line and in its vicinity.

The interventions of this period have had no greater impact on the viticultural landscape. The only exceptions that changed the external image of these towns are the factory chimneys (figure 3). The building boom was concentrated on the flat parts of the country, omitting the slopes of the mountain. This had saved the external image of the region's characteristic landscape, which remained unchanged until the mid-20th century.

3.2.2. Second Period of Change. The second wave of industrialization changed the original historic picture of the whole region in the most striking way. We can define this period of time between the years 1945-1989 after the Second World War when Europe was divided into Western European capitalist bloc and Eastern European socialist bloc with central management of the economy. This era had a great influence on the way of development in towns of Slovakia [10]. The establishment of the Czechoslovak Socialist Republic in 1948 led to a radical and violent change in the ownership relations by nationalizing private property and land [11]. The second wave of industrialization and the process of modernization had come to an end. Such a situation had a great effect on most of Slovak settlements, especially those which had become the center of state power. From the studied area, this was the case of the town Pezinok, which became the administrative center of the region. The second period of change can be divided into three stages, which gradually influenced the changing external image of the towns:

- 1st Stage (1945-1956) - The period of the socialist realism style. There was no greater urban development, the construction was represented by small residential complexes, which still had some reference to the traditional viticultural architecture and preserved the spatial characteristics of the surrounding structures. The construction was mainly concentrated in the marginal parts of the historic core beyond the towns’ fortifications, or in close distance from industrial sites and railway stations.

- 2nd Stage (1957–1975) - After the official rejection of socialist realism, new concepts were designed and constructed on the principles of modern urbanism. After the Warsaw Pact troops entered the territory of Czechoslovakia in 1968, the period of normalization began. The normalized regime was reflected in monumental design that manifested itself in both architecture and urban design. In 1971, the long awaited Project of Urbanization of the Slovak Socialist Republic was approved, setting off the intensification of construction [12].

- Stage 3 (1975–1989) - In the 1970s, in addition to industrial sites and their dominants, monofunctional prefabricated panel housing estates enter the skyline, contrasting not only with the landscape, but also with the preserved historical monuments. Unification and typization were reflected not only in the constructed housing development, but also in the construction of civil buildings, such as cultural and commercial buildings. This period had a significant impact on the external image of the vineyard landscape.

The village of Old Rača has become part of the city district, dominated by a typical monofunctional modernist housing estate and detached housing residential district. The vineyards under the slopes of the Little Carpathians from the northwest side have been preserved.
Pezinok had also undergone a significant transformation, which had been subject to significant pressure due to its administrative and central function (figure 4). The original landscape was changed with the dominants of the panel housing districts, just like in Old Rača. These do not respect the context of the natural environment of their surroundings [13].

Sv. Jur and Modra did not develop as dynamically as Pezinok, both of them still maintained their viticultural character.

Based on the new development and demolitions, which had significantly damaged the historic cores of many towns, there was a need for the protection of historic towns centers. In this period the Conservation Reservation and its protection zone of Sv. Jur (1990) and the Urban Conservation zone of Modra (1991) were declared, based on cultural and historical values associated with the tradition of viticulture of these towns. The subject of protection is focused on the urban, architectural, and artistic values of the spatial, urban and building structure.

Figure 4. Transformation of the town Pezinok during the period 1950-2018

3.2.3. Third Period of Change. The third period is a period dating from modern Slovak history up to the present. Especially, the last decades pose a significant proportion in the transformation of the original environment. As the settlements are located on one of the main development axes of Bratislava, they are also subject to the current trend of suburbanization of the capital's surroundings.

Old Rača is again a specific example where the most significant changes have occurred in the ongoing period. Unlike in the second period, the new development has been located mainly southeast of the Carpathians. Nowadays, the original village is surrounded by modern family houses. In this case, we can hardly talk about preserving the historically developed cultural landscape. From the original vineyards that surrounded Old Rača, just a small portion remains today. Rača transformed into
a typical post-socialist city district, partly erasing its viticultural character. Since that we can no longer compare it to the other parts of the region and is no longer subjected to further research.

Just like in Old Rača, the significant pressure on the conversion of agricultural land and vineyards to the building sites occurs in the vicinity of Pezinok, Modra, and Sv. Jur. The new development changes and moves the borders of the built-up area of these towns, taking up vineyards and transforming them into new housing estates or estates of commercial companies (figure 5).

![Figure 5. Actual photo of Pezinok (left) a Modra (right), 2018 [14]](image)

4. Natural and Cultural Values of the Region
Despite the changes described above, the studied region as a whole still retains its viticultural character. It is not easy to generalize the natural and cultural values, because every single small town has developed in specific conditions, which has had an effect on their current status.

The cultural and historical values of the area are today preserved and protected in all three town cores (Pezinok, Modra, Sv. Jur). Their urban an architectural value is represented by the historical ground plan (layout), the spatial structure of the buildings, while many of them are considered as National Cultural Monuments or buildings with a cultural value reflecting the way of life connected to vine-growing. Each of the historic cores of these cities has its unique urban structure that is still preserved also in the remnants of the town’s fortifications [15].

The surrounding landscape is characterized by the terraced gardens and vineyards, the creative invention of man. The elements of this cultural landscape represent the original historical structure of nature. This creates a typical well-known image and relief of the country (figure 6). Namely, those elements are: cultivated vineyards, abandoned vineyards (wastes), extensive meadows, pastures and small stone houses. The panorama can be best observed from the foot of the mountains, which also set the scene for the silhouette of the towns, which is formed by historical dominants of sacral buildings preserved in the town core [16].

The valuable nature of this area, determined mainly by the viticulture, forms a specific surrounding for the historic core. The essence of these values is part of the Protected Landscape Area of Little Carpathians. This protected area contains large and small scale protected areas, sites of community importance and special protection areas. This territory represents not only a set of characteristic compositional elements of natural and cultural heritage, but also an important economic production of the Little Carpathian viticultural region. This also is a significant reason for setting the limitations onto new development and thus setting a specific regime for the construction of new buildings.
5. Protection of Landscape by Current Legislative Documents

The landscape can be, within the framework of current legislation, protected through several documents of land-use planning and urban planning. The protection of vineyards is applied in several levels of these documents - region, town and zone level. In addition to these planning documents, there is a special law on viticulture and vineyards \cite{18}. Despite extensive and detailed regulation at all levels of protection, the need for more consistent protection of the original vineyards is needed due to the practice of vigorous conversion of vineyards into building plots.

5.1. Land-use Plan of Bratislava Self-Governing Region

The territory of the Small Carpathians vineyards is an administrative part of the Bratislava self-governing region. According to land-use regulations and spatial arrangement, the following principles are administered:

- To promote and to protect the free landscape and its aesthetic quality and typical character - vineyards and orchards, etc.
- To take into account the natural development tendencies of the municipality in order to create a new urban and landscape valuable area, while respecting the vineyards.
- To protect and develop the image of the vineyard landscape - define and refine it in the lower grades of planning documentation of the wine-growing area \cite{19}.

5.2. Land-use Plans of towns Sv. Jur, Pezinok and Modra

Land-use Plans are extensive documents that set the basic framework for the regulation of territorial development and nature conservation. Based on the analysis of the town-planning documentation, we can say that the requirements and principles for regulation in the territories are very similar. To protect the original landscape of the towns, there are mentioned several points of view, namely:

- From the perspective of developing the urban structure based on the requirements and regulation it is necessary:
  - To maintain the original specific character, based on the original character of the built-up area and the historically created surrounding landscape, to preserve the historically formed type of viticultural development of the villages.
  - To preserve the natural character of the area with an emphasis on the characteristic wine-growing landscape, to ensure the preservation of the vineyard area in the Carpathians belt with the typical character of the landscape structure, as a typical characteristic element of the region.
  - To preserve the existing vineyards and not to build in the vineyards or in their vicinity. An unbreakable construction line should be set in such a way that the existing historical relief
and overall valuable landscape panorama and the appearance of the exposed slope are not disturbed. It is necessary to respect the boundary defined by land use and not to disturb it in further processing.

- In terms of ecological aspects, of nature and landscape protection, and soil fun protection:
  - To respect and preserve the landscape of the Little Carpathians with vineyards and do not change vineyards to areas with the function of the housing.
  - To respect the greenery of vineyards in all activities in the area, which is typical of the overall character of the town and co-creates the character of the settlement and its silhouette in the country (on the basis of expert analyzes it is also necessary to propose a plan of actions which will help to return the country's characteristic appearance to ensure the preservation of vineyards in the foothills of the Little Carpathians as a typical characteristic element of the region)
  - To support and protect the essential elements of aesthetic quality and typical character of the viticultural region - vineyards, natural forests, scattered landscape greenery in the form of smaller forests, groups of trees and trusses on the boundaries, stone-houses, and along the roads, rivers, streams and areas with shoreline crops.
  - To preserve territories with the typical character of the region's wine-growing landscape structure.

- In terms of cultural and historical heritage:
  - To respect the potential of cultural-historical and social values and phenomena that continuously operate in the given environment, characterize it and represent the development impulses of the region both in tangible and intangible form (wine-growing traditions of the Little Carpathians region, ethno-cultural and social traditions), and create a suitable environment for them. (figure 7) These values are further specified in the relevant documentation for the protection of cultural heritage, which are the Principles of the Protection, Renewal and Presentation of the Sv.Jur, Modra and Pezinok. However, these apply only to the limited areas of historical cores and do not regulate the protection of the surrounding environment [20-22].

![Figure 7. Historical photo of Sv. Jur, 1959, Archive of Sv. Jur](image_url)

5.3. Buffer Zones of Conservation Zones
At present, only the Conservation reservation Sv. Jur has a Buffer zone [24]. This extensive protection area is situated on the surrounding slopes of Little Carpathians, which are mainly vineyards, orchards
and pastures. The Buffer zone of Modras [25] historic core is being prepared, with the purpose to protect the cultural landscape, the original elements of the historical landscape structure, which ones form the immediate surroundings of the protected urban structure and thus protect it as much as possible (figure 8).

5.4. Protection of Vineyards
The Little Carpathians vineyards are the jewel of the Bratislava region. These vineyards are an important and essential source of economic growth. The potential for sustainable development of the studied micro-region lies in the assessment of the quality of the territory. Vine growing and processing is a significant source of job opportunities for the country, not only directly in this sector, but also in sectors that are linked to it, such as tourism. Unfortunately, insufficient protection of vineyards, especially the legal uncertainty about the use and protection of such land and the pressure of construction developers lies in the way of this trend [26].

One of the examples of the gradual loss of original vineyard land can be found in the statistics of Agricultural Association Vineyards Bratislava. The Association has in the past 20 years lost most of the actively used vineyards. Furthermore, the Agricultural Association Vineyards in Bratislava notes that by 1989 production on thousands of hectares of vineyards had prospered. After the collapse of the agricultural association, there was chaos in ownership relations which leaves us with many permanently uncultivated vineyards [27].

Figure 8. Buffer Zone of Sv. Jur, 1996 (left) and Proposed Buffer Zone of Modra, 2016 (right) [28]

6. First Line - as a part of the solution?
When trying to determine where exactly should the First Line of the town Pezinok be, we should take into consideration its location on the main regional development axis, however since the First Line represents also the economic and ecological size of the city, the urban sprawl should not have any room inside the towns limited space. This line is even more important in such an environmentally
valuable location as these vineyards. Since we are focused just on the research of the external image and the historical and natural values of the region, we are not able to determine the exact space to fulfill the town's needs. However, we can point out locations that are more suitable for new development, locations where no new structures should rise, and areas where this ideal line is already crossed.

Through our research, we found out that an unbreakable line is even proposed in the Land-use Plans of the towns. This proposition was however only mentioned in the analytical part of the text documentation and was not directly designed in the plans of the towns (in their graphic parts). These were created by following the typical scheme, while still forming extensive new zones of development behind the current town's limits.

In the Scheme of Development of the town Pezinok we can see the current and the proposed lines of built-up space, together with new development zones, as shown (figure 9). Some of these zones are inside the towns’ limits but many of these are taking up agricultural land. We would advise locating any new development on the Southwestern side of the town not disrupting the vine terraces. Many of the proposed new zones are located in this area, but the line should be more compact, without any isolated islands of new development built without any relations to the existing town structure. No further development should be located on the slopes of the mountain, especially the proposed areas on Suchy vrch are already behind the ideal line, interfering and disturbing the external image. Unacceptable are also the isolated islands of new development on the borders of the town's district. These are connected to the village Limbach, seemingly being part of it. Any inhabitants in these areas would use the facilities of the village but they administratively belong to the town of Pezinok. The First line proposed by us shows the ideal border from the Little Carpathians, aiming to preserve the typical external image and natural values. Any already built-up areas should be regenerated if possible to support the overall image of the town.

Figure 9. Pezinok - Scheme of development
7. Conclusion

The viticultural region of the Little Carpathians is one of the most valuable viticultural regions in Slovakia. The architectural and urban values are preserved as Conservation areas, but these represent only one half of the image of the towns. The external image is equally important reflected in the tradition of vine-growing and its spatial elements (figure 9).

The typical natural environment is continuously changing due to the gradual urban evolution, which is in the last two decades under extreme pressure of new development. This trend of suburbanization disproportionately occupies agricultural lands, in this case, a profitable and important part of the region.

Despite extensive land-use planning tools at all levels, from the General Plan of the Region to the Urban Plan and the special law on vineyards, we can conclude that there is a permanent distortion of the natural landscape of an important part of the Little Carpathians viticultural area. At all levels of land-use planning, urban planning documentation, and principles of protection, already valid or under preparation, the common denominator is the protection and preservation of the original historical landscape of typical vineyards. These regulations are mentioned in the analytical part of the text documentation, but unfortunately, are not implemented to the final urban design and regulation.

We can summarize that there are enough legal policies to protect and revitalize the natural environment and the external image of the viticultural towns. However, there is not enough willpower to implement them. Our proposed concept of defining the “First Line” might help in simplifying the regulations in the practical life and can be easily added in the graphical part of the existing regulatory documents.

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