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Simon, Róbert Balázs[1] – Berkes, Judit[2]

Territorial Analysis of the Sustainable Urban Development Strategy of the City of Győr

ABSTRACT

Sustainable urban development in Győr has received special attention in recent decades. This study examines the city's sustainable development strategies, with a particular focus on increasing green spaces, improving public spaces and improving the energy efficiency of transport systems. The example of Győr illustrates how urban planning and policies can be shaped according to the principles of sustainability, ensuring an improved quality of life for the population and the conservation of natural resources. The research highlights the importance of cooperation between local government and the community and the role of innovative solutions in promoting sustainable development. The results show that Győr is successfully integrating global sustainability goals into the local context and can serve as a model for other cities.

Keywords: urban development, sustainability, urbanism, local governments

[1] PhD Student, Széchenyi István University, Doctoral School of Regional and Economic Sciences, 9026 Győr, Egyetem tér 1. Email: simonrobertbalazs@gmail.com.
[2] Associate Professor, Széchenyi István University, 9026 Győr, Egyetem tér 1. Researc Fellow, Institute for Regional Studies, Hungarian Academy of Sciences, 7621 Pécs, Papnövelde u. 22. Email: berkes.judit@sze.hu

INTRODUCTION

Sustainable urban development is a comprehensive approach that integrates economic, social, and environmental considerations to create cities that are resilient, efficient, and equitable for current and future generations. It involves a holistic and integrated approach to urban planning and management that seeks to balance economic growth, environmental protection, and social equity. This approach is dedicated to enhancing the quality of urban life by considering ecological, cultural, political, institutional, social, and economic aspects (Yu, 2021). Sustainable urban development focuses on achieving stable economic growth and structural optimization within cities, leading to urbanization and modernization (Wang et al., 2020).

Sustainable urban development strategies are becoming increasingly important to address the myriad challenges posed by rapid urbanization (Enyedi, 2012), climate change and resource depletion (Hungarian Urban Society, 2020). As cities continue to grow at an alarming rate, they face pressing problems such as pollution, inadequate infrastructure and social inequalities. In response, urban planners and policy makers are seeking innovative solutions to create more resilient, efficient and liveable cities. By integrating sustainability principles into urban development, these strategies seek not only to improve the quality of life for current residents (Madarász, 2018), but also to ensure that future generations can thrive in balanced ecosystems.

One key aspect of sustainable urban development is the concept of sustainable urban form, which emphasizes characteristics such as compactness, walkability, high density, public transport dominance, mixed land use, proximity, connectivity, diversity, ecological integration, well-designed spaces, and high environmental standards (Chen et al., 2022). This form of development aims to create cities that are more sustainable by altering physical elements and urban organization to increase urban density (Bikdeli, 2016). Additionally, sustainable urban transformation involves multidimensional and radical changes that steer urban development towards ambitious sustainability goals (McCormick et al., 2013). It emphasizes structural transformation processes that can effectively drive urban development towards sustainability (Fayad, 2022).

In the context of sustainable urbanization, the synergy degree of sustainable urbanization measures the coordinated development and orderly evolution trend of various subsystems within the urbanization system, including demographic change, economic development, spatial structure, environmental quality, and social development (Jiao et al., 2017). Furthermore, the theory of sustainable urban development includes dimensions such as economic, social, and natural sustainability, highlighting the importance of balancing these aspects for overall urban sustainability (Liu, 2021). The evaluation of green transportation systems within urban areas based on sustainable development theory integrates the principles of sustainable development into transportation planning and design (Wang et al., 2019).

Urban agriculture also plays a role in sustainable urban development, with strategies based on theories like the core-periphery theory and multifunctionality of agriculture theory. These strategies aim to promote urban agricultural development and contribute to urban sustainability by integrating urban and rural planning (Tian & Xu, 2012).

In assessing sustainable urban development, it is crucial to consider various tools and methodologies for evaluating the sustainability of urban design. These tools help establish classification parameters for different phases of urban development, temporal and spatial scales of intervention, sustainability dimensions, and stakeholder involvement, enhancing the understanding of sustainable urban development evaluation (Gil & Duarte, 2013). Additionally, addressing environmental risks associated with urban development projects through the application of sustainable development theory can help evaluate the environmental, social, and economic impacts of such projects, paving the way for more sustainable and equitable urbanization practices (Mburu, 2024). Achieving sustainable urban development requires a concerted effort to balance competing interests and prioritize long-term sustainability over short-term gains.

The aim of this paper is to analyze the process, implementation, and expected impacts of sustainable urban development strategies in Hungarian municipalities, particularly in cities with county status. Our analysis is based on the sustainable urban development strategies of Hungarian cities with county rights, with a special focus on Győr (Municipality of Győr City, 2022), as well as on questionnaires and other research and preparatory documents used in their development.

LITERATURE REVIEW

Sustainable Urban Development

Sustainable urban development aims to balance economic growth, social equity, and environmental protection. Since the publication of the Brundtland Report (1987), sustainability has become a central concept in urban development, emphasizing the need to meet present needs without compromising future generations. Pongruengkiat et al. (2023) and Yu (2021) emphasize the importance of a holistic approach integrating economic, social, and environmental aspects. Sustainable urban development requires structural transformations that foster stable economic growth, high quality of life, and environmental equilibrium (Wang et al., 2020; McCormick et al., 2013). Key features of a sustainable urban form include compact urban structures, pedestrian-friendly environments, mixed-use land development, and prioritization of public transport (Chen et al., 2022; Bikdeli, 2016). Assessment tools and sustainability indicator systems (Gil & Duarte, 2013; Sikos & Szendi, 2022; Central Statistical Office, 2021) enable effective monitoring of environmental, economic, and social dimensions of urban progress.

The „green city" concept focuses on ecological integration within urban environments, particularly through the expansion of green spaces, enhancement of ecosystem services, and mitigation of the urban heat island effect. Schmeller (2021) highlights the significance of „tactical urbanism" in creating green spaces, emphasizing flexible, community-driven interventions that make urban areas more sustainable. Green transport system evaluations (Wang et al., 2019) are also integral to green urban development, promoting environmentally friendly mobility and healthier cities. The „Green

Cities Europe" initiative further supports strategies that address climate change and biodiversity preservation, aiming to make urban environments more resilient and sustainable.

The "smart city" approach enhances urban system efficiency and sustainability through the application of digital technologies and data-driven decision-making. Smart city strategies integrate information and communication technologies (ICT) to optimize transportation, energy supply, public services, and governance (Váczi et al., 2022). According to Fayad (2022), smart urban development is not only about technology but also about creating socially inclusive and environmentally sustainable solutions. Urban agriculture initiatives (Tian & Xu, 2012) and participatory planning models (Gehl, 2010) demonstrate how smart technologies can contribute to urban food security and social cohesion, broadening the scope of smart city innovations.

The "sponge city" concept addresses challenges posed by climate change, especially in managing urban stormwater. The key idea is to enhance urban areas' ability to absorb, store, and reuse rainwater naturally. Sponge cities aim to reduce flood risks, conserve water resources, and improve urban livability by integrating green infrastructure such as green roofs, rain gardens, and permeable pavements. Studies by Chen et al. (2022) and Jiao et al. (2017) underline the necessity of enhancing cities' climate adaptability as a fundamental component of sustainable urban strategies. Sponge city models not only offer environmental benefits but also contribute to economic efficiency and social well-being by lowering infrastructure costs and improving overall urban quality of life.

Sustainable Urban Development in Central and Eastern Europe

Sustainable urban development in Central and Eastern Europe has garnered significant interest and research attention, particularly due to the challenges and opportunities faced by cities transitioning from socialist to capitalist economic systems. Urban planning efforts in this region have been characterized by the incorporation of an environmental agenda and a focus on sustainable development, reflecting the increasing awareness of the importance of sustainable practices amidst political, structural, social, and economic changes (Martín-Díaz et al., 2015). This shift towards sustainability is pivotal in shaping urban policies and management strategies in post-socialist urban societies, where addressing the decline of shrinking cities is crucial for urban revitalization and re-urbanization efforts (Kantor-Pietraga, 2021).

The socio-economic and political changes at the end of the 20th century in Central and Eastern Europe significantly impacted the transformation of urban spaces, especially in industrial and mining towns, underscoring the necessity for innovative approaches to sustainable urban development (Kantor-Pietraga et al., 2021). Moreover, the influence of globalization, internationalization, and societal transformations on urban development and property management has been notably strong in Central and Eastern European countries, highlighting the significance of strategic decision-making in urban development processes (Melnikas, 2005). This dynamic environment has led to the emergence of sustainable management accounting practices and an increasing public awareness of corporate sustainability in the region (Zyznarska-Dworczak, 2018).

Research examining the relationship between economic growth and sustainable development indicators in Central and Eastern Europe has aimed to identify key factors influencing economic growth and sustainability in the region. By analyzing the interplay between economic growth and sustainable development indicators, studies have sought to determine the primary variables shaping the economic landscape of Central and Eastern European countries (Lapinskienė & Tvaronavičienė, 2009). Additionally, the evolution of systems of cities in countries like the Czech Republic, Hungary, and Poland since the mid-20th century has highlighted the process of metropolization and the changing settlement networks in the region, emphasizing the need for comprehensive urban planning strategies (Hajdú et al., 2017; Zdanowska, 2015).

The concept of urban shrinkage and housing in post-socialist cities like Łódź, Poland, has shed light on the relationship between demographic evolution and housing development, emphasizing the complex interplay between systemic transformation and urban development processes in Central and Eastern Europe (Szafrańska et al., 2018). Furthermore, the phenomenon of depopulation in post-industrial regions has raised questions about the potential for urban sustainability in shrinking cities, emphasizing the need for innovative approaches to address demographic shifts and urban planning challenges (Runge et al., 2018).

Understanding the patterns of urbanization in Eastern European cities in comparison to Western trends has provided valuable insights into the unique, convergent, or hybrid nature of urban development in the region (Taubenböck et al., 2019).

In the realm of sustainable urban development, bottom-up movements in Central and Eastern Europe have played a crucial role in advocating for sustainable practices and community-driven initiatives. These movements have been instrumental in shaping urban policies, promoting environmental sustainability, and fostering community engagement in the region (Jacobsson, 2016). Additionally, the exploration of knowledge production and learning for sustainable landscapes in Central and Eastern Europe has underscored the importance of transdisciplinary research and stakeholder engagement in promoting sustainable land use practices and environmental conservation efforts (Angelstam et al., 2013).

In conclusion, sustainable urban development in Central and Eastern Europe is a multifaceted and dynamic process that necessitates a comprehensive understanding of the socio-economic, political, and environmental factors influencing urban landscapes in the region. By integrating sustainable practices, community engagement, and innovative urban planning strategies, cities in Central and Eastern Europe can progress towards creating more resilient, equitable, and environmentally friendly urban environments for present and future generations.

To develop a sustainable urban development strategy in the European Union (EU), it is crucial to address the diverse challenges and opportunities that cities encounter in the region. The EU has emphasized sustainable urban development as a fundamental policy objective, as demonstrated by initiatives like the Aalborg Charter in 1994 and the European Union Strategy for Sustainable Development in 2002 (Dimitrova, 2007). These initiatives highlight the significance of integrating economic, social, and environmental considerations into urban planning and management practices to establish cities that are resilient, efficient, and equitable for all residents.

The use of sustainable urban development strategies is essential in shaping the cities of the future. Numerous examples in Europe and Hungary (Nagy-Szijártó & Szalmáné Csete, 2023) show that integrated and comprehensive approaches are needed to achieve sustainability goals. Such strategies not only help to reduce environmental pressures, but also contribute to improving the quality of life of the population (Lechner Knowledge Centre, 2019).

Focusing on Cities: Municipal Sustainability

The sustainability of cities is of paramount importance, as urban areas are often the epicenter of many environmental, social and economic challenges. With more than half of the world's population living in urban areas, the importance of sustainability in cities is becoming increasingly important for promoting resilience, improving quality of life and ensuring the well-being of future generations.

An essential component of sustainable urban development in the EU involves the adoption of Integrated Sustainable Urban Development Strategies (ISUDS), which have been progressively implemented to tackle the intricate challenges faced by urban areas (Medeiros & Der Zwet, 2019). These strategies advocate for a holistic and integrated approach to urban planning, concentrating on improving residents' quality of life, promoting environmental sustainability, and fostering economic growth. By embracing ISUDS, EU cities can benefit from a comprehensive and coordinated approach to urban development, transitioning from traditional sectoral-focused policies to more integrated and sustainable solutions.

Moreover, the issue of urban sprawl presents a significant obstacle to sustainable urban development in the EU. Research has indicated the necessity for a European de-sprawling strategy to manage urban sprawl, establish targets and boundaries, and utilize land more efficiently (Hennig et al., 2015). By endorsing compact city models over dispersion and sprawl, EU cities can mitigate environmental harm, decrease commuting distances, and enhance the overall urban living standards. Implementing measures to control urban sprawl aligns with the EU's dedication to creating thriving, appealing, and sustainable cities that prioritize environmental sustainability and social inclusion (Hennig et al., 2015).

Regarding urban shrinkage, an emerging concern for European policymaking, EU cities must implement strategies that balance population dynamics, employment opportunities, environmental quality, and social cohesion (Alpek et al., 2016; Bank et al., 2003; Haase et al., 2013; Tésits, 2003, 2005; Tésits & Bokor, 2000; Tésits & Bokor, 2005a,b,c; Tésits & Alpek, 2017; Tésits et al., 2005). Viewing shrinkage as an opportunity to enhance existing residents' quality of life through sustainable urban development initiatives can lead to more resilient and inclusive cities. Through engaging in civic participation and community-driven approaches, EU cities can navigate the challenges of urban shrinkage while promoting sustainable growth and development.

Furthermore, the EU's Europe 2020 strategy underscores smart, sustainable, and inclusive growth as crucial elements for enhancing economies and ensuring long-term prosperity (Issa et al., 2018). By aligning urban development strategies with the objectives of the Europe 2020 strategy, EU cities can

stimulate innovation, competitiveness, and social cohesion while advancing sustainability goals. This integrated approach to urban development emphasizes the importance of balancing economic growth with social and environmental considerations to establish vibrant and sustainable urban environments. Below are some key aspects that highlight the importance of sustainability in urban environments:

Environmental Protection and Resource Conservation

Urban areas significantly contribute to greenhouse gas emissions and environmental degradation (Lechner Knowledge Centre, 2020). Implementing sustainable practices helps mitigate these adverse effects (Eisenhart-Lennert, 2021) by promoting energy efficiency, waste reduction, and natural resource conservation. Strategies such as green building practices, sustainable landscaping, and urban biodiversity initiatives can reduce the ecological footprint of cities and help combat climate change.

Sustainable cities prioritize public health by improving air and water quality, encouraging active transport, and increasing access to green spaces. A well-designed urban environment can reduce pollution-related illnesses, promote physical activity, and provide mental health benefits associated with exposure to nature. By fostering healthy lifestyles, sustainable urban planning contributes to a happier and healthier population.

Urban sustainability extends to social justice and equity. A sustainable approach ensures that all community members have access to essential services, green spaces, and opportunities to participate in decision-making processes. By promoting inclusive urban design, cities can address social inequalities, empower marginalized communities, and foster a sense of belonging, ultimately enhancing social cohesion.

Sustainable urban strategies strengthen local economies (Chikán & Czakó, 2018) by creating green jobs (Bod, 2017) and fostering innovation in sectors such as renewable energy (Tagliapietra & Zachmann, 2020), sustainable transport, and waste management. Investing in sustainable infrastructure not only generates employment opportunities (Köllő, 2015) but also stimulates economic growth by improving business efficiency and reducing operational costs.

Cities are highly vulnerable to climate change impacts, including extreme weather events, rising sea levels, and heatwaves. Sustainable urban strategies are crucial for enhancing cities' adaptive capacity (Newman et al., 2009). Measures such as climate-resilient infrastructure, green roofs, urban parks, and sustainable water management help cities prepare for and respond to climate-related challenges (Rogers & Gumuchdjian, 2011).

Sustainability directly improves urban quality of life (Szirmai, 2012) by fostering healthier, more attractive, and functional living spaces. Well-planned sustainable cities offer affordable housing, efficient public transport, cleaner neighborhoods, and diverse leisure opportunities. These factors contribute to overall well-being and enhance a city's appeal for tourism and investment (Szirmai, 2011).

Sustainable urban strategies emphasize the importance of efficient and accessible public transport systems, reducing reliance on private vehicles and minimizing congestion. Initiatives such as bike-

sharing programs, pedestrian-friendly infrastructure, and multimodal transport systems significantly lower emissions and improve mobility, making cities more livable.

The importance of sustainability in urban environments spans environmental, social, and economic dimensions, necessitating a holistic approach to future urban development. By prioritizing sustainability, cities can create resilient and equitable environments that serve both current and future generations. As urban landscapes continue to evolve, sustainability will remain a fundamental principle in shaping cities capable of thriving amidst modern challenges.

METHODS

The primary source for the research was the questionnaire of the Sustainable Urban Development Strategy of the City of Győr. The questionnaire was distributed among the city's residents and local experts to reflect the specific needs and opinions of the different residential areas. The questionnaire aimed to identify challenges and opportunities in the urban environment and to formulate recommendations in line with sustainable development objectives. The questionnaire covered several different aspects, including:

- The environmental condition of residential areas.
- Transport and infrastructure facilities.
- Accessibility of public spaces and green areas.
- Public perception and awareness of sustainability.
- Local economic opportunities and employment.

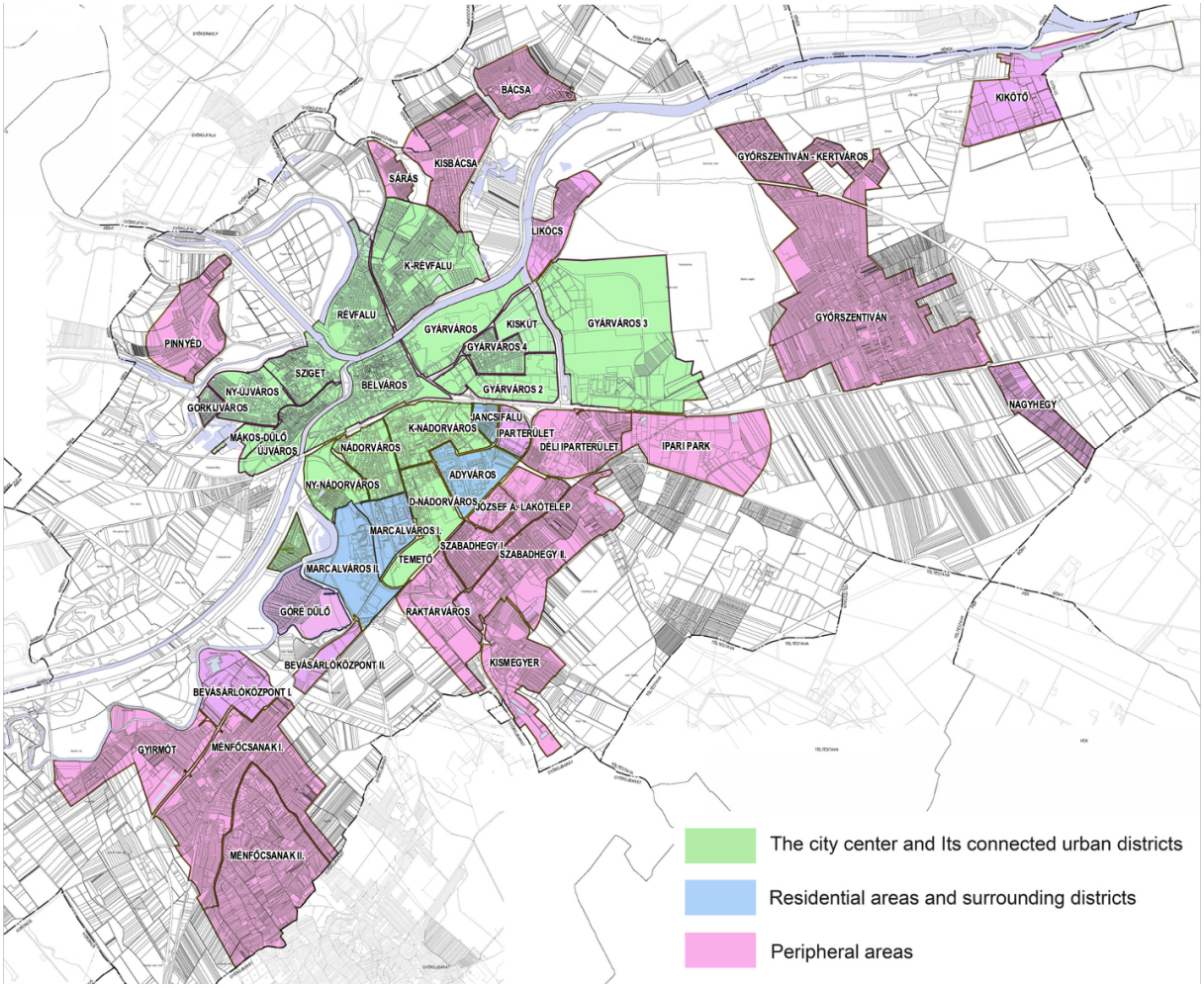
The data collected was analysed using qualitative and quantitative methods. Statistical analysis was used to examine the frequency and distribution of responses, while thematic analysis of qualitative responses was used to identify community needs and suggestions.

Categorisation of Győr City Districts

The sustainable urban development strategy of the city of Győr has received considerable attention in recent years, particularly in balancing the dynamic development of the city's areas with environmental sustainability. Different parts of the city have different challenges and opportunities, which the city administration is addressing with different development approaches. The aim of this analysis is to show how the sustainable urban development strategy is being implemented in the different parts of Győr, grouped into three main categories: the city centre and its immediate neighbourhoods, the residential areas and the peripheral areas.

The Sustainable Urban Development Strategy for the City of Győr adopts a comprehensive and multi-faceted approach, taking into account the different character and needs of the different neighbourhoods. The development of the city center and its immediate surroundings is aimed at strengthening the economic and cultural centre, while the sustainability ambitions of the residential areas (Figure 1).

Figure 1. Classification of Győr's City Districts Based on Urban Planning District Division



Source of base map: Municipality of Győr, Urban Development and Strategic Planning Department

City Center and the Directly Connected Districts[3]

The city centre and its directly connected districts play a central role in the economic, cultural and social life of Győr. In these areas, the urban development strategy focuses in particular on preserving the historical heritage, promoting economic activities and introducing sustainable transport solutions.

The city centre of Győr, with its historic buildings, dense urban fabric and tourist attraction, requires special attention. The city administration is seeking to reduce car traffic in the city centre by improving pedestrian and cycling infrastructure and increasing public transport options. It will also promote sustainability by renewing public spaces, increasing green areas and supporting local businesses. Nádorváros, Gyárváros and Révfalu districts are directly linked to the city centre, but contribute to the diversity of Győr with their own character. The urban development strategy gives priority to the rehabilitation of old industrial sites, especially in Gyárváros, where brownfield sites are being reused. Among the residential developments in Nádorváros and Révfalu, the focus will be on expanding community spaces and preserving green areas. Urbanisation and revitalisation of these

[3] The districts relevant to the analysis: Belváros, Nádorváros, Gyárváros, Révfalu, Újváros, Sziget.

neighbourhoods are important elements of the urban development strategy. In Újváros, priority will be given to social housing programmes and the development of community services, while in the Sziget, emphasis will be placed on waterfront development, recreation and nature conservation.

Residential Areas[4]

Residential areas are home to a significant part of Győr's population and sustainability challenges in these areas are particularly related to energy efficiency, transport infrastructure development and improving the quality of public spaces. The housing estates of Adyváros have become a model for energy-efficient building renovation and green space rehabilitation. The insulation of prefabricated buildings, the renovation of public spaces and the improvement of public transport links are all contributing to sustainability. The city government is working to minimise the environmental footprint of the estate while improving the quality of life for residents. Marcalváros's housing estates are also undergoing comprehensive energy efficiency programmes, with the active involvement of the residents' communities. In addition to increasing green areas and improving transport infrastructure, boosting community life is also key. The creation of community gardens and playgrounds in the neighbourhoods will also contribute to achieving sustainable urban development goals. The Jancsifalu residential area is a small but strategically important part of the city of Győr. Here, urban development efforts focus mainly on improving transport links, increasing energy efficiency and improving community infrastructure. Projects involving local residents will increase commitment to sustainability.

Peripheral Areas[5]

The peripheral areas are extensive, less urbanised areas of the city of Győr with a high potential for promoting sustainable development. These districts have significant green areas and agricultural potential, which the urban development strategy seeks to exploit.

Bácsa, Gyirmót and Győrszentiván peripheral areas are Győr's agro-economic centres, where the promotion of sustainable agriculture and local food production (Palkovič, 2021) is an important part of the urban development strategy. The city government is working to ensure that these areas retain their rural character while supporting local farmers to adopt sustainable practices. In addition, improving transport links and developing local services are also a priority. The residential development of Kisbácsa, Kismegyer and Ménfőcsanak districts and the development of community infrastructure is a key challenge for urban development. The sustainable urban development strategy here focuses on improving transport links, creating community spaces and preserving local identity. In particular, it is important to preserve green spaces and use sustainable building practices. Pinnyéd, Sárás and Szabadhegy districts have both natural assets and development potential. Sustainability efforts here focus on nature conservation, water management and support for local communities. The city government seeks to preserve local ecosystems while promoting sustainable residential development.

[4] The districts relevant to the analysis: Adyváros, Marcalváros I., Marcalváros II., Jancsifalu.

[5] The districts relevant to the analysis: Bácsa, Gyirmót, Győrszentiván, Kisbácsa, Kismegyer, Ménfőcsanak, Pinnyéd, Sárás, Szabadhegy.

RESULTS

Development Priorities for the City Centre and Related Neighbourhoods

Transport Improvement and Traffic Reduction

In the inner city and surrounding areas, residents place great emphasis on improving public transport. This includes starting new bus services and increasing the frequency of existing services. It is also important to promote alternative modes of transport such as cycling and walking, for example by creating cycle paths and pedestrian zones. The lack of parking spaces is a major problem for city centre residents. Therefore, the creation of parking garages and P+R car parks, as well as the redesign of the parking system in the city centre, are transport priorities.

Improving Green Spaces and Public Spaces

The inhabitants of the city centre and the surrounding neighbourhoods pay particular attention to the improvement of green spaces, parks and public spaces. The expansion of these areas, the launching of tree planting programmes and the regular maintenance of existing green spaces are essential to enhance the liveability of the city. The development of public spaces such as pedestrian streets, public parks and playgrounds is also an important objective. Residents demand new features to improve the quality of urban life, such as outdoor events, music pavilions and street furniture.

Expand Cultural and Social Services

There are a number of cultural institutions in the downtown areas that residents would like to see developed. For example, theatres, museums, art galleries, etc., whose expansion and modernisation would help to boost cultural life. Residents are calling for measures to care for the elderly and to develop social facilities, such as the creation or expansion of social centres, which would support the social cohesion of the city.

Improving Public Safety and Street Lighting

Improving public safety in the downtown and surrounding areas is a priority. Residents expect increased security in public spaces, for example by installing CCTV cameras, increasing police presence and supporting crime prevention programmes. Improving street lighting is also a priority, particularly in areas where additional lighting is needed to improve public safety and make night-time travel safer.

Development Priorities for Housing Estates

Infrastructure and Transport Development

Improving roads and parking facilities is a priority for people living in housing estates. This includes the upgrading of the internal road network, the creation of new parking spaces and the optimisation

of parking systems. For people living in housing estates, it is important to improve the availability and frequency of public transport, especially during peak periods, to facilitate access to the city centre.

Improving Public Spaces and Green Areas

Improvements to public spaces in residential areas include upgrading playgrounds, creating new community spaces and increasing recreational opportunities. Residents are calling for the modernisation of playgrounds, the creation of new sports fields and recreational facilities. Maintaining and expanding green spaces is also a priority, especially around housing estates where residents use these areas for recreation and leisure.

Improving Services and Public Safety

People living in housing estates often lack basic services such as shops, pharmacies and health facilities in the immediate vicinity. Local services could be expanded to make everyday life easier. In order to improve public safety in housing estates, there is a need to improve street lighting and increase police presence. These measures would increase residents' sense of security, especially in the evening and at night.

Improving Community Life and Social Services

For people living in housing estates, it is important to create and develop community spaces where they can organise a variety of programmes and events that foster community cohesion. Residents are calling for the expansion of social services for the elderly and vulnerable, such as new social centres or day care facilities to help meet the social needs of the local population.

Development Priorities for Peripheral Areas

Improving Transport Links

Facilitating access to the city centre is a priority for peripheral residents. This includes improving the road network, including widening roads, repairing potholes and building new roads to provide more efficient transport options. Public transport coverage in peripheral areas is often poor and residents are calling for an expansion of the public transport network, such as new bus services, more frequent timetables and better integration of existing services into the urban transport system.

Green Spaces and Environmental Sustainability

Preserving and enhancing green spaces, parks and forests in peripheral areas is key for residents. Maintaining these areas not only contributes to the preservation of local ecosystems, but also provides recreational opportunities for communities. Residents in peri-urban areas support sustainable solutions such as encouraging the use of renewable energy sources, increasing selective waste collection, and removing invasive plant species that can threaten local vegetation.

Develop Community and Recreational Facilities

New community centres, sports facilities, playgrounds and cultural centres are needed to boost community life in peripheral areas. These facilities will not only improve the quality of life for residents but also strengthen community cohesion. People living in peri-urban areas often lack basic services such as proximity to shops, pharmacies and doctors' surgeries. To increase their accessibility, expanding local services is also an important priority.

Improving Infrastructure and Public Safety

To improve public safety, street lighting needs to be improved, especially in more deserted streets and public spaces. Improved street lighting will help prevent crime and increase residents' sense of security. Ongoing maintenance of the road network, including regular renewal of roads and pavements, is also a priority for residents, especially in peripheral areas where road conditions are often below the urban average. These development priorities reflect the needs and aspirations of residents in each of these categories, the satisfaction of which can contribute to the sustainable development of the city as a whole and to improving the liveability of peripheral areas (Figure 2–4).

When examining the differences, the different needs and priorities of residents in different neighbourhoods should be taken into account. The three categories are summarised below to show where there was the greatest variation. The greatest divergence was therefore in the category of peripheral areas, where the specific needs of residents differ significantly from the priorities of the inner city and residential areas. This difference is most evident in transport links, green space management and public safety measures.

For those living in peri-urban areas, the biggest challenge is access to the city centre, which shows a significant difference compared to those living in the city centre and in housing estates. While traffic reduction and parking improvements are important for inner city residents, those living in peripheral areas tend to prioritise improving road infrastructure and increasing access to public transport.

For people living in peripheral areas, the preservation and enhancement of green spaces is of paramount importance, as these areas are directly linked to the natural environment. This is in contrast to the needs of inner city and residential areas, where the focus is more on the renovation of public spaces, parks and the development of new recreational facilities.

Residents of outlying areas often perceive a lack of public safety, particularly in less populated, more isolated areas. Improving street lighting and increasing public safety measures is therefore a higher priority than in the inner city, where police presence and street lighting are already at a relatively good level.

Figure 2. Transport Pereferences by Neighbourhood

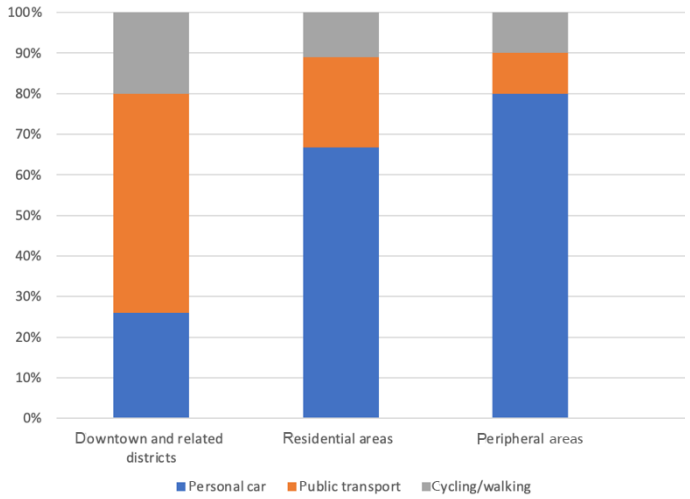


Figure 3. Satisfaction With Public Services by Neighbourhood

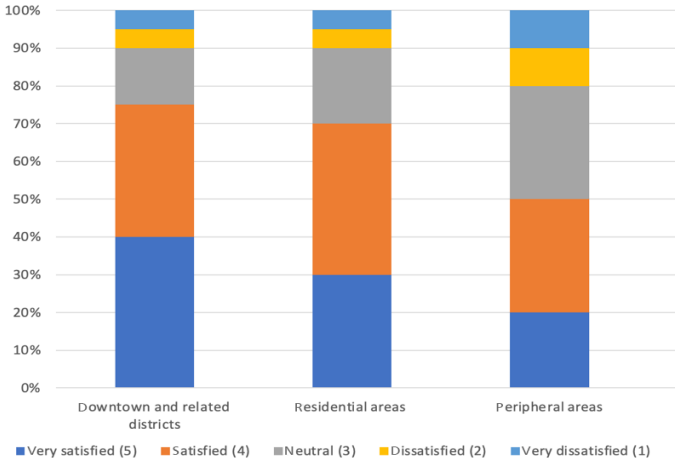
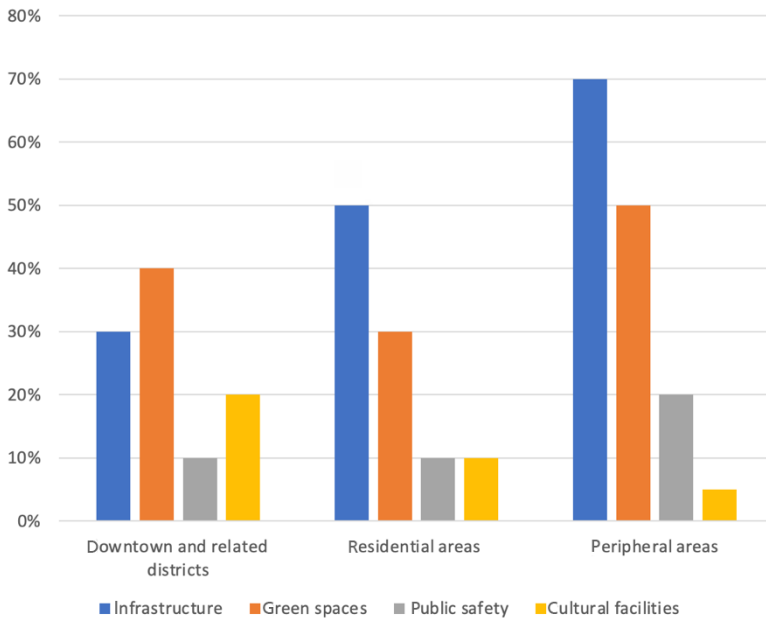


Figure 4. Development Priorities by Neighbourhood



CONCLUSIONS

The City of Győr's sustainable development strategy takes a multi-faceted and integrated approach to addressing environmental, economic and social challenges. Measures to create a green urban environment, improve transport facilities, water management and promote community participation all contribute to making Győr a liveable, sustainable city. In this way, the development of the city will ensure a green, healthy and liveable urban environment not only for its current residents but also for future generations. In the light of the above, an overall picture of the sustainability priorities of the city of Győr can be drawn as follows:

The issue of transport and energy efficiency (Kiss, 2017) has been highlighted in the Sustainable Urban Development Strategy of Győr. The European literature provides numerous examples (Tóth, 2018; Lechner Knowledge Centre 2020, Hungarian Central Statistical Office, 2021) of how the development of sustainable transport systems can contribute to improving urban quality of life and reducing environmental pressures (Institute for Transport Research, 2019). Pucher and Buehler (2012) provide a comprehensive study on how the development of cycling infrastructure, pedestrianisation and the integration of public transport systems contribute to the sustainability of cities (Magyar, 2015).

In the city of Győr, special attention (Hungarian Urban Society, 2019) has been paid to the promotion of cycling and walking, which is to be implemented by adopting European good practices. In addition, investments in energy efficiency, such as the energy modernisation of public and residential buildings, also contribute to achieving sustainability goals.

The expansion of green spaces and the development of community spaces (Hungarian Urban Society, 2019) are also important elements of a sustainable urban development strategy. Since the work of Jacobs (1961), we know that urban green spaces (Schmeller, 2021) and community spaces (Kondor, 2016) play a key role in improving the quality of life of urban residents. In Győr, the city government has set the goal of preserving existing green spaces and creating new parks and community spaces (Government of Hungary, 2018) that will help to revitalise community life and preserve urban ecosystems.

In the urban development strategy, special attention has been paid to involving local residents in the development of green spaces, partly through questionnaire surveys (Németh, 2020; Kovács, 2017).

In planning the sustainable urban development strategy of the city of Győr, the city administration has paid special attention to involving the population and taking their opinions into account. The different needs and priorities of the people living in different parts of the city have contributed significantly to the development of the strategy. The following summary of this paper presents the transport preferences, satisfaction with public services and development priorities of the population, grouped by neighbourhood category (downtown and related neighbourhoods, residential areas, peripheral areas).

The preferences, satisfaction and development priorities of the population of Győr by neighbourhood show significant differences, reflecting the specificities and needs of the neighbourhoods. For the city administration, this information provides an important basis for the targeted and effective design of

a sustainable urban development strategy that takes into account the different expectations and needs of different population groups.

The example of Győr demonstrates that adapting sustainability principles locally—such as expanding green spaces, enhancing public areas, and improving the energy efficiency of transport systems—can effectively contribute to a higher quality of urban life while supporting global sustainability objectives. Strong cooperation between local governments and communities strengthens the legitimacy of sustainability programs, increases public acceptance, and enhances the long-term effectiveness of urban development initiatives. The adoption of new technologies, green infrastructure, and alternative transport solutions enables cities to better address the challenges of climate change and rapid urbanization.

Compact, walkable, transit-oriented, and mixed-use urban designs contribute to lower carbon emissions, stronger community cohesion, and more efficient resource use. Integrating economic, social, and environmental considerations into planning and evaluation is essential to achieve sustainable urbanization. Cities must continuously measure their progress using complex indicators to fully understand the impacts of their development efforts. Although each city faces unique challenges, successful local strategies, such as Győr's sustainability efforts, can serve as inspiration and models for other cities seeking their own paths toward sustainable development.

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