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## CHALLENGES AND DRIVERS OF GREEN AND SUSTAINABLE SPATIAL DEVELOPMENT: A CASE STUDY OF LOWER SILESIA AND LATVIA

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**Abstract.** The article discusses sustainable spatial development in Lower Silesia and Latvia (NUTS 2 level for territorial units), paying attention to the integration of Sustainable Development Goals (SDGs) and strategies for future growth. In Poland, spatial development guidelines emphasise economic viability, competitiveness, innovation, and sustainability, focusing on cooperation between local governments. Legislative reforms prioritise sustainable development principles in spatial planning to address regional challenges comprehensively. Lower Silesia's diverse topography and urban centres are focal points for understanding local development strategies and climate change mitigation efforts. The sustainable development strategy in Latvia aims to enhance societal well-being, economic growth, environmental quality, and international recognition through long-term development objectives. Collaboration between urban and rural areas is crucial for Latvia's sustainable development, emphasising the optimal utilisation of resources and tourism promotion. The text stresses the importance of aligning economic activities with environmental preservation and promoting social engagement for sustainable development. The research highlights the significance of integrating environmental considerations, spatial planning, and societal engagement to achieve sustainable development and address regional disparities for further exploration and application of sustainable practices.

**Keywords:** spatial development; sustainable development; drivers; Lower Silesia; Poland; Latvia

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### 1. Introduction

Sustainable development can be understood as a rule that enables the current generation to realise its development aspirations while securing the ability of future generations to meet their own needs (Brundtland, 1987). The idea of sustainability encompasses various elements that encourage regional growth, such as the anticipated increase in gross domestic product, augmented investment in research and development, decreased unemployment rates, heightened employment opportunities, poverty alleviation, elevated fertility rates, prioritisation of environmental concerns (including waste segregation, renewable energy sources, protected ecological areas), and the efficient operation of non-governmental organisations. Borys (2005) emphasises that sustainable development is a process of change that should exhibit the features of sustainability, positively assessed, at least on the basis of an anthropocentric set of values. The initial section of the study delves into theoretical considerations concerning sustainable spatial development, highlighting challenges posed by

underlying obstacles, sustainable development conceptual frameworks, the significance of innovation, the pivotal role of non-governmental organisations, and effective governance practices within regional contexts. Effective regional governance determines balancing economic progress, environmental sustainability and social well-being (Giorgetta, 2002). The analysis of the implementation of the sustainable development concept presented herein offers a comprehensive evaluation with a particular focus on select facets crucial to its successful realisation, the achievement of which significantly influences the overall implementation of sustainable development principles.

In this study, the authors define the term "Sustainable spatial development" as an improving organization of space to ensure long-term quality of life within a specific territory. Sustainable spatial development encompasses the dynamic process of facilitating effective hierarchical interaction and redistributing the functions of social, economic, ecological, innovative, and informational elements within living spaces to cater to the diverse needs of present and future generations sustainably. It is important to understand that achieving sustainability is not about striving for its absolute but balancing various development dimensions, such as spatial, ecological, economic, social, cultural and institutional (Kipane et al., 2023). Governance in sustainable spatial development entails activities undertaken by management entities to concretise spatial strategies that promote balanced socio-economic and environmentally sustainable development. The study aims to determine a theoretical and methodological basis for the analysis of sustainable spatial development processes (Pavlikha, 2006). The goal is to enhance the living standards of populations, ensure rational space utilisation, regulate natural resource use, protect the environment, maintain spatial system integrity, overcome regional disparities, promote urbanisation and rural development, and ensure spatial accessibility and safety. These actions aim to support the preservation of cultural heritage, expand access to information and knowledge, and increase energy security.

Additionally, responsible and intelligent spatial policies are based on sustainable development principles, reinforcing the significance of spatial planning in boosting sustainability (Zhang et al., 2024). By anchoring sustainable development in spatial policy, decisions made in local spatial planning are imbued with an axiological basis and serve as guiding principles in navigating conflicting interests and values. One of the crucial elements in integrating sustainability into mainstream practices is the incorporation of spatial thinking and territorial cohesion perspectives in the processes of planning, development, assessment, and monitoring. A region can be organised as a homeland for residents and their descendants by applying sustainability to spatial planning. The conceptual framework for sustainable spatial development hinges on the synergistic integration of social, economic (Remeikiene et al., 2022) and environmental dimensions, with spatial planning playing a vital role in steering socio-economic progress while safeguarding environmental resources. Moreover, ensuring holistic societal well-being requires balancing these pillars in sustainable spatial development (Szlávik et al., 2016; Pavlikha & Voichuk, 2018; Szlachetko, 2023).

The literature review shows that sustainable spatial development includes many different interrelated development drivers. However, the degree of research into these individual drivers varies. For example, factors such as transport, social sphere, and cultural heritage have been studied in more detail than environmental protection factors. Although the topic of green sustainable development of territories has increasingly appeared in scientific articles in recent years, these articles, as a rule, focus only on individual aspects, such as water quality or degraded territories. At the moment, the list of possible drivers that would allow for a comparative analysis of territories in an international context remains an unresolved issue. Therefore, in this article, the authors firstly focus on proposing a set of uniform and comparable drivers and, secondly, conduct a comparative study of these drivers in relation to two regions of the European Union - Latvia and Lower Silesia.

## 2. Strategic Approach for Spatial Sustainable Development

The modern strategy for sustainable spatial development is based on scientific and technical improvements driven by innovative resources, interdisciplinary research initiatives, localities engagement and a culture of creativity (Zieschank, 2004).

Additionally, the inclusion of global climate change concerns in municipal development strategies can take various forms at different levels: 1) Micro and mezo (regional) levels may involve ongoing programs to reduce greenhouse gas and air pollutant emissions, improve air quality in health resorts and leisure municipalities, promote greening initiatives, and encourage pro-environmental business practices; 2) At the macro level, initiatives may include educational projects to enhance knowledge of global climate change and environmental awareness, targeting both children and adults. Other activities dedicated to reducing the harmful effects of human impact on the climate may include implementing innovative projects in consumption, logistics, housing and communication (Czaja & Rutkowska, 2023). Considering the above and the specificity of sustainable development, it becomes easier to gradually achieve the delicate balance between economic growth, social cohesion and environmental protection while taking advantage of growing opportunities and effectively minimising potential threats (Zieschank, 2004; D'Adamo & Gastaldi, 2023). In 2001, the Ministers overseeing Spatial Planning and Development in the Baltic Sea Region (BSR) countries ratified a revised Action Programme for the coming years. The BSR initiative addresses many of the challenges of spatial sustainability, including transport integration, promoting territorial diversification through smart specialisations, strengthening rural areas, and creating culture-based green networks (Zieschank, 2004). Human involvement is paramount across dimensions of sustainable development, emphasising the responsibility of meeting present and future needs. Sustainable spatial development aims to implement programs based on sustainable development principles through collaboration with local governments and community support.

On the other hand, sustainable development strives to meet the expectations of the current generation while optimising public welfare, environmental protection, and economic interests to ensure future generations' ability to satisfy their needs. The sustainable development strategy of Latvia, rooted in the analysis of global processes, addresses demographic changes, globalisation, labour market dynamics, climate change, energy security, emerging public participation forms, poverty risks, and urbanisation. The launch of sustainability in local spatial planning is of key significance, emphasising that local spatial development plans are essential tools for implementing spatial order and sustainable development principles set out in the relevant regulations (Szlávik et al., 2016; Raszkowski & Bartniczak, 2018; Szlachetko, 2023). One of Poland's most crucial legal bases regarding sustainability concerns is the "Sustainable Development Strategy for Poland up to 2025" (Polska 2025, 2000). While the strategy aims to initiate an extensive dialogue within Polish society regarding sustainable development, accessing the strategy, even online, may prove challenging.

Nevertheless, it enables entities to consider ecological challenges in social, economic, and infrastructure strategies (Nowicki, 2011; Raszkowski, 2013; Godlewska-Majkowska, 2014). Notably, Polish spatial planning law changes have focused on sustainable development as a fundamental principle, providing appropriate guidelines and conditions for land use (Miszczak, 2013). The legislative reforms of 2023 expanded the values considered in spatial planning to include sustainable development needs. The significance of local spatial planning in managing sustainable space is crucial in Poland's legal framework (VNR, 2023). The key spatial challenge is the insufficient coverage of spatial development plans throughout the country (Korenik et al., 2018; Wyszowska & Rogalewska, 2016; Szlachetko, 2023).

### 3. Research methodology

This study uses a descriptive method as well as a content analysis method. This combination allows for a more comprehensive study of the problem of sustainable development (drivers and challenges) in two regions of Europe. In the first stage, the authors, based on a literature review and an analysis of already available studies, model a set of the most important comparable drivers for assessing sustainable spatial development and comparative analysis of the regions of the European Union. In the second stage, the authors test the performance of this model by applying it to two specific regions - Lower Silesia and Latvia.

The more variables are used in constructing a model, the more accurate and adequate the model is expected to be; however, with an increase in the number of factors (variables) used, the computational complexity increases, and the interpretability of the model decreases. The authors draw attention to the fact that not all available data

will be useful - the data may contain redundant and insignificant (irrelevant) features that can be removed without significant loss of information and deterioration in the quality of the model.

Therefore, when solving the methodological problem of selecting the necessary factors (variables for constructing an analytical model), the authors focused on identifying a subset of the data set that ensures the best quality of the model. Firstly, the variables selected by the authors are quantitatively measurable. Secondly, these variables contain only the most significant features from the point of view of the problematic of the article.

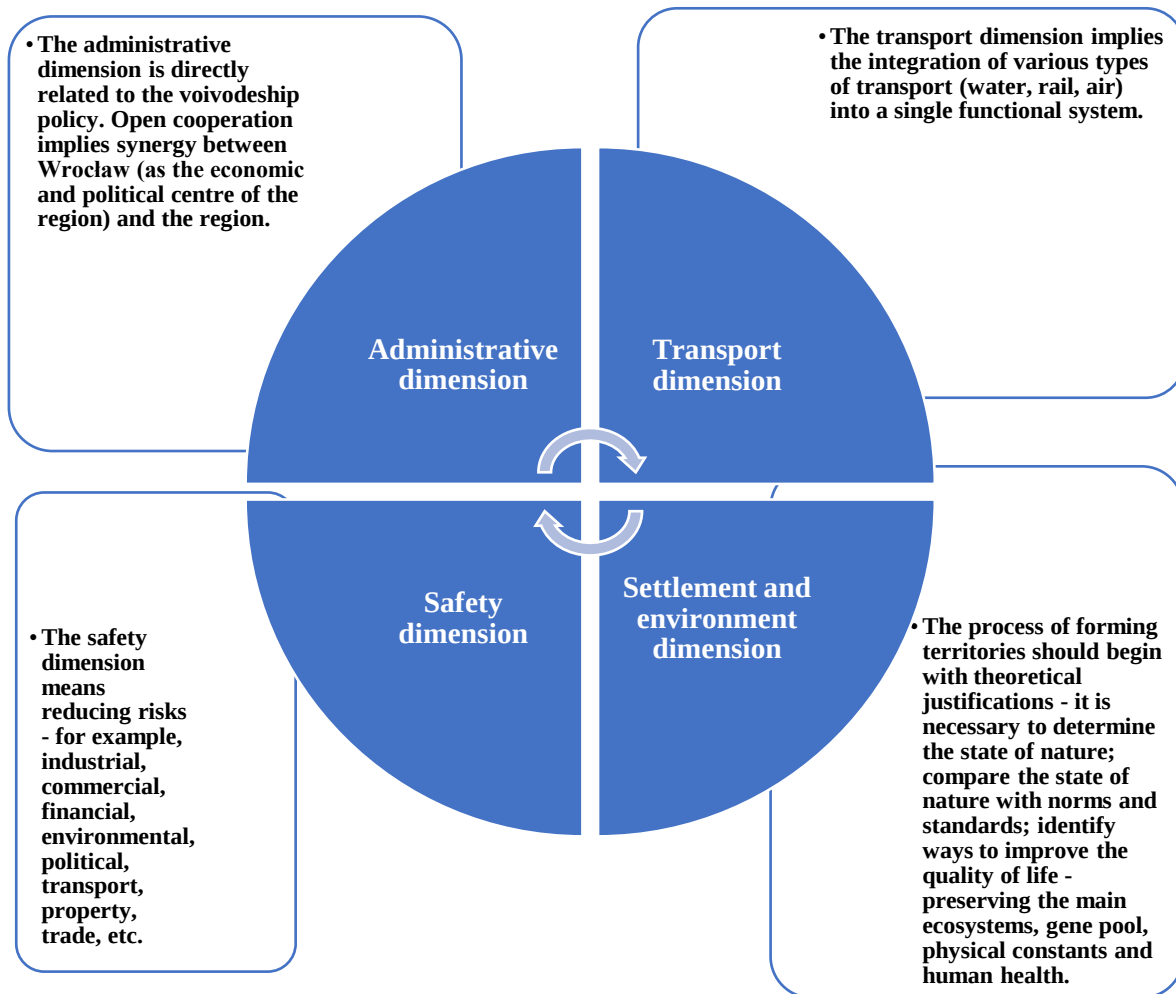
#### **4. Results and discussion**

##### **Characteristics of Spatial Sustainability in Lower Silesian Voivodship**

The Lower Silesia, situated in the southwestern part of Poland and sharing borders with the Czech Republic and the Federal Republic of Germany, closely mirrors the geographical boundaries of the Lower Silesian Voivodeship. Morphologically, the region consists of mountainous areas, highlands, lowlands and intermountain valleys. The excerpt underscores the urgency of formulating a deliberate settlement strategy for the Lower Silesia region. It visualises Poland's progress towards achieving Sustainable Development Goals (SDGs) through selected drivers that monitor the country's national sustainable development priorities.

The spatial development guidelines for Lower Silesian Voivodeship aim to manage spatial resources efficiently. The region aspires to be economically attractive, socially responsible, environmentally future-oriented, and innovative governance, focusing on sustainable development and creative management (Miszczak, 2020). The administration prioritises public service, resource management, stability, safety, community support, health, and vitality. It emphasises cooperation between local governments to address regional issues and strengthen synergy between Wrocław (the region's capital) and the surrounding area. Therefore, it is worth taking a closer look at the complex processes and mechanisms of the functioning of local communities and the evolution of local government in Poland (Czaja & Rutkowska, 2023).

Given that urban sprawl is most prominent in highly populated, rapidly developing regions experiencing significant economic growth in Europe, Lower Silesia, a leading Polish region, was chosen as the focal point for investigation. The growing challenges related to proper spatial planning have concerned both urbanised and rural areas, especially those surrounding the main urban centres of Lower Silesia (Kulczyk-Dynowska & Stacherzak, 2022). An undoubted challenge resulting from the analysis of 250 Local Development Strategies in Lower Silesian communes from 2016-2022 (Czaja & Rutkowska, 2023) is a need to implement the concept of sustainable development, emphasising long-term growth (including the promotion of eco-business) and growing involvement in environmental protection (including limiting local air pollution, reducing greenhouse gases, greening municipalities as much as possible and promoting ecological educational projects). The conducted research (Czaja & Rutkowska, 2023) revealed shortcomings in local information policy, significantly hindering the voivodeship in correctly understanding and addressing the effects of global climate change and responsible spatial planning. That's why, according to the Development Strategy of Lower Silesian Voivodeship 2020, the following directions for intervention dedicated to spatial sustainability improvement should be undertaken (Figure 1).



**Figure 1.** Main dimensions of Lower Silesian spatial sustainability  
 Source: authors created based on the *Development Strategy of Lower Silesian Voivodeship 2020*

It should also be emphasised that sustainable consumption significantly impacts the implementation of spatial sustainability in each of the four dimensions described above. Sustainable consumption as a driver of development involves using goods and services that meet current needs while ensuring the availability of resources for future generations. This challenge requires a conscious and responsible approach to minimise environmental impact and improve well-being. Moreover, in light of a growing need for a more precise conceptualisation of sustainable development due to various emerging issues, this consumption model fits the best. Sustainable spatial development involves a dynamic process of ensuring effective hierarchical interaction and changing the concentration of functions within living spaces to meet the various needs of current and subsequent generations. Sustainable communities are where people desire to live and work now and in the future. Sustainable planning aims to ensure sustainable development and management of the built environment, focusing on trade-offs between different dimensions of sustainability. The concept of sustainability balances the needs of internalisation and glocalisation, shifting towards fulfilling its long-term goals (Pavlikha & Voichuk, 2018; D'Adamo & Gastaldi, 2023). From the point of view of sustainable development, however, it is crucial not only to grasp spatial planning goals properly but also to implement them consistently, leading to achieving the assumed effects. Various drivers help assess the impact of the sustainability policy. Creating multiple sets of drivers of spatial sustainable development is very common. Particular attention is paid to the sustainable development of strongly urbanised areas, especially cities and suburbs. The overarching objective of these activities is to develop methods and tools supporting the creation of a high-quality living environment

in cities and to inhibit the adverse phenomena of urban growth and degradation of old housing estates and post-industrial areas (Fogel & Fogel, 2007).

The spatial sustainability of the Lower Silesian voivodship was characterised using spatial planning instruments, such as a synthetic drivers of land use under the principles of sustainable development, for which twelve basic measures were adopted (see Table 1):

| MEASURE                                                                                                                                                                                                            | LOWER SILESIA | POLAND    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------|
| Share of protected areas in the total area [%]                                                                                                                                                                     | 18,6          | 32,2      |
| Share of green areas in the total area [%]                                                                                                                                                                         | 0,83          | 0,59      |
| Total green area per capita [m <sup>2</sup> ]                                                                                                                                                                      | 57,7          | 49,2      |
| Share of degraded areas in the total area [%]                                                                                                                                                                      | 0,107         | 0,025     |
| Number of inhabitants per km <sup>2</sup> of built-up and urbanised area                                                                                                                                           | 1908          | 2061      |
| Communes that carried out revitalisation activities based on Municipal Revitalisation Programs or Public Relations completed in the reporting year for which interventions in the spatial-functional area dominate | 77            | 732       |
| Total revitalisation area [ha]                                                                                                                                                                                     | 41 314        | 1 082 083 |
| The area of revitalised brownfield areas (including post-industrial, post-railway) [ha]                                                                                                                            | 2,45          | 36,12     |
| Revitalisation area - residential areas, including accompanying service and communication areas in the city [ha]                                                                                                   | 9 212         | 174 444   |
| Revitalisation area - residential areas, including accompanying service and communication areas in the countryside [ha]                                                                                            | 26 873        | 629 512   |
| Revitalisation area - uninhabited built-up areas [ha]                                                                                                                                                              | 2 993         | 85 956    |
| Revitalisation area – other uninhabited areas [ha]                                                                                                                                                                 | 1 101         | 163 077   |

**Table 1.** Land use under the principles of sustainable development in Lower Silesia in 2022

Source: authors created based on *Statistics Poland, 2022*

As the above analysis shows, Lower Silesia, one of the most urbanised regions of Poland, is characterised by a smaller share of protected areas in the total area of the voivodeship than the national average. In contrast, this proportion is reversed in the case of degraded areas. Such challenges require appropriate actions undertaken by local government authorities in spatial development policy, primarily since the region is distinguished nationally by more remarkable greening and intensity of land use. Local authorities and communities seem to be aware of this fact, as evidenced by the number of almost half of Lower Silesian municipalities (45%) that carried out revitalisation activities in the spatial-functional area based on Municipal Revitalisation Programs or Public Relations in 2022. For comparison, the percentage of municipalities undertaking revitalisation interventions in this area across the country was only 29% in 2022. Similarly, the share of revitalisation areas in the voivodeship area was more than twice as high (7%) as the share of these areas in the total area of Poland (3%). At the same time, the uninhabited but built-up areas of Lower Silesia were more subject to revitalisation activities (0.5% of the region's area, national average of 0.2%) than other uninhabited areas (0.1% of the region's area, national average of 0.5%).

On the other hand, in the urban-rural dimension, in the Lower Silesian voivodeship, as in the whole of Poland, a larger area of rural areas is subject to revitalisation interventions (4% of the voivodeship's area, in Poland 2%) than the urban revitalised area (1% of the voivodeship's area, in Poland 0.5%). An additional argument proving the above-average commitment of the Lower Silesian local government authorities to improving spatial sustainability is the higher than national average share of revitalised brownfield areas. This driver results from the specificity of the spatial-functional structure of the region, which is covered with a dense network of railway lines requiring immediate modernisation and (post)industrial character, especially two of the five subregions of Lower Silesia, i.e. the Wałbrzych subregion and the Legnica-Głogów subregion.

### Characteristics of Spatial Sustainability in Latvia

The Republic of Latvia borders with Estonia, Lithuania, Russia and Belarus. Currently, forests occupy 3.4 million hectares in Latvia, covering 53% of the country's territory. Statistics on the distribution of land by land use types on January 1, 2024 (Statistics, 2024) show that the total area of Latvia is 6448976 ha, including agricultural land 2251137 ha, forests 3147484 ha, scrubland 102380 ha, swamps 208763 ha, land of water objects 271748 ha, land under for buildings and yards 105716 ha, land under roads 143779 ha and other land 217969 ha.

According to the data of the Official Statistics Portal (OSP, 2024), in 2020, there were 69 thousand economically active farms in Latvia, which managed 1.97 million ha of agricultural land, or 30.5% of Latvia's territory. In 2020, farms managed 1.21 million ha of owned areas, or 61.7% of the total managed agricultural land, while the rest of the managed areas were leased from other farmers. Over the past 10 years, the distribution of farms by economic size groups has changed - in 2020, small farms accounted for 85.2% of the total number of farms, which is 6.3 percentage points less than in 2010, which is a significant challenge for the entire land use system. Small farms managed only 22.7% of the total agricultural land area, which is 20.4 percentage points less than in 2010. Large farms managed 870.7 thousand ha, or 68.2% of the sown area, as well as 91.8 thousand ha or 16.3% of the used meadows and pastures, were managed in large farms.

In comparison with Poland, Latvia demonstrates a relatively good situation in terms of the ecological drivers of the territory (see Table 2).

| Country                                                         | Latvia | Poland |
|-----------------------------------------------------------------|--------|--------|
| <b>Renewable Energy:</b> % of Gross Final Energy Consumption    | 37,20  | 11,30  |
| <b>Green Areas:</b> Forest Area (% of Total Land)               | 53,97% | 30,81% |
| <b>Green Areas:</b> Forest Area (m <sup>2</sup> ) per Capita    | 17,045 | 2,485  |
| <b>Government Support:</b> € per Capita                         | 107,59 | 25,48  |
| <b>Pollution:</b> Greenhouse Gas Emissions (t per Capita)       | 6,00   | 10,50  |
| <b>Municipal Waste Generated</b> (kg per Capita)                | 6,00   | 307    |
| <b>Waste Management:</b> Incineration / Energy Recovery         | 0      | 56     |
| <b>Waste Management:</b> Material Recycling                     | 62     | 85     |
| <b>Waste Management:</b> Composting and Digestion               | 42     | 21     |
| <b>Waste Management:</b> Sustainable Recycling (%)              | 25,37% | 52,77% |
| <b>Organic Agriculture:</b> Share of Organic Agricultural Areas | 13,42  | 3,72   |

**Table 2.** Comparison of "Eco-Costly" drivers in Latvia and Poland, 2023

Source: authors created based on *Greenmatch*, 2023

The differences in the mentioned drivers are mainly related to the size of the countries, population, as well as the history, geography and economy of these countries. In Latvia, environmental quality (On Pollution, 2001) shall be determined in comparison with the desirable quality of air, surface water, underground water, soil, and subterranean depths or quality of other environmental components for the provision of which the environmental quality requirements expressed in quantitative indicators shall be determined. In this context, special attention should be paid to the challenges in the energy sector, which are more relevant for Poland than for Latvia. In the power structure of Latvia's generating sources, more than half of the electricity comes from hydroelectric power plants. In turn, in Poland, whose energy sector is still 70% coal-based, three times more CO<sub>2</sub> must be emitted to produce 1 kilowatt-hour of electricity than the European average.

By analyzing the challenges and environmental policy guidelines for 2021-2027 (EPG, 2022), we can draw attention to the following aspects. The annual runoff of Latvian rivers is 34.7 km<sup>3</sup>, but only about 44% of the total runoff is formed in the territory of the country. The pollution that enters Latvia from Lithuania, Belarus and Russia covers all groups of pollutants, especially biogenic elements, affecting the quality of waters in the Gulf of Riga and the Baltic Sea. In the context of environmental noise pollution, two main impact indicators have been identified - the impact on public health and the impact on the possibilities of using the territory. Until now, no comprehensive studies have been conducted in Latvia on the impact of noise on public health. However,

taking into account the fact that the extent of the impact is inextricably linked to drivers and indicators of the state of the environment, it must be concluded that the impact of noise on the health of the population of Latvia has increased over the past 10 years. Taking into account that the country has set limits for the permissible level of environmental noise pollution in certain built-up areas, such an increase in the level of noise pollution, as a result of which the limit values of noise in certain areas are exceeded, creates a practical challenge - restrictions on the possibility of using the affected areas. To characterize the state of the environment, data from the noise strategic maps are used, which are updated every 5 years for the Riga agglomeration and the main objects of the national transport infrastructure, evaluating the dynamics of the population and the area of the territory exposed to increased noise levels.

Low concentrations of sulfur dioxide and carbon oxide in the atmosphere have been observed for a long time in Latvia. On the other hand, the concentration of other acidifying substances, as well as particulate benzene and ground-level ozone in the environment, is characterized by significant territorial differences. The concentrations of all the above-mentioned substances, except ozone, outside the large cities where air quality monitoring is carried out (Liepāja, Rēzekne, Riga, Ventspils) remain at a low level, but in urban areas, air quality regulations for the protection of human health and the upper pollution assessment threshold are often found to be exceeded.

The results of ozone monitoring show the opposite results; in this case, increased concentrations were observed directly at rural observation stations, where exceedances of the target values for the protection of human health and vegetation were recorded. With the exception of ozone pollution, other state drivers characterizing the impact on ecosystems (concentrations of sulfur dioxide and nitrogen dioxide) indicate a low level of pollution in rural areas. Taking into account that the situation in the field of climate change is characterized by the modern challenge - the concentration of greenhouse gases in the atmosphere, which is not measured separately in the territory of Latvia, in order to characterize the manifestations of climate change in Latvia, primary impact drivers are used. Impact trends are considered over a longer period because when evaluating data for a shorter period, it is impossible to objectively assess trends.

One of the most important challenges in the context of spatial development in Latvia is currently the revitalization of degraded areas. Brownfield, in this article, means a place (land, buildings, real estate) that was previously used or built on but is currently abandoned or underutilized. It can be a place that is abandoned (a territory whose productive use no longer takes place for a considerable period of time), abandoned (a territory that industrial or other activities have damaged to such an extent that it is impossible to start its beneficial use without special restoration measures) or polluted (a territory, where a polluting activity has occurred or is still ongoing). This place can also be partially inhabited or otherwise used (territory in part of which economic activity or other beneficial use takes place).

It is a whole complex of challenges, which includes such risks as the expansion of construction in natural areas that does not comply with the principles of sustainable development; anthropogenic load, soil, water and air pollution, construction of green areas; insufficient physical and aesthetic quality of construction; non-compliance of production and technical infrastructure with environmental requirements; losses in the economy, due to inefficient use of the territory.

Degraded territories (brownfield) in Latvia consist mainly of inefficiently used production territories and the construction of warehouses, also in the port area; former army territories (activity in them: production, warehouses, workshops); residential construction - buildings in emergency condition; former landfills – contaminated sites; abandoned or inefficiently used transport infrastructure areas; areas of small gardens are extensively used.

Degraded areas can have a negative cumulative effect on the surroundings (RSC, 2004), and both the area and the local community can be harmed. On the other hand, the revitalization of degraded areas has a positive effect on the flow of investments and the business environment. In essence, the general goal of the revitalization of brownfields is to promote the country's sustainable development: to eliminate brownfields as much as possible and thus promote the regeneration process of the urban environment. This includes solving environmental

challenges, increasing the economic efficiency of the use of territories, improving the visual and structural-functional quality of the environment, and humanizing elements of the social environment.

Significantly, the criteria that influence business decisions are conceptually consistent with the criteria for determining brownfield sites, such as drivers of the economic efficiency of the territory - population, nature sites, number of companies; legal status of the territory - permitted use, limitations, obligations; presence of infrastructure and quality of engineering communications; access options; construction intensity and area size; placement opportunities of interrelated companies; compatibility and mutual influence of the use of adjacent territories; environmental condition and level of pollution; public opinion and attitude.

The history of degraded areas in Latvia and Poland is relatively similar. Most of these territories in Latvia occurred after the collapse of the Soviet system. Their decisive conditions are related to the transition to the market economy (Krivins, 2019) and, as a result, a radical change in the production field. Former heavy industry territories and their service engineering infrastructure abandoned military areas and residential areas around them, and the buildings that started today are still unfinished. At the same time, Latvia's scales are significantly smaller than Poland's. In addition, there are no large areas in Latvia which are dominated by a single industry, such as the coal industry or metalworking, so large, continuous, degraded areas have not developed.

The conditions of prolonged existence of degraded areas may vary. The main reasons for the existence of degraded territories in Western European countries are related to population decline, economic downturn, and corruption (Krivinš & Vilks, 2013; Krivins, 2014; Teivāns-Treinovskis et al., 2022; Krivins et al., 2023), decrease in land market value, decline the availability of green areas. Of course, the effective use of the degraded area cannot be resumed without targeted intervention (recovery, renovation, infrastructure arrangement, spatial planning measures, investment (Kastratović et al., 2024), land consolidation and significant investment in its reconstruction).

It should be noted that there is still monocentric development in Latvia, which focuses on the capital of the capital (Riga). Although research into areas degraded in Western Europe has been carried out on the concepts of revitalisation and practical projects in the restoration of territories since the mid-20th century, this aspect has been relatively little scientifically studied in Latvia. One of the first planning documents in which special attention was paid to the study and renovation of degraded areas was the new development plan of Riga. Even today, the most crucial revitalisation projects are implemented primarily in Riga.

For example, according to the SJSC "State Real Estate" data (SRE, 2023), it is planned to complete several projects in 2024 when degraded areas turn into creative, educational and innovative locations, including the project "The Center for Education, Culture and Creative Industries - "TAB FAB "(ERDF funding of EUR 5.1 million without VAT) as well as the project "Riga Makerspace" (total construction costs of EUR 9.4 million with VAT). These and many other revitalisation projects related to the renovation of buildings confirm that the actual volume and complexity of the work to be done only after the start of the work, so it is very difficult to predict the exact completion of these projects. Revitalising the degraded areas owned by municipalities and transforming them into attractive and sustainably used ones is challenging. In Latvia, restored areas where the historical heritage and modern, sustainable solutions alternate are returned to society.

The biodiversity, development and availability of parks, forests and greenery in Riga is cared for by LTD "Riga Forests", with 62,000 ha of forests, 399 ha of parks and 125 greenery objects (RF, 2022). Riga Forests also cares for the Culture and Recreation Park "Mežaparks" (385ha). In 2021, Riga Gardens and Parks, in cooperation with neighbourhood associations, participated in the project initiated by the Latvian Nature Fund, "City Meadow", preparing the soil for installing 20 meadows. In 2022, this initiative was continued, and 10 natural meadows were created. Riga residents are relatively optimistic about air and water quality, green areas, parks and other drivers (Numbeo, 2022), which affects the city pollution - in 2022, out of 5577 cities, Riga was ranked 63rd. There are many natural areas in Riga, but in most cases, their location in the city is fragmented (Riga City Council, 2022). It is necessary to combine these areas into a single structure of biological centres,

urban environmental green centres, and the green band adjacent to the city, connecting the water areas to the green corridors and trails.

Directly to discuss and solve the challenges of the capital, on November 15, 2022, the Focus Group was held (Riga City Council, 2022), whose main insights are as follows: 1) Covid-19 pandemic and restrictions showed the importance of a public outdoor role. A green, pleasant, outdoor space must be near the residence; The neighbourhoods must become self-sufficient - there is a place in each neighbourhood where people can relax and where they can walk from their place of residence; 2) green zones (not always parks) and their creation is also essential for adaptation to climate change; 3) Special attention should be paid to the waterfront, the residence should be developed at the water, their availability and diverse functionality (improvement); 4) It is essential to focus on the improvement of the courtyards, opening for public use, such as creating courage passages - making the yards multifunctional people would feel safer; 5) A quality natural environment improves both urban aesthetics as well as emotional and physical health. The connectivity of the green areas (green trails, corridors, water edges) makes it more enjoyable and promotes an active lifestyle for recreation and daily mobility of the feet and bike.

These aspects are closely related to improving the emotional well-being and life quality of the local population through the facilitation of a biophilic approach to urban development and design. There are numerous studies (e.g., Bowler et al., 2010; Scopelliti et al., 2019; Gaekwad et al., 2022) that confirm the positive impact of the nature, quality and aesthetically appealing environment on the population, including a positive effect on productivity. This aspect is indirectly confirmed by human values studies in Latvia using Motival technology (Kaže et al., 2022) – the value profile of the Latvian population is highly exposed towards the domain of Caring and Tolerant values that include high importance of values related to caring about the environment and being in harmony with nature, respectively. The economic impact of the revitalisation is not currently much researched; however, not only does the productivity of the local population have a positive impact, but it might also help to grow the income from inbound tourism, attracting visitors with similar values to the local population. (Kaže et al., 2011)

## 5. Conclusions

The situation regarding the use of the country's territory in the current development conditions is rapidly changing, and the most crucial driver for development could be the revitalisation of degraded areas in the twentieth century. This issue should be seen in the context of the following factors: 1) European Union policy and potential support for a sustainable urban environment; 2) the context of economic development and the speed of change; 3) Tourism promotion - an increase in the number of tourists that require appropriate infrastructure and attractive environment for accommodation and service; 3) Reducing the risk of poverty, as the degraded living environment is, to a certain extent, the physical expression of social challenges; 4) Solving the challenge of transport, as if the mobility and business mobility of the population is increased by promoting traffic, the functional organization of an inappropriate area may enhance the pollution of the area.

To respond to these challenges, the most important steps may be: 1) a detailed and comprehensive assessment of the situation, which includes gathering information on the degraded areas in the country - including property affiliation, topography, existing and permitted use, level of pollution, building intensity, etc.; 2) determination of the causes of new degraded areas; 3) development of possible development scenarios and models; (4) the establishment of the database of degraded areas - this database must be publicly accessible and qualitatively maintained to provide the country with up-to-date information on processes in the use of the territory and justification for decision-making; 5) proactive national planning and definition of priorities in the revitalization of degraded areas.

Of course, these tasks are challenging. Degraded areas are characterized by diversity (different dislocation, authorized use, contamination risks, engineering communications, engineering quality, etc.). This fact makes the methodological category of territories; second, the potential costs of restoring the area have a significant impact; third, it has a significant impact on the types of intervention.

The public sector - the government and municipalities must act for the restoration of degraded areas, but the available resources limit their actions, which is an important current challenge. Although Latvia has implemented a number of revitalization projects with the European Union Structural Funds funding after joining the European Union, other types of cooperation, such as public and private sector cooperation, should be used more actively, in addition to the public sector support and private sector resources and knowledge, the renewal of degraded areas may be delayed, which can have a long-term negative effect.

In the context of the article, the number of degraded areas and their long-term existence indicate that private investment is inadequate to fully restore them effectively and quickly. For example, in Latvia, these areas are currently being renovated fragmented. This indicates that the revitalization of the degraded areas also requires public sector support and planned measures to increase the efficiency of resource use, as private businesses refrain from activities in the recovery of the environment if the area is not commercially beneficial.

The ineffective use of the area undoubtedly has a negative impact on the national economy. Concluding, it seems evident that the European Union's guidelines for the sustainable development of cities and regions should be referred to in the spatial planning systems of the Member States. In the case of Poland, this adjustment is half-hearted. The spatial development policy of the voivodships is mainly focuses on one driver - limited to planning the location of public purpose investments of supra-local importance. On the other hand, at the local level, large cities (including urban agglomerations and metropolises) are treated the same way as other municipalities. However, their complexity and the scope of generated external impacts significantly exceed their administrative boundaries (Mierzejewska, 2011). An optimistic accent is the recent change in legal regulations in spatial planning, which allows us to expect that sustainable development in the spatial aspect will be an objective reality in Poland soon. Entering the path of sustainable development in this respect will also require greater awareness of the impact of additional drivers - of the planning and development entities of the impact of the shaped spatial structures on the possibilities of implementing the principle of sustainable development and greater responsibility for the common good, social interest and future generations.

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