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THE VOICE OF SOCIETY IN DESIGNING PUBLIC RECREATIONAL SPACES (PRS) IN AN URBAN ENVIRONMENT

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ABSTRACT: Global urban population growth, climate change, and the energy crisis pose significant challenges for the local authorities and encourage a shift in local policy-making towards sustainable development. Local governments have to cater to public needs and expectations regarding recreational spaces and environmental protection by implementing innovative infrastructure solutions, including those based on renewable energy sources. In recent years, the debate on urban planning has centred on the placemaking approach and the implementation of the 15-minute city and smart city concepts. This novel approach promotes sustainable urban development that relies on the links between the natural environment, the economy, and society. The aim of this study was to explore the possibilities of urban planning solutions and the components of urban infrastructure that contribute to sustainable urban development in the context of improving the quality of local life. Local community needs were identified in a questionnaire survey and during a field investigation. The study was conducted in a medium-sized Polish city where public recreational spaces were redesigned in line with the principles of sustainable urban development. The results were used to propose universal urban development projects that address local needs and rely on renewable energy sources to create a sustainable future for society, the natural environment, and the climate.

KEYWORDS: Public Recreational Spaces, sustainable urban development, friendly cities, urban space, society

Introduction

The Industrial Revolution fueled the rapid development of cities, which became the centres of economic growth where most capital, land and labour were concentrated. According to World Bank data, around 55.7% of the world's population, namely 4.274 million people, live in cities (4.274 million people) (World Bank, 2022). This figure is projected to increase to 60% by 2030 (OECD, 2008).

Social standards in relation to the behaviour of PRS users play a key role in the discourse on inclusivity and equality in the context of sustainable urban development. The need for research stems from the behaviour of people in the PRS within the framework of social constructionism theory and social learning theory.

The steady increase in the urban population poses a significant challenge for urban planners (European Parliament, 2008). At present, the global urban debate focuses on the implementation of the innovative 15-minute city concept to adapt public spaces to the needs and expectations of local communities in an environmentally friendly manner that is consistent with the principles of sustainable development. This concept is centred around the core principle of sustainable mobility and reduced need for travel (ICLEI, 2023). In smart cities, the residents are encouraged to use pedestrian routes and minimise their use of public or private transport (ICLEI, 2023). The 15-minute city concept was developed to counteract social exclusion and improve the residents' health and the quality of urban air.

The smart city is the second innovative concept in urban planning (Torisson, 2022). A smart city relies on smart urban infrastructure, information and communication technologies (ICTs), and innovative services to meet the residents' needs in economic, social (Zysk, 2013; Pira, 2021), and environmental dimensions (Mohanty, 2016).

The local authorities are responsible for the future development of cities. They are tasked with meeting the local communities needs and expectations by initiating measures and implementing policies that are consistent with the Sustainable Development Goals of the United Nations (UN, 2015), in particular goals 3 (Ensure healthy lives and promote well-being for all at all ages) and 11 (Make cities and human settlements inclusive, safe, resilient and sustainable). The performance of city services and the quality of urban life are measured with the use of principles and indicators set out in ISO 37120: Sustainable Cities and Communities – Indicators for City Services and Quality of Life (ISO, 2018).

Placemaking is an emerging concept in urban planning. Placemaking is a multi-faceted approach to planning, designing and managing public spaces. The overreaching goals of placemaking are to activate local communities and engage neighbourhoods in the process of creating public spaces, including recreational spaces, that improve the quality of urban life. In cities, public recreational spaces promote community participation and social interactions. According to universal design principles, public recreational spaces should meet local community needs (Wysocki, 2015) and should be consistent with the principles of the Global Charter-Agenda for Human Rights in the City (UCLG Global Character, 2019) that advocate the implementation of sustainable urban policies.

The present study was motivated by the global rise of urbanisation (Zysk & Wawrowska, 2018) and the need to exchange scientific experience and knowledge to identify social needs and create public spaces that meet the expectations of the present and future generations in view of the UN Sustainable Development Goals. At the same time, the proposed solutions should be eco-friendly, and they should exert a minimal impact on the natural environment (Wolch et al., 2014; Tataruch et al., 2019; Sajnóg et al., 2022).

The aim of this study was to explore the possibilities of urban planning solutions and the components of urban infrastructure that contribute to sustainable urban development in the context of improving the quality of local life.

The extent to which the implementation of smart solutions in public recreational space can lead to improvements in the quality of life and longevity, protect the natural environment, and mitigate climate change was analyzed. In smart cities, innovative solutions are introduced to enhance the quality of life by improving public safety, public health, and environmental health, and by decreasing energy costs.

There is a general scarcity of research studies examining the social dimension of urban life (community needs) in the context of sustainable development of public urban spaces based on renewable

energy sources. Sustainable urban development and management policies should address local community needs (Bokun & Nazarko, 2023), and they should rely on renewable energy technologies that can be implemented in public spaces. These efforts and measures are closely linked with the concept of precision urban planning, which aims to improve the quality of urban life by focusing on community needs in a given public space (Lui et al., 2009).

The following research questions were formulated:

1. What are the resident's perceptions of the quality of PRS?
2. Which types of urban infrastructure components contribute to the creation of user-friendly PRS?
3. Which solutions should be introduced to public space in the opinion of local citizens to contribute to sustainable development of the environment and mitigate the negative effects of climate change in the urban environment?

The study contributes to the innovative concepts of a smart city (Torisson, 2022) and the 15-minute city, which prioritises public spaces and promotes pedestrian and bicycle traffic.

The study involved a questionnaire survey and a field investigation in a Polish city classified in the 15-minute city concepts.

The results were used to design smart and inclusive PRS in SketchUp Pro 2021 software. The proposed infrastructure solutions are consistent with global trends (WHO), which encourage the creation of public spaces that promote direct social interactions, foster active, safe and socially integrated lifestyles, and promote the sustainable development of the natural environment (Pira, 2021).

The study is innovative (Dastjerdi & Nasrabadi, 2022), and it makes a valuable contribution to research on user-friendly public spaces in cities that strive to meet local needs, reduce their environmental impact, and mitigate climate change by adhering to sustainable development principles.

Literature review

Placemaking

The rapid growth of the urban population necessitates the introduction of new solutions that adapt the urban infrastructure to local needs (Kerr et al., 2012). As social institutions, cities should strive to improve and implement innovative solutions that promote the creation of resident-, environment-, and climate-friendly cities. A friendly urban environment (Wiese et al., 2014) is characterised by a high quality of life; it enables seniors to lead healthy and active lives and age with dignity in their communities. Placemaking is a people-based approach that emerged in response to hybrid city (Marino et al., 2023) and smart city, a concept which addresses urban challenges such as sustainability, quality of life, and resilience (European Commission, 2023).

Placemaking is regarded as the future dimension of public space. The main aim of the placemaking concept is to create user-friendly public spaces for daily activities, work, recreation, social interactions, and cultural events. Placemaking capitalises on local assets to improve the well-being of the local community, and it leads to the creation of public spaces that are safe and attractive for the residents. Public spaces have to be designed specifically for the local residents to create harmony with nature within the built environment (Morizon, 2022). The Place Diagram developed by the Project for Public Spaces is a useful tool for assessing the quality of public spaces (Figure 1). In the diagram, the outer ring represents measurable data; the middle ring represents intangible attributes, and the inner ring represents the key attributes of the evaluated place.

The creation of public spaces is largely driven by the users of space because their experiences play a key role in the process. Urban planners can create inclusive and user-friendly spaces by listening to the opinions and suggestions of local community members and analysing attributes that enhance comfort and safety in public spaces. The benefits delivered by user-friendly spaces are presented in Figure 2.

In the urban planning process, placemaking can involve measures that improve the esthetic appeal of public spaces (rest areas), create functional zones that meet local needs (pedestrian routes, cycle paths), and introduce new components that enhance the social function of public spaces (festivals, mass events). Such measures foster social integration and a sense of well-being; they promote the growth of local communities (Matthews & Gadaloff, 2022), and, above all, they lead to the creation

of safe, user-friendly, and inclusive public spaces. Placemaking is a sociable, collaborative, flexible, and trans-disciplinary process (PPS, 2022) and an integral part of the smart city concept.

Figure 1. Place Diagram developed by the Project for Public Spaces
Source: PPS (2022).

Figure 2. Benefits of user-friendly public spaces

Smart city and Urban Environment

The smart city concept (Ionescu et al., 2023) relies on the assumption that smart solutions based on modern ICTs are introduced to public space. For a city to be recognized as fully smart, new generation technologies have to be skillfully blended with the urban structure. A smart city has six main components (Sikora-Fernandez, 2013), namely smart economy, smart mobility, smart living, smart environment, smart people, and smart governance (Figure 3).

The identification of local needs plays a key role in the development of smart cities (Bowling, 2005; Cramm et al., 2013). Local needs have to be identified to implement dedicated solutions (mainstreaming ageing) (Szatur-Jaworska & Błędkowski, 2016). According to the World Health Organization (WHO, 2002), "In all countries, and in developing countries in particular, measures to help people remain healthy and active are a necessity, not a luxury". The main focus of the policies and strategies implemented in smart cities should be to adapt societies to the implications of population ageing and individual longevity (Figure 4).
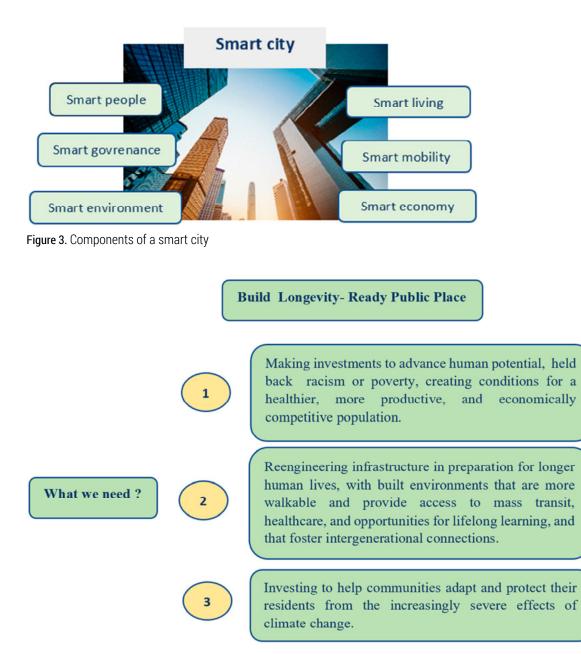
Figure 3. Components of a smart city

Figure 4. Building Longevity-Ready PRS

A smart environment should foster productivity and competitiveness by supporting human potential and, above all, eradicating racism and poverty. To achieve this goal, the urban infrastructure should be transformed and adapted to build longevity-ready PRS. The urban environment should be walkable; it should provide easy access to public transport and healthcare and promote lifelong learning and multi-generational integration (Cramm et al., 2013). The local authorities are faced with the task of adapting urban development policies and implementing innovative infrastructure solutions that not only meet local needs but are also consistent with the principles of sustainable development (ICLEI, 2020). Sustainable development has spatial (Gomez-Baggethun & Barton, 2013), functional (Hamnett & Whitelegg, 2007), social (Michelangeli & Türk, 2021), economic (Wang et al., 2020), and environmental dimensions (Wolch et al., 2014). Sustainable development is closely linked with the principle of New Urbanism (NU), which promotes the creation of user-friendly architecture that meets the needs of diverse social groups. Therefore, the most important components of public urban space and PRS were identified in this study. These concepts are defined in the following section.

Public Urban Space and PRS

Public spaces that are accessible to all residents are an integral part of every city. Dymnicka (2013) defined public space as an area that supports the free expression of opinions, diverse behaviours (limited only by the general rules of social coexistence) and direct social interactions. According to Wejchert (1993), public space denotes space that supports urban living and is accessible to both residents and outsiders. Public space incorporates urban landmarks of social and cultural significance. Lorens and Martyniuk-Pęczek (2010) defined public urban space as an integral part of the urban environment, which, through its design and location in the urban structure, promotes direct social contact, serves vital social needs, and is physically accessible to all interested parties. Public urban space is composed of areas that serve different functions, including transport (pedestrian routes and cycle paths), rest and relaxation (parks and green squares) (Wejchert, 1993). Public space also incorporates recreational areas that have been designed and built specifically for recreational purposes. PRS promotes leisure-time activities which have important social and environmental implications (Toczek-Werner, 2007). The most popular types of PRS have been identified based on a review of the literature (Wejchert, 1993; Lorens & Martyniuk-Pęczek, 2010; Dymnicka, 2013), and they are discussed in the subsequent sections of the article.

Public parks and green areas

Public parks, green areas, and outdoor squares are prime examples of public recreational areas. These spaces promote both active (walking, cycling) and passive (rest) leisure-time activities (Wong & Shaw, 2011). Parks and green areas should feature recreational spaces that are safe and accessible to all community members, including disabled users. Areas designated specifically for recreational purposes should have a surface texture different from that of pedestrian routes to ensure that they can be easily located by visitors with mobility and cognitive impairments (Wysocki, 2009). Well-planned and managed recreational spaces, including pedestrian routes and cycle paths, promote active leisure (Talen, 2002). Footpaths should have hard, even, and slip-resistant surfaces to ensure pedestrian safety (Figure 5).
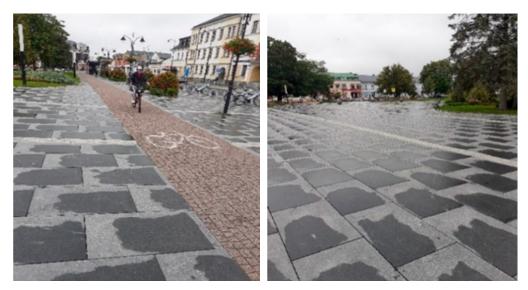

Figure 5. Separate footpaths and cycle paths in a park without architectural barriers (photo: E. Zysk)

Footpaths should be accompanied by street furniture, including benches, where visitors can rest after physical activity (UN, 2016).

Lighting also plays an important role in public parks. Parks and other recreational areas should be well lit to promote safety and enable safe pedestrian traffic after dark. Street lamps and accent lights should be evenly distributed in public recreational areas (Wysocki, 2009).

Playgrounds for adults

Playgrounds for children play an important role in public urban spaces. Playgrounds in parks, public spaces, and green squares are open to all community members (Talen, 2010). Most playgrounds are equipped with structures and devices designed specifically for the youngest users. In recent years, playgrounds have been increasingly often designed to accommodate the needs of various age groups, including teenagers and seniors (Wysocki, 2015). These types of facilities promote physical activity (Figure 6) and enable people to actively spend their free time in the company of peers (Figure 7).

Figure 6. Senior zone in a playground (photo: E. Zysk)

Figure 7. Meeting point and recreational zone (photo: E. Zysk)

Sensory garden

Sensory gardens are the latest addition to urban recreational spaces that attract growing popularity. The layout of a sensory garden and carefully selected plants stimulate the senses of sight, smell, hearing, touch, and taste. These spaces provide the ideal environment for relaxation and contemplation. In a sensory garden, the sense of hearing is evoked by the sound of trees blowing in the wind, singing birds, a trickle of a water stream or a fountain, and the rustle of leaves. Through mindful listening, visitors are able to identify new sounds and bring their awareness to the present moment

(Pawłowska, 2008). A sensory garden also stimulates the sense of touch. According to Juhani Pallasmaa, "touch is a sensory mode that integrates our experiences of the world and of ourselves" (Pallasmaa, 2015). Visitors can experience the sensuous qualities associated with the texture and structure of leaves and flowers. Floral arrangements in a sensory garden also activate the sense of smell. Plant fragrances stimulate the nervous system, have calming and soothing effects, and stimulate the imagination (Łapińska & Łapińska, 2019).

Research methods

Several methods were used in the present study to achieve the research goal. In the first stage of the study, research papers, policy documents, and reports on public recreational spaces were critically analysed using the historical interpretation method. The next stage involved a diagnostic survey, and the local residents' needs concerning PRS were identified with the use of a questionnaire. In the following stage, the studied city was examined, and data were collected during a field investigation. During the field study, the researchers visited public spaces indicated by the respondents in the questionnaire. The results of the questionnaire and the collected data were used to design smart and inclusive PRS in Sketch Up Pro 2022 software. The research stages and the applied methods are presented in Figure 8.
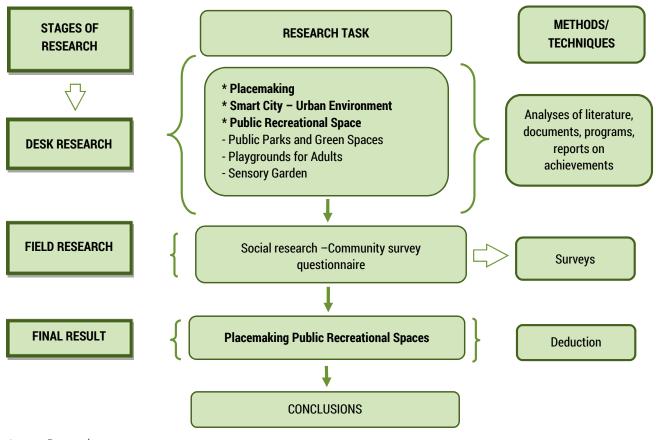
Figure 8. Research stages

Study area

The study was conducted in the Polish city of Ostrołęka. Ostrołęka is located in north-eastern Poland, in the Great Valley Region, approximately 100 km north of the Polish capital city of Warsaw (Figure 9).

Figure 9. Location of Ostrołęka

Table 1. Demographic data for Poland and Ostołęka

Population of Poland	38 382 576
From 2002 to 2021 the population reduced	0,4%
Area of Poland	322 575 km^2
Population density in Poland (persons/km²)	123
Women	51,7%
Men	48,3%
Percentage of population	
Minors	18,2 %
Working age population	59,2 %
Retired	22,6%
Population of Ostrołęka	48 995
Area of Ostrołęka	33,5 km^2
Population density in Ostrołeka (persons/km²)	1462
Women	52,6%
Men	47,4%
Percentage of population:	
Minors	18,5 %
Working age population	57,4 %
Retired	24,1 %

Source: authors' work based on GUS (2020).

Due to its proximity to the Polish capital, Ostrołęka is an important service hub and a centre of industrial activity, including power, construction, pulp-and-paper, and food processing industries. The city is intersected by national road No. 61, which connects the Baltic states with other EU countries.

Ostrołęka was selected for the study because it belongs to the group of medium-sized cities which drive economic growth in most countries (GUS, 2020). Rapid population ageing and youth migration are the main demographic problems in Polish cities, including medium-sized cities (Table 1). In 2018, there were 930 cities in Poland, including 252 medium-sized cities. These cities are in the 15-minute city concepts based on accessible public spaces for the local population. Medium-sized cities are faced with the challenge of leveraging local potential, improving the quality of life, and promoting sustainable development in the social and spatial dimensions. Therefore, research studies should be conducted in medium-sized cities to accelerate their transition to sustainability.

Results

Community survey – questionnaire

The questionnaire for the community survey was developed based on a review of the literature and methodological guidelines for social surveys (Sawiński et al., 2000). Before the survey, the questionnaire was reviewed by local experts in Ostrołęka and scientists working at the Institute of Spatial Management and Geography, University of Warmia and Mazury in Olsztyn. Experts assessed the questionnaire to ensure that it meets urban design (including universal design) criteria and adequately addresses the needs and expectations of local community members. The questionnaire survey was conducted online between November 2021 and February 2022.

Figure 10. Attributes of public recreational spaces

A total of 162 respondents (59.8% females and 40.2% males) participated in the survey. The size of the sample was adequate to obtain reliable results. In other studies, community surveys involving 60 (Percival, 2002) and 121 respondents (Wiles et al., 2009) were conducted in similarly sized cities. The questionnaire consisted of demographic questions as well as 12 open- and closed-ended questions. The respondents were selected randomly. The percent distribution of age groups was as follows: 18-24 years – 25%, 25-60 years – 45%, 60 years and older – 30%. More than 84.5% of the

respondents used public spaces in Ostrołęka. The most popular public recreational spaces were the walkway on the bank of the Narew River, Municipal Park on Traugutta street, and the Old Town. The preferred means of urban transport were walking (60%), cycling (30%), and private car (10%).

In the following question, the respondents were asked to indicate and rank the most important attributes of public recreational spaces. Safety was recognised as the most important feature, which can be attributed to the fact that a sense of security is a basic human need. Safety was followed by the condition of pavements and curbs, as well as the appearance and esthetic appeal of buildings (Figure 10).

According to the respondents, the following architectural features make the greatest contribution to the quality of local life: high quality of the natural environment, low noise levels, access to public space (distance), and attractive surroundings (Figure 11).
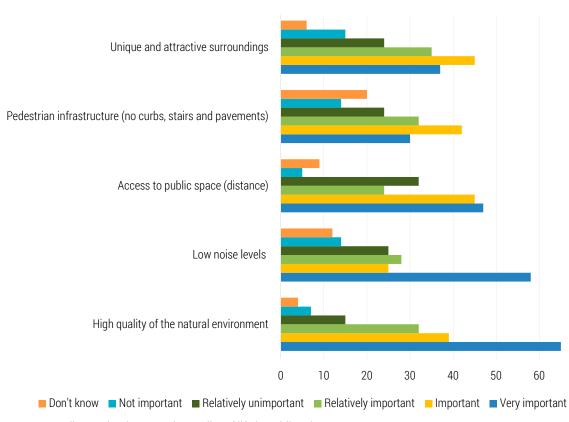

Figure 11. Attributes that improve the quality of life in public urban space

The respondents were asked to indicate smart solutions that would make the greatest contribution to improving the quality of life in an urban environment. Most respondents were of the opinion that the following smart solutions would generate the greatest benefits for local community members: street lights with solar panels, digital information terminals, smart ground lights, benches with solar panels and USB ports (Figure 12). According to the participants, these solutions would contribute to the creation of user-friendly public spaces and deliver environmental benefits by relying on renewable energy sources.

In the following question, the respondents were asked to indicate which urban infrastructure components and architectural solutions are most desirable in public recreational spaces (Table 2). The participants ranked the significance of these components on a scale of 0 to 5 points (0 – don't know, 1 – not important, 2 – relatively unimportant, 3 – relatively important, 4 – important, 5 – very important). The higher the score, the more important the evaluated component.
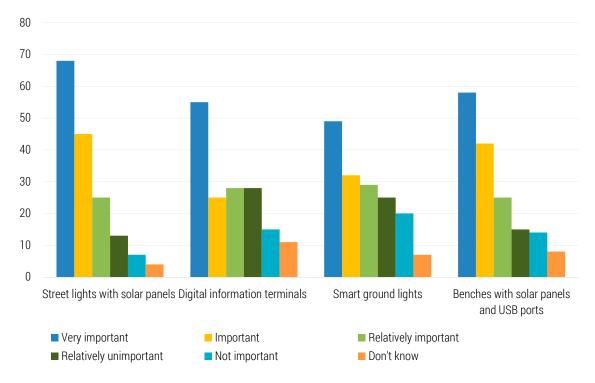
Figure 12. Smart solutions in public urban space

Table 2. Identification of urban infrastructure components and architectural solutions in public recreational spaces

Urban infrastructure and architecture	0	1	2	3	4	5	Median
	Number of responses						
Ornamental plants	5	5	12	30	45	65	4
Digital information terminals	4	5	35	15	45	58	4
Spaces that promote social integration, such as game tables	7	5	12	34	48	56	4
No curbs	10	18	29	31	42	32	3
Standard benches	27	32	21	23	41	18	3
Smart benches with USB ports	5	8	8	14	75	52	4
Waste bins	28	42	28	16	32	16	2
Playgrounds for all age groups	4	10	11	34	40	63	4
Rest areas: gazebos, canopies, pergolas	8	8	9	30	59	48	4
Footpaths with a hard surface	1	4	15	37	58	47	4
Street lights with solar panels	8	10	18	20	43	63	4
Green areas (plants and flowers)	8	8	12	34	40	60	4
Educational trails (with boards containing information about plants and animals)	15	34	24	30	43	16	3

The most desirable components were identified by calculating the weighted median in cumulative weight distribution. The median is least sensitive to outliers, and in the adopted procedure, weights were assigned to each observation to rank the selected components in terms of importance.

The following urban infrastructure components were regarded as most important (median value – 4): ornamental plants, digital information terminals, spaces that promote social integration, smart benches, playgrounds, rest areas with gazebos, canopies and pergolas, footpaths with hard surface, street lights with solar panels, and green areas (flower gardens). Waste bins (median value – 2),

educational trails, absence of curbs, and standard benches (median value – 3) were regarded as less important attributes of public recreational spaces.

Field study of PRS in Ostrołęka

Based on the results of the questionnaire survey, the following PRS in Ostrołęka were selected for the field study: 1. Municipal Park, 2. Old Town, 3. Walkway on the bank of the Narew River (Figure 13).
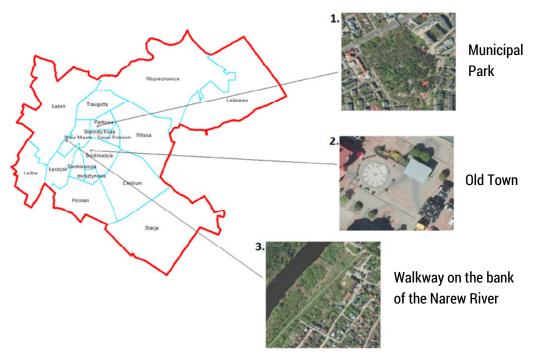

Figure 13. PRS selected for the field study

Based on the results of the questionnaire survey, the field study, and a review of the literature, the examined PRS in Ostrołęka were redesigned by the authors, and the most desirable urban infrastructure components, including smart solutions, were incorporated in each project to improve the quality of local life, promote sustainable development of the natural environment, and mitigate the negative effects of climate change.

Area 1 – Municipal Park

The Municipal Park has considerable potential to become a modern recreational site. Visitors can engage in various forms of active recreation, including walking and Nordic walking. However, the park lacks public spaces that promote social integration.

The authors suggest using guidelines for a mini-golf course as an additional attraction that could actively engage community members. The mini-golf course would encourage people to pursue leisure time activities in the company of their peers. Gaming is an interactive experience that builds social bonds, and outdoor exercise delivers health benefits.

The Municipal Park could also benefit from a sensory garden, which was one of the attractions indicated by the respondents in the questionnaire survey. There are no sensory gardens in Ostrołęka. The authors suggest including a sensory garden as a site that meets local community needs and adds value to public recreational spaces in the city.

Use of smart solutions footpaths in the Municipal Park. Innovative components such as smart ground lights, digital information terminals, and benches with USB ports would improve the quality of outdoor recreation and minimise the environmental impact of urban infrastructure by relying on renewable energy sources.

Area 2 – Old Town

The Old Town in Ostrołęka has been largely modernised, and it is surrounded by commercial and residential buildings. The Old Town is well equipped with street furniture (benches, canopies). However, the existing urban infrastructure is not powered by renewable energy sources, and this shortage needs to be addressed.

Author's proposals are solutions include benches with solar panels and USB ports (in addition to standard benches), which have a very low environmental impact and are an excellent source of natural energy for powering mobile devices. Street lights could be also equipped with solar panels to reduce energy consumption. Digital information terminals and outdoor chess board as may be additional attraction for visitors of all ages.

The proposed solutions contribute to the creation of user-friendly public recreational spaces in the city.

Area 3 – Walkway on the bank of the Narew River

The walkway on the bank of the Narew River was the last public recreational space indicated by the respondents. This area has considerable potential for development, and its appeal for local community members could be significantly improved through the introduction of smart components. Standard benches should be replaced with solar benches with USB ports.

The authors suggest that streetlights should be equipped with solar panels and motion sensors. The walkway should be to minimise its impact on the riparian ecosystem and the landscape, and to create user-friendly public space that promotes active recreation and relaxation.

The proposed solutions by the authors were introduced to address the needs and expectations of local community members and should build user-friendly public spaces that are accessible to all social groups. At the same time, the suggested guidelines and solutions are largely universal, and they can be implemented in most public spaces.

Discussion

A literature analysis noted a gap – there is a lack of research sufficiently developing the issue of recreational public spaces inclusive cities and confronting them with the needs of local residents.

Functional public recreational spaces should enable local community members to engage in both active mobility and passive recreation in an environment (Silva et al., 2023).

This was the object of the study (Mehta, 2014; Kotarski, 2022; Silva et al., 2023). The location, layout, and functions of public spaces should promote social integration. Public space is an area where individuals and groups enter into social interactions, undertake various types of physical activity, and learn about the world. The local authorities are responsible for creating and managing public spaces.

Infrastructure solutions in smart cities should promote walkability by making public spaces more accessible to pedestrians, cyclists, and disabled users (ISO, 2018) in accordance with Sustainable Development Goals (UN, 2015). The Sustainable Development Goals (SDGs) concentrate on creating equal, gender-equitable, safe, resilient, and inclusive cities, which fits this project's idea. SDGs are particularly relevant for panel 3 (Ensure healthy lives and promote wellbeing for all at all ages), 5 (gender equality) and 11 (Make cities and human settlements inclusive, safe, resilient and sustainable.

For these goals to be achieved, the existing architectural barriers should be eliminated, and the proposed solutions should assist individuals with physical and cognitive impairments in navigating public spaces (Czarnecki & Siemiński, 2004).

The study has its strengths and weaknesses. The main limitation was that the study was conducted in only three public recreational spaces in a single location. Ostrołęka is a medium-sized city with a largely homogenous culture and social practices. In the future, a similar study should be conducted in PRS in a larger city.

Local studies in the creation of urban spaces have been the subject of research on social preferences (women) (Sadeghi & Jangjoo, 2022), development of participatory processes (Wysocki, 2009).

The main strength of our study was that the identified social needs are largely universal and address architectural solutions and urban infrastructure components regardless of language, culture, or ethnicity and above all, user-friendly PRS should be safe (Council of Europe, 2014).

Jopek (2018) identifies that increasing the quality of selected public spaces by introducing new compositional, functional, spatial, social, and aesthetic values is key to creating safe, egalitarian and inclusive cities (Gawron & Trzcińska, 2008) and adapting to local community needs based on the placemaking concept.

The measures taken depend on the management stakeholders for whom the studies conducted can also inspire active public involvement and public participation in line with the policies to the global direction of sustainable development (goals 5 and 11), sustainable improvement of quality of life and accessibility (ISO, 2018).

The proposed innovative solutions for redesigning public recreational spaces rely on smart ICTs and are consistent with the latest sustainable urban development trends, which aim to improve the residents' comfort and quality of life. Research in this area was conducted by (Bednarska-Olejniczak et al., 2019). Results of the study showed that it is not possible to create a friendly space without identifying a local standard of the quality of life for citizens and making it a tool used to carry out local policy.

The study confirmed that city dwellers have a positive attitude towards smart solutions in urban space. A number of innovative infrastructure components have been proposed to improve the quality of public recreational spaces, including street lights with solar panels, smart ground lights, and digital information terminals.

Wysocki (2009) suggests that the creation of friendly cities is based on universal design. The authors proposed that the designed solutions are largely universal and can be implemented in all types of public spaces. At the same time, the proposed smart components are powered by renewable energy sources, which contributes to environmental protection, mitigates the negative consequences of climate change, and decreases energy consumption in public space.

The studies we carried out are part of the trend of New Urbanism (NU), which focuses on the functionality of cities, and public spaces (accessible to the public), are to be dedicated to a diverse group of audiences and users, and friendly to all social groups (Wejcherta, 1993; Dymnicka, 2013; Lorens & Martyniuk-Pęczek, 2010). The research undertaken adds to the knowledge and is key to the development of the right spatial planning policy practices, mainly at the local level (European Charter for Equality of Women and Men in Local Life).

The proposed solutions are consistent with the concepts of the 15-minute city and the smart city, which is an added value of the study.

The presented findings contribute new knowledge by identifying the key components of user-friendly public spaces and providing valuable insights about the residents' perceptions of public recreational spaces after the COVID-19 pandemic. The results of the study can be used to assess the quality of public recreational spaces in other cities around the world.

Conclusions

Cities are the hubs of social, professional, and cultural activity for millions of people around the world. The future of cities is largely dependent on local development policies and the authorities' efforts to create user-friendly cities based on the placemaking concept which plays a key role in improving the quality of local life and promoting sustainable urban development.

The questionnaire used in the study was helpful in systematising knowledge about architectural solutions and urban infrastructure components that contribute to the creation of user-friendly public recreational areas in the context of the placemaking approach to the urban environment (Serra, 2021). The list of the identified components can be freely modified to suit local communities' needs and preferences in different countries.

The study confirmed that the resident's needs and expectations have to be taken into consideration in the process of improving the quality of public recreational spaces. Sustainable urban development encompasses many areas of activity, including environmental protection, resilience to climate change, and the implementation of innovative technologies that improve the residents' comfort and

quality of life. Future research should focus on the placemaking approach to make cities more livable, improve the residents' health and well-being, protect the natural environment, and mitigate the adverse consequences of climate change.

The presented findings can be helpful in designing prosperous cities that are responsive to the needs of various social groups in line with the OECD's vision and mission to build better policies for better lives.

The contribution of the authors

Conception, E.Z.; literature review, E.Z.; acquisition of data, E.Z. and K.Z.; methodology, E.Z.; data curation, E.Z.; analysis and interpretation of data, E.Z.; formal analysis, E.Z.; funding acquisition writing – original draft, E.Z.; visualisation of data, K.Z.; surveys, K.Z.

Elżbieta Zysk – 80%, Katarzyna Zalewska – 20%

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SPOŁECZNY GŁOS W PROJEKTOWANIU PUBLICZNYCH PRZESTRZENI REKREACYJNYCH (PPR) W ŚRODOWISKU ZURBANIZOWANYM

STRESZCZENIE: Globalny wzrost liczby ludności miejskiej, zmiany klimatyczne i kryzys energetyczny stanowią poważne wyzwania dla władz lokalnych i zachęcają do zmiany lokalnej polityki w kierunku zrównoważonego rozwoju. Władze lokalne muszą zaspokajać potrzeby i oczekiwania społeczne w zakresie przestrzeni rekreacyjnych i ochrony środowiska poprzez wdrażanie innowacyjnych rozwiązań infrastrukturalnych, w tym opartych na odnawialnych źródłach energii. W ostatnich latach debata na temat planowania urbanistycznego koncentrowała się na podejściu do tworzenia miejsc oraz wdrażaniu koncepcji 15-minutowego miasta i inteligentnego miasta. To nowatorskie podejście promuje zrównoważony rozwój miast, który opiera się na powiązaniach między środowiskiem naturalnym, gospodarką i społeczeństwem. Celem niniejszego badania było zbadanie możliwości rozwiązań urbanistycznych i rodzajów elementów infrastruktury miejskiej w zakresie zrównoważonego rozwoju miast w kontekście poprawy jakości życia lokalnego. Potrzeby społeczności lokalnej zostały zidentyfikowane w badaniu ankietowym i podczas badania terenowego. Badanie przeprowadzono w średniej wielkości polskim mieście, w którym przeprojektowano publiczne przestrzenie rekreacyjne zgodnie z zasadami zrównoważonego rozwoju obszarów miejskich. Wyniki zostały wykorzystane do zaproponowania uniwersalnych projektów rozwoju miast, które zaspokajają lokalne potrzeby i opierają się na odnawialnych źródłach energii, aby stworzyć zrównoważoną przyszłość dla społeczeństwa, środowiska naturalnego i klimatu.

SŁOWA KLUCZOWE: Publiczne Przestrzenie Rekreacyjne, zrównoważony rozwój miast, przyjazne miasta, przestrzeń miejska, społeczeństwo