

IMPLEMENTATION OF THE “15-MINUTE CITY” CONCEPT – CASE STUDY OF THE CITY OF PLESZEW

Beata REFORMAT

University of Economics in Katowice, Faculty of Management; beata.reformat@ue.katowice.pl,
ORCID: 0000-0002-4178-9541

Purpose: The aim of the article is to identify the practices of implementing the assumptions of the "15-minute city" concept and the areas of its implementation by the city of Pleszew. It is the first medium-sized city in Poland that has successfully developed on the theoretical foundations of this concept.

Design/methodology/approach: The methodology used in the article refers to the methodological canon of management sciences, including, among others, the methodology of qualitative research, which allows the use of the case study method. On their basis, a critical analysis of foreign and Polish literature on the concept of the "15-minute city" was conducted. The descriptive method was used to interpret and analyze the collected material.

Findings: The essence and assumptions of the "15-minute city" concept were recognized. Areas of its implementation were identified using the example of a city reflecting good practice. On this basis, it was shown that the analyzed concept brings many benefits to its residents.

Research limitations/implications: The presented example of the implementation of the "15-minute city" concept can serve as a model and inspiration for other smaller urban units. They, like the city under study, have a chance for sustainable urban development, the basis of which should be research into the needs and expectations of their residents.

Social implications: The identified city practice contributes to focusing activities on social integration, providing support and services to groups at risk of exclusion and taking care of the overall well-being and quality of life of its residents.

Originality/value: Deepening and updating knowledge on sustainable urban development based on the assumptions of the "15-minute city" concept. Popularization of activities related to the studied phenomenon.

Keywords: "15-minute city", cities, quality of life, case study.

Category of paper: A literature review and case study.

1. Introduction

The transformation of cities, taking place as a result of a series of processes triggered by, among other things, the need for sustainable development, is currently undergoing dynamic changes, making this phenomenon an interesting field of research at the same time. Within its framework, it can be noted that the recognition of problems related to the organization of urban space plays a key role, prompting the search for solutions aimed at creating friendly living conditions for city residents. One of them is the concept of the “15-minute city” discussed in the article, which has gained its popularity after 2020, largely influenced by the COVID-19 pandemic, particularly the immobility and social isolation it caused (Sikorska, Lipp, 2021; Khavarian-Garmsir, Sharif, Sadeghi, 2023).

In view of the above, the purpose of the article is to identify ways of implementing the assumptions of the “15-minute city” concept, as well as areas of its actual implementation by means of the case study method. The “good practice” of Poland's first medium-sized city, which is successfully developing based on this concept, was used as a reference point. It is Pleszew, a city located in the central-western part of Poland, belonging to the Greater Poland Province.

The article is of a review-theoretical nature and its structure is created by several parts. After a brief introduction, the key theoretical aspects of the concept of the “15-minute city” are explained. The next part of the article describes its methodological foundations, followed by an analysis and evaluation of the implementation of this concept by the studied city. The last part of the article contains a discussion and main conclusions resulting from the practice presented of activities.

The article was developed based on a critical analysis of the literature on the subject, which included secondary material (including internet sources), as well as research findings based on case study (so-called “good practice”) and observation methods.

2. Theoretical Background

Based on a review of scientific literature, the main goals, objectives, and benefits of applying the studied concept were analyzed. They were considered important for the description and identification of the presented practice of the city studied.

2.1. The concept of a “15-minute city” – idea, goals, and objectives

The pioneer of the “15-minute city” concept is considered to be the French Colombian scientist, urban planning and smart cities specialist Carlos Moreno. It identifies a workable

solution for sustainable urban development of cities that allows for the realization of the goals of this development in combination with measures to shape new ways of living, working, and resting (Moreno et al., 2021). In the opinion of many authors (e.g. Moreno et al., 2020; Beim, 2021; Allam et al., 2022), Paris mayor Anne Hidalgo also contributed to the popularization of the analyzed concept. In 2020, as part of the ongoing re-election strategy „Cities Climate Leadership Group (C40)” It made the concept a central tool of its campaign, recommending it as a key strategy for rebuilding Paris after the COVID-19 pandemic (Moreno et al., 2020; Allam et al., 2022). The premise of the strategy was based on the ideas of proximity, participation, cooperation, and ecology, to the extent that the people of Paris minimize the sense of haste and constant lack of time in their daily lives. In addition, the implementation of the concept described is triggered largely by the global situation (including the promotion of the idea of the immediate neighborhood and the growth of environmental awareness), which encourages actions towards sustainable urban development (Murgante, Patimisco, Annunziata, 2024).

According to Khavarian-Garmsir, Sharif & Sadeghi (2023), the goal of the “15-minute city” concept is to create self-sustaining urban neighborhoods that provide their residents with the basic functions of life, work, commerce, healthcare, education, and entertainment by decentralizing urban functions and services. According to Moreno's theory (Allam et al., 2021), the concept of a “15-minute city” should base its foundation on the four main assumptions detailed in Figure 1.



Figure 1. The main assumptions of the “15-minute city” concept.

Source: elaboration based on Moreno et al. (2021, p. 7).

The first, main assumption of the analyzed concept is “proximity,” which, in the context of the city's functioning, refers to the spatial aspect on the one hand, and the temporal aspect on the other. According to Moreno (Allam et al., 2021), it should take no more than 15 minutes on foot, by bicycle, by public transportation to meet the needs of city residents to access key services (education, health, clerical, professional, retail, food service, etc.). Weng et al. (2019),

emphasize that the increase in physical activity of urban residents due to pedestrian accessibility leads to improvements in their fitness and overall health. A similar opinion is expressed by Kos et al. (2022), stating that the lack of exercise caused by the use of private cars has a significant impact on the health of residents. This condition is affected by traffic noise, poor air quality, high CO levels, and consequently poor environmental quality. Consequently, this assumption, as emphasized by many authors (Knowles, Ferbrache, Nikitas, 2020; Pozoukidou, Chatziyiannaki, 2021; Logan et al., 2022), contributes to the abandonment of private cars, resulting in lower emissions and pollution of the urban environment.

The second assumption, or “density,” relates to the population aspect and, according to Moreno et al. (2021), defines: “the number of people that a neighborhood can comfortably accommodate without straining or under-utilizing available resources, infrastructure and space.” The above assumption makes it possible to plan access to basic public services adequately for the optimal number of people. This aspect is pointed out, among others, by Mouratidis (2017), who shows in his research that population density can provide a critical mass for local services and businesses in the distance, as well as for the creation of local employment opportunities. According to Wisniewski (2021), the optimal way for urban residents to access essential services is one that is as short as possible and takes as little time as possible to travel. The measures proposed under the analyzed urban development concept contribute to sustainable development, the creation of health and social relations, the reduction of car use and the optimal consumption of resources.

The third premise of the “15-minute city” concept is “diversity.” On the one hand, it concerns the residential infrastructure of urban areas, and on the other, the people who inhabit them. The first aspect considers the development of mixed-use neighborhoods in which basic amenities and services are easily accessible. This means that a neighborhood should include at least residential, commercial, government, health, educational and entertainment elements (Moreno, 2020). According to Bibri et al. (2020), cities operating according to the development concept under study should consist of compact neighborhoods characterized by high-density development, which indicates the need for an efficient public transportation system. Underlying its implementation is the assumption that covering distances in an urban area encourages its residents to replace automobile transportation with walking or other forms (such as cycling, scooters, etc.). The second aspect of diversity, on the other hand, refers to the structure of urban residents, which is made up of social groups that are diverse in many ways (e.g., culture, religion, worldviews, income, etc.). In addition, Guzman, Oviedo and Cantillo-Garcia (2024), emphasize in their discussion that affluent segments show a greater preference for retail stores and commercial services. In contrast, the low-income population has a much greater preference for healthcare facilities. According to the concept analyzed, the aspect of diversity requires reference to basic social functions, i.e., entertainment, care, provision, education, work, and housing, which in the context of easy and quick access must be adapted to the needs of diverse social groups.

The fourth premise of the “15-minute city” concept is “digitalization.” According to Viale Pereira et al. (2017), this factor primarily relates to big data and the potential of the Internet of Things (AR). Access to these makes it easier for city residents to take a more active role in planning and making decisions about the energy they consume, while enabling more efficient use of water and electricity resources.

An important requirement of the “15-minute city” concept is to consider the needs and characteristics of the city's residents, which, according to the concept, means designing public spaces for their own benefit. A manifestation of the realization of these needs is, for example, the promotion of investments in pedestrian and bicycle traffic. At the same time, Guzman, Oviedo, and Cantillo-Garcia (2024) emphasize the attractiveness of the “15-minute city” concept, which, based on the assumed “proximity”, allows the connection of three interrelated levels: the city, the neighborhood, and the individual scale of its residents. The main advantages of the concept described, and its benefits are shown in Table 1.

Table 1.

Key advantages and benefits of the “15-minute city” concept

Advantages of the concept under study	The resulting advantages
Proximity to services and attractions	<ul style="list-style-type: none"> • easy access for city residents to most services, attractions, and workplaces within walking or biking distance of bicycle, • less need to use cars daily
Promoting healthy lifestyle	<ul style="list-style-type: none"> • shorter distances encourage city residents to walk walking or cycling, which improves their fitness, physical condition, well-being, and health
Less environmental pollution	<ul style="list-style-type: none"> • ensures a reduction in the number of cars on the road, which means less air pollution and thus translates into a healthier environment;
Greater social interaction	<ul style="list-style-type: none"> • short distances promote interaction between residents, which can help build stronger communities over time
Smaller infrastructure costs	<ul style="list-style-type: none"> • reducing dependence on cars may lead to a reduced need to invest in extensive road infrastructure;
Stimulation local economy	<ul style="list-style-type: none"> • residents are more likely to use local services and stores, which contribute to the local economy;
Greater public space	<ul style="list-style-type: none"> • freeing up space reserved for cars, such as parking lots, can lead to the creation of more parks, playgrounds, and other gathering places.

Source: elaboration based on Allam et al. (2021), Khavarian-Garmsir, Sharif, Sadeghi (2023), Guzman, Oviedo, Cantillo-Garcia (2024).

The advantages presented in Table 1 should be seen as crucial in terms of benefits for residents, as well as for the cities themselves. In the longer term, which is required to implement the assumptions of the “15-minute city” concept, they indicate the right and, moreover, desirable direction of sustainable development of urban units.

3. Case study - good practice of the city of Pleszew

3.1. Research methodology

The article focuses on the concept of the “15-minute city,” which promotes the creation of friendly living conditions for residents of large and medium-sized urban areas. The main research problem is included in the question: *How is the city of Pleszew implementing the “15-minute city” concept and what are the benefits for its citizens of implementing this concept?* In order to identify the phenomenon under study, qualitative research of a diagnosis nature was carried out. Their goal was to identify ways to implement the assumptions of the “15-minute city” concept, as well as areas of its actual implementation by a medium-sized urban unit. This goal determined the choice of a research method in the form of a case study, involving the analysis and evaluation of an example of good practice in the selected research area.

Accordingly, the research methodology used in the article refers to the methodological canon of management sciences, including qualitative research methodology with scientific case studies. The use of this methodology made it possible to describe the example of the city studied and identify its action practices.

Basic information on the survey conducted are presented in Table 2.

Table 2.

Basic information on the survey conducted

Specification	Characteristic
Research methodology	<ul style="list-style-type: none"> the analysis of specialized journals, materials on the studied city, websites, participant observation, case study
Sample selection	<ul style="list-style-type: none"> targeted selection, criterion: good practice of activities
Sample size	<ul style="list-style-type: none"> a medium-sized city of Pleszew, located in the Greater Poland region
Geographical scope	<ul style="list-style-type: none"> national scale
Time scope	2019- 2024

Source: own elaboration.

3.2. The city of Pleszew as a representative of medium-sized urban units

The city of Pleszew is in the southern part of the Greater Poland Voivodeship in the Kaliska Upland and belongs to the Pleszew District. It is the seat of the urban-rural municipality of Pleszew¹. According to CSO data as of 31/12/2023. Pleszew has a population of 16,599, its population density is 240.6 people/km², and its area is 13.4 km² (CSO, 2024). There are ten residential neighborhoods in its area (Zielone, Wojska Polskiego, Śródmieście, Rodzinne, Jordanowskie, Wokół Wieży, Zachodnie, Królewskie, Reja and Piastowskie). Its central place is the historic market square, around which a coherent and compact development has been created.

¹ With a population of 29,039, Pleszew municipality is home to 45.9% of the population of Pleszew district and occupies 25.3% of its area.

The city of Pleszew is distinguished by its convenient location, including especially easy transportation accessibility provided by the A2 and S11 expressways, as well as convenient rail connections to the capital of Greater Poland - Poznań (80 km), and the nearby larger cities of Kalisz and Ostrów Wielkopolski (30 km). A railroad also runs near the described town, and trains stop at the Pleszew station located in Kowalewo - about 4 km from its center. The station is reached by a narrow-gauge railroad line that has a unique three-rail track weave, on which both narrow-gauge and normal-gauge trains can run² (Koleje wąskotorowe..., 2024, p. 7). In 2021, public transportation was launched in the city area, consisting of buses of lines PL1 and PL2 that circle the entire city and take passengers to the most important points in Pleszew.

As of 2018, Arkadiusz Ptak is the mayor of the city and municipality of Pleszew. From the information provided by him and published by the Institute of Rural and Agricultural Development of the Polish Academy of Sciences (2023), we learn that the implementation of the “15-minute city” concept took place in 2020. Its implementation benefited from consultation and support from the scientific community, as well as a number of quantitative surveys of the city's residents (Table 3).

Table 3.

Studies related to the implementation of the “15-minute city” concept, commissioned by the authorities of the city of Pleszew between 2018 and 2022

Serial number	Name and type of research	Year of survey implementation
1	Analysis and forecast of demographic processes in the municipality of Pleszew	2018
2	Formation of functional links of Pleszew against the background of socio-economic processes in cities and the region	2019
3	Empirical research report: “Factors influencing decisions to live in the city/municipality of Pleszew”.	2018
4	Report on the quantitative and qualitative research conducted within the project “Revitalization of the city of Pleszew”	2019
5	Concept of service of the City and Municipality of Pleszew by public mass transport	2020
6	The “Smart Pleszew” project (funded by EU funds “Human Smart Cities. Smart city co-created by citizens”)	2019-2021
7	Standards for smart management of the city and municipality of Pleszew	2021
8	Mapping the needs of people with disabilities, the youngest residents, and seniors for smart solutions	2021
9	Opinions of residents of the city and municipality of Pleszew on the quality of life in 2021	2021
10	Opinions of residents of the city and municipality of Pleszew on the quality of life in 2022	2022
11	Concept transformation of the center of Pleszew	2022

Source: Based on UMiG Pleszew (2023).

² The three-rail plexus model assumes that one rail serves vehicles suitable for both 750 mm and 1435 mm gauge track, and two oil rails ensure the completeness of the track of each gauge.

The results of the specified quantitative research were decisive for the implementation of the “15-minute Pleszew” concept. It should be added that the city authorities are still looking for inspiration and real opportunities to improve areas that are key to its sustainable urbanism. These stem from the assumptions of the Development Strategy of the City and Municipality of Pleszew 2015-2023, the Urban Renewal Plan (POM) and the further vision of development adopting the wording: “PLESZEW an integrated and competitive center of Southern Wielkopolska” (Strategia miasta...).

3.3. Practice of implementing the “15-minute city” concept by city of Pleszew

Six pillars of action were taken as the basis for the implementation of the analyzed concept in the case of the city of Pleszew, in which specific actions are currently being taken in its urban space. Their summary is shown in Figure 2.

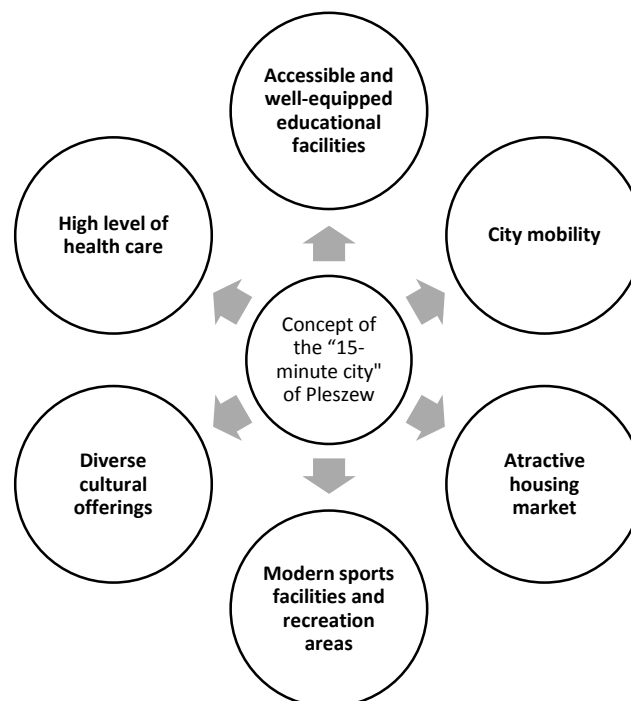


Figure 2. Pillars of the “15-minute city” concept implemented by Pleszew.

Source: Based on Urząd Miasta i Gminy w Pleszewie (2024).

The first pillar, in which activities related to the implementation of the “15-minute city” concept in the urban space of Pleszew are undertaken, involves easy access to the services of well-equipped educational institutions. Their range of services includes nurseries, kindergartens, and friendly schools (including art schools) - Table 4.

Table 4.*Infrastructure and educational service base of the studied city*

Types of educational institutions	Facilities creating educational infrastructure	Number of objects
Nurseries	- network of non-public institutions	3
Kindergartens	a) public	13
	b) non-public	4
Primary schools	a) urban establishments	3
	b) suburban establishments	4
Secondary vocational schools	- establishments offering vocational and secondary vocational education vocational education for youth and adults	3
Secondary schools	a) non-public high school offering interesting profile extensions.	1
	b) public high school	1
University of the Third Age	- Association “Pleszew University of the Third Age”	1
Specialist schools	a) Special Education Complex working with children in need of dedicated learning support.	1
	b) OHP Education and Training Center in Pleszew	1
Arts schools	- State Music School of the First Degree	1

Source: Based on UMiG Pleszew (2024).

It can be seen from the table presented that Pleszew has an infrastructure and base of educational services that can meet the needs of parents, children, as well as young people, which in the vision of the city is still to be expanded. The distribution of facilities has been planned so that everyone from their place of residence can easily access them. This makes it possible to combine raising children with work and save considerable time.

The second pillar of the implemented concept is an attractive housing market. From the website of the Pleszew City and Municipality, we learn that dozens of new apartments are handed over in Pleszew every year. The leading investor is the Pleszew City and Municipality Local Government and the local government company Pleszewskie Towarzystwo Budownictwa Społecznego Sp. z o.o. Private developers are also very active. All this makes the market for buy-to-let and rental housing increasingly competitive, and own housing for city residents is becoming more accessible. An example of these actions is a complex of buildings at the intersection of Poniatowskiego and Mieszka I streets in Pleszew in a new formula: apartments for rent with the possibility of purchase. Offers includes 92 apartments with a total floor area of about 4500 sqm. (from 32 to 74 sqm.) and 98 parking spaces. The buildings consist of 6 overground floors and basements. Associated infrastructure has been designed: playground, green areas for recreation, bicycle racks, underground and above-ground parking. In the immediate vicinity are located: grocery stores, kindergarten, elementary school, high school, transportation stops, service points, sports fields and recreation areas.

The third pillar of “15-minute city” concept is a diverse cultural offer. In order to meet the needs of different social groups, a complex of facilities located in the former buildings of the narrow-gauge railroad station in Pleszew called “Cultural Depot”. It is worth mentioning that the revitalization and functionality of the above complex was awarded in the prestigious competition of the Society of Polish Urban Planners for the best organized urban public space in the country (pleszew.naszemiasto.pl). The structure of the complex consists of a House of

Culture with an auditorium and classrooms, as well as the Municipal Public Library. Various cultural events are regularly held in these facilities and in the open air, i.e.: festivals, concerts, meetings with interesting people, exhibitions, performances, and many others. Their offer includes proposals for people of all ages and interests, tastes: from light popular music to classical music in the thresholds of the modern concert hall of the State Music School in Pleszew. Importantly, admission to many events is free. At the same time, it is an extremely impressive cultural facility in Greater Poland.

The fourth pillar of the “15-minute city” concept implemented by Pleszew is a high level of health care. It is provided by the Pleszew Medical Center with modern equipment and qualified staff, as well as private and public clinics, offices, and laboratories. Pleszew Medical Center ranks at the top of the Ranking “Safe Hospital”, which is organized by the Quality Monitoring Center at the Ministry of Health. In the last edition, it was ranked first in Greater Poland and 3rd on the national list. It was also ranked first in the country in terms of Level II security hospitals (wielkopolskie.naszemiasto.pl). Residents of the city can also take advantage of the services of a number of private and public clinics, the services of offices of qualified specialists, as well as the services of several laboratories, where a variety of tests can easily be performed. In addition, there are more than a dozen pharmacies both in and near the city, allowing residents to purchase medicines quickly.

Another (fifth) pillar of the “15-minute city” concept implemented by Pleszew is formed by modern sports facilities and recreation sites, i.e., sports infrastructure. Its detailed description is provided in Table 5.

Table 5.

Elements that make up the sports infrastructure of the city of Pleszew

Element of sports infrastructure	Offer of facilities forming sports infrastructure
"Planty Water Park"	<ul style="list-style-type: none"> • sports swimming pool with dimensions of 25 x 16 m, with 6 lanes with a depth from 1.35 m to 1.8 m • recreational pool with numerous attractions: rapid river, jacuzzi, water jets, children's pool • pool for swimming lessons • SPA area with saunas, experience shower, and heated loungers
Sports halls	<ul style="list-style-type: none"> • 9 objects • the newest of the halls (located on Bolesława Krzywoustego Street) is a full-size facility with a grandstand, which also allows for the organization of music events
Sports fields	<ul style="list-style-type: none"> • numerous grassy playing fields • 7 training fields with artificial turf and lighting • spaces for play distributed throughout the entire municipality
Trax	<ul style="list-style-type: none"> • they provide numerous running spots • the thriving Team Pleszew group invites all enthusiasts of this form of exercise, organizing joint training sessions and designating attractive routes • the synthetic surface running track is located at the municipal stadium and is available for public use
Skatepark	<ul style="list-style-type: none"> • an offer aimed at young people, skateboarding, roller skating and BMX bike enthusiasts, enables them to spend their free time in accordance with their preferred passion, in a safe manner and in suitable conditions for training

Cont. table 5.

Bowling alley	<ul style="list-style-type: none"> • offers 4 fully automated bowling alleys that guarantee a comfortable and efficient game • guests also have access to billiard tables, darts, table football, and games for the youngest • while waiting for their turn to play, customers have access to the bar services and the catering buffet located on the premises
Tennis courts	<ul style="list-style-type: none"> • they allow playing tennis regardless of the time of year • 2 covered tennis courts located next to the city stadium • the facility in Lenartowice near city of Pleszew ensures year-round tennis playing
Outdoor gyms	<ul style="list-style-type: none"> • these offer a proposal for people who prefer physical activity in the open air • there are quite a few of them, and more are constantly being created • they are often combined with playgrounds, creating multi-generational recreation areas
Health Trail	<ul style="list-style-type: none"> • the passage describes a 2-kilometer path located on the Pleszew Plants, which forms a sports and recreational complex. Some key points • it consists of simple fitness equipment and installations for exercises • it serves as a mini sports and recreation complex • it meets the needs for activities like running, Nordic walking, and various • other forms of outdoor physical activity • it serves as an area for training, sports activities, relaxation, and integration of the local community
Bicycle Trails	<ul style="list-style-type: none"> • they are integrated into the urban infrastructure, serving recreational and transportation functions • they are built in areas closed off from vehicular traffic • they are equipped with rest and relaxation areas • they connect the city to nearby towns, with particular importance placed on • paths along national roads 11 and 12 • they provide access to tourist attractions like the arboretum park, reservoir, and • museums in Gołuchów City

Source: Own study on Miasto 15' (2024).

Based on the objects to creating the sports infrastructure of the city of Pleszew presented in Table 5, it can be seen that their wide offer allows residents (children, youth, middle-aged and seniors) to actively spend their free time, which is an important element of health prevention. Using the services of these facilities, especially by young people, allows for sports competition, which develops talent and ultimately may contribute to the recruitment of outstanding athletes in the future.

The last pillar of the analyzed concept implemented by the city of Pleszew is urban mobility. The assumption is that every resident can easily reach the most important points of the city on foot, by bicycle or by public transport, while giving up their own vehicles. To implement this assumption, the pedestrian routes and bike paths have been expanded, and a new public transport system has been proposed, which reaches not only the city of Pleszew, but the entire municipality. In addition, the road infrastructure and free parking have been improved. It is worth noting that in 2021, the PL1 and PL2 bus lines were launched, which circle the entire city. Their compactness, frequency of trips and symbolic ticket prices are assets particularly appreciated by seniors and students commuting to school. In January 2024, a new public transport system called PPL was launched, which is an expanded transport network that was created to connect not only the entire Pleszew municipality, but also the neighboring

municipalities. For this purpose, 22 new lines were organized for the Pleszew municipality and the Dobrzyca municipality, and 9 lines to Gołuchów for the Pleszew county. These solutions introduce a new quality of communication, accompanied by wide accessibility to the city center, residential areas, schools, workplaces, parks, and recreational areas.

The presented pillars of action implemented as part of the "15-minute city" concept implemented by city of Pleszew cover the full range of key services for its residents. They contribute to improving the quality of life in the city, enabling the combination of professional work and child-rearing, providing access to cultural events, sports development, and access to the expected housing offer.

4. Discussion

The "15-minute city" concept, the implementation of which is presented in this article, is gaining popularity in cities around the world as an urban model that promotes living near work, services and recreation. However, despite its many advantages, research on the concept has some limitations and weaknesses. These are addressed by the authors of a number of scientific articles and books, for example: Montgomery (2013); Pozoukidou, Chatziyiannaki, (2021); Moreno, Gehl & Thorne (2024); Murgante, Patimisco & Annunziata, (2024), such as the authors of numerous blogs and online portals dealing with urbanism and urban development, such as: "CityLab", "The Urbanist" and "Planetizen". The most frequently mentioned limitations and weaknesses in the implementation of the "15-minute city" concept are presented in Table 6.

Table 6.

Limitations and weaknesses of implementing the "15-minute city" concept

Factors limiting the concept under study	The essence of a given limitation and weakness
Heterogeneity cities	<ul style="list-style-type: none"> high homogeneity in urban development may not correspond to the reality of many cities, where there are significant differences in infrastructure, population density and availability of services
Lack of consideration of demographics	<ul style="list-style-type: none"> surveys may not consider the demographic diversity of the population, which can lead to overlooking the needs of different social groups (e.g., the elderly, people with disabilities, families with children, etc.)
Restrictions infrastructure	<ul style="list-style-type: none"> many cities do not have sufficient transportation infrastructure, making it difficult or impossible to realistically implement the concept, the necessary infrastructure changes may require significant financial investment and time
Economics aspects	<ul style="list-style-type: none"> implementation of the concept may involve costs that are not always feasible in the context of limited local government budgets
Gentrification	<ul style="list-style-type: none"> implementation of this concept in some areas may displace lower-income people and change the nature of local communities
Problem of spatial planning	<ul style="list-style-type: none"> the concept requires integrated urban planning, which can be difficult to achieve in densely built-up cities where existing structures may limit the ability to make changes

Cont. table 6.

Adaptive capabilities	• cities that want to introduce the concept under study must be flexible to adapt to the changing needs of residents and external conditions, which can be a challenge
Sustainability problems	• although the concept prioritizes sustainability, implementing it in practice may face difficulties in balancing various social, environmental and economic aspects

Source: own elaboration based on (Montgomery, 2013; Pozoukidou, Chatziyiannaki, 2021; Moreno, Gehl, Thorne, 2024; Murgante, Patimisco, Annunziata, 2024)

In view of the emerging weaknesses and organics, research on the “15-minute city” concept, should therefore take into account these difficulties to better understand its potential and applicability in different urban contexts. The example of the city of Pleszew presented in the article confirms that this is possible, as well as the practices of many other cities around the world. Research on the concept analyzed has the potential to transform urban life and improve its quality on many levels.

5. Conclusions

The aim of the article was to recognize the practices of implementing the principles of the "15-minute city" concept, as well as the areas of its implementation by the Greater Poland city of Pleszew. The conclusions arising from the analysis of the case study presented indicate that the practice of implementing the "15-minute city" concept by Pleszew is based on six main pillars of action. They provide residents with easy access to basic educational, medical, recreational, cultural, commercial, and residential services. Their offer is fully tailored to the needs and expectations of the local community, to which the local government's cooperation with various business entities (public and private), including investors and developers, contributes.

Thanks to the implemented concept, residents of the surveyed city live better, more comfortably, healthier, and safely. The aspect of "proximity" in accessing basic services is of vital importance here, allowing for considerable time savings, which in today's world is an extremely valuable, scarce, and non-renewable resource. As a result, they can devote their free time to entertainment with their families, recreation, sports, or culture. At the same time the surveyed city has invested in improving public transportation options, including expanding the bus network and implementing measures to encourage sustainable modes of transportation, such as biking and walking. In addition, Pleszew is making efforts to protect the local environment by preserving and expanding green spaces and promoting ecological practices among its residents. The city encourages citizen engagement and active participation in decision-making processes, fostering a sense of community and ownership among the residents. Moreover, an important aspect of the “15-minute city” concept implemented by the city of Pleszew is the active promotion of local cultural heritage through the organization of various cultural events, festivals and initiatives aimed at preserving and showcasing the city's unique

identity. The city works to attract investment, support local businesses, and create employment opportunities, contributing to the overall economic well-being of Pleszew.

The presented example of the implementation of the "15-minute city" concept can serve as a model and inspiration for other smaller urban agglomerations, which, like Pleszew, have the opportunity for sustainable urban development focused on the needs and expectations of their residents. It is the first medium-sized city in Poland that has successfully implemented the theoretical foundations of the described concept. However, its use requires appropriate creativity, engagement, openness to change, flexibility of actions, wise planning, and investment decisions, as well as social dialogue.

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