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Healthy housing environment in contemporary investments. Contribution to the research on the Mieszkaj w Mieście – Wizjonerów Estate in Krakow

Introduction

The contemporary Polish cities are struggling with the problem of an insufficient number of flats. According to the *Raport. Stan mieszkalnictwa w Polsce* [Report on the State of Housing in Poland] of March 2020, despite the gradually increasing resources in our country, the housing deficit is a significant problem. In the structure of new flats delivered in 2019, the largest percentage (97.8%) was the real estate development and investments carried out by individuals [1]. As a consequence, many investors often assume that the flats they build will be in demand regardless of their quality. The focus on profit results in housing estates where it is difficult to find attractive common areas. Insolation results directly from regulations specifying its minimum duration, and green areas are only a result of the factor ensuring the minimum biologically active area specified in the Local Development Plan or Conditions of Development. Some investments are below an average standard and unclear from the point of view of shaping the correct space. Some housing complexes are built without a convenient connection to the rest of the city by public transport. The lack of public transport and access to services, small spaces between buildings and small sizes of flats can be a source of frustration for the users in the long term. With reference to the issues mentioned above, the aim of this paper is to describe certain features of healthy residential environment as the examples of issues that could be examined in detail in future in the context of one of investments in Krakow: Mieszkaj w Mieście – Wizjonerów Estate in Krakow.

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What is a healthy housing environment?

Nowadays, people live longer and want to stay healthy for a longer period of time, so the environment they live in is very important. According to the *New Athens Charter* of 2003, poor health conditions are a result of pollution, less biodiversity in cities and lack of open spaces [2]. On the one hand, active lifestyles are promoted, while on the other hand, cities limit the possibility of contact with nature by reducing the amount of non-developed green areas within their borders [3]. Therefore, it is necessary to find a balance between the economically justified development of a city and the provision of adequate living conditions for its citizens. It is difficult to imagine a healthy residential environment without taking into account the concept of a "healthy city". Only skilful management of environment and practical application of the sustainable development principles can make all cities healthier for their inhabitants [2].

The World Health Organisation (WHO) uses the term "healthy housing" in its publication *Housing and health guidelines*, pointing out that the housing environment quality is also determined by its surroundings. Ensuring physical, mental and social well-being is important in this context. A healthy housing is a space that ensures a sense of belonging, security and privacy. The term also refers to the structure of housing, which guarantees physical health by means of protection against the elements, excessive moisture and providing adequate temperature, sanitary conditions and lighting. A healthy housing is also a comfortable space per a single occupant, access to adequate utilities, and protection from biological degradation and pests. In terms of the surrounding space and establishing the relationships, a community is important to enable shared interactions that support health and well-being.

Finally, healthy housing conditions depend on the immediate surroundings of the building or estate and what it can offer apart from the place to live. Here, such issues as the access to services, green spaces and active and public transport, as well as protection from pollution or the effects of natural disasters are important [4].

When defining a healthy housing environment, the safety of using the common and private spaces should also be taken into account, including requirements resulting directly from legal acts, such as protection against falling from heights, use of protective elements (e.g., canopies at entrances), the availability of a safe escape route in case of fire, or safe construction of the building in case of a specific location of the project, e.g., in mining or landslide areas [5]. However, these are fundamental issues governed by law so, theoretically, the facilities permitted for use should respect them.

The healthy housing environment is a place which integrates generations and does not discriminate against anyone because of age or disability. In this respect, it is important to ask whether the space that is currently comfortable and safe for a particular group of residents will be optimal for the same users in 20–30 years' time. We live in times of an ageing population. Taking account of the needs of senior citizens is necessary because of the demographic processes we are seeing today. When thinking ahead, we must take into account, for example, the fear of older and disabled people of leaving their homes. The mobility restrictions and difficulties in accessing the homes, such as the lack of lifts, can lead to an increased isolation. People with dementia or low vision should be helped to use the common spaces by applying appropriate visual identification and colours, so that they are able to recognise the floor and find the way to their flat much quicker and easier. When designing the housing environment for older people, it is necessary to pay attention to solutions that promote their activity and integration into society [6].

This paper assumes that health and well-being are influenced by any relationships between a person and the space in which he/she lives. The quality of such space and its relationship with a person is influenced by factors that can be hierarchized and used to evaluate a housing complex, referring to the scale of the city, housing estate and flat, as shown below (Table 1).

The following sections of this paper characterise the above features in relation to one of contemporary multi-family housing estates, Mieszkaj w Mieście – Wizjonerów Estate in Krakow. The following characteristics are a contribution to broader research on the quality of contemporary housing investment environment, together with a presentation of proposed research methods for profound examination of each of the presented issues.

Characteristics of a selected contemporary project on the example of Mieszkaj w Mieście – Wizjonerów Estate in Krakow

Mieszkaj w Mieście – Wizjonerów Estate (developed by Medusa Group) is a multi-stage investment intended to be a self-sufficient part of the city, with multi-family, single-family as well as office and service buildings. The estate is located in the north-western part of the city (Fig. 1) in the Bronowice district, between Armii Krajowej and Radzikowskiego Streets, 4.5 km in a straight line from the Main Market Square in Krakow. The whole establishment has a graduated scale from the office, service and residential buildings of higher intensity located by a busy traffic route, i.e., Armii Krajowej Street, to the two-storey single-family houses in the western part of the estate. 2200 flats have been planned under this undertaking. Currently, some of the investment stages have been completed, namely: Naukowców, Wizjonerów, Kompozytorów and Aktorów.

City

1. Air quality

The investment is located in a city where every new and large construction project arouses huge emotions. This is why each time the Krakow city officials must accurately assess how densely to build the city up and whether the intensity of development in certain places is not already too big. At the same time, there is a need to accommodate incoming population in the city, which developers take advantage of. Even the notion of "concreting Krakow" emerged, which – in the opinion of some people – is the cause of poor air quality in the city. In the case of Mieszkaj w Mieście – Wizjonerów Estate, the average value of

Table 1. Factors influencing the housing environment quality (elaborated by R. Oleksik)
Tabela 1. Czynniki wpływające na jakość środowiska mieszkaniowego (oprac. R. Oleksik)

City	Housing estate	Flat
Air quality	Access for the elderly and disabled	Sense of security and privacy
Access to open spaces	Security of the surrounding	Usable area per single inhabitant
Connection of the housing estate with the city by public transport	Access to green and recreational areas	Microclimate quality and protection against external weather conditions
–	Access to services	Ecological quality of materials and their impact on human health
–	Opportunity to build social relationships	–

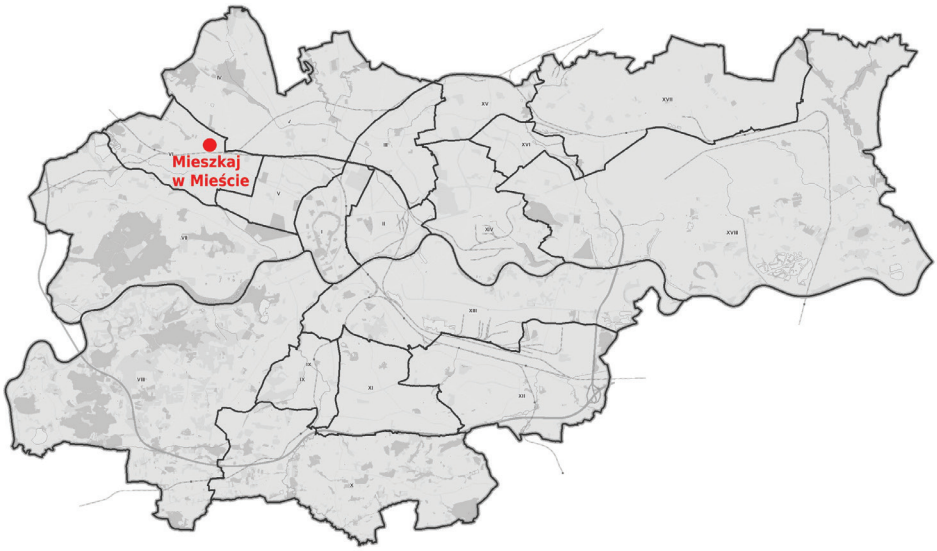

Fig. 1. Wizjonerów Estate in Krakow. Location of the investment on the map of Krakow (elaborated by R. Oleksik based on www.msip.krakow.pl)

Il. 1. Osiedle Wizjonerów w Krakowie. Lokalizacja inwestycji na mapie miasta (oprac. R. Oleksik na podstawie www.msip.krakow.pl)

PM10 particulate matter in 2018 for the measurement station located closest to the housing estate, i.e., at Złoty Róg Street in Krakow, was 43 µg/m^3, with the maximum value being 69 µg/m^3 [7]. As compared to year 2020 for the same location, the mean and maximum results were much lower, namely 30 and 52 µg/m^3 respectively [8]. As can be seen, the situation has improved. Several factors may have contributed to this. Among the most important ones is the fact that since September 1, 2019 there is a total ban on solid fuels, i.e., coal and wood, in Krakow. In addition, the city is trying to put emphasis on reducing car traffic and promoting cycling as an important means of transport. Also, the popularisation of renewable energy and stricter provisions concerning the requirements for thermal insulation in the *Rozporządzenie Ministra Infrastruktury z dnia 12 kwietnia 2002 r. w sprawie warunków technicznych…* [Regulation of the Minister of Infrastructure of 12 April 2002 on technical specifications for building and their location] [5] fills with optimism as regards the influence of pollution on the living space of a man. The above information may be treated as a starting point for a detailed study of air quality in the immediate vicinity of the estate as well as inside individual buildings.

2. Access to open spaces

An important added value of any housing investment is access to open urban recreational areas with rich biodiversity. The location near a park or a river encourages physical activity of the residents. It was analysed which green areas are located within 1.5 km from the investment (Fig. 2), and thus which, assuming a walking speed of 6 km/h, can be reached in 15 min (this makes 30 min in both directions, which is the time recommended for physical activity of moderate intensity for an average healthy person) [9]. Undoubtedly, one of the most attractive recreational spaces located near the housing estate is the Młynówka Królewska Park located one kilometre to the south. It is an example of linear park with a length of 8 km running along a non-

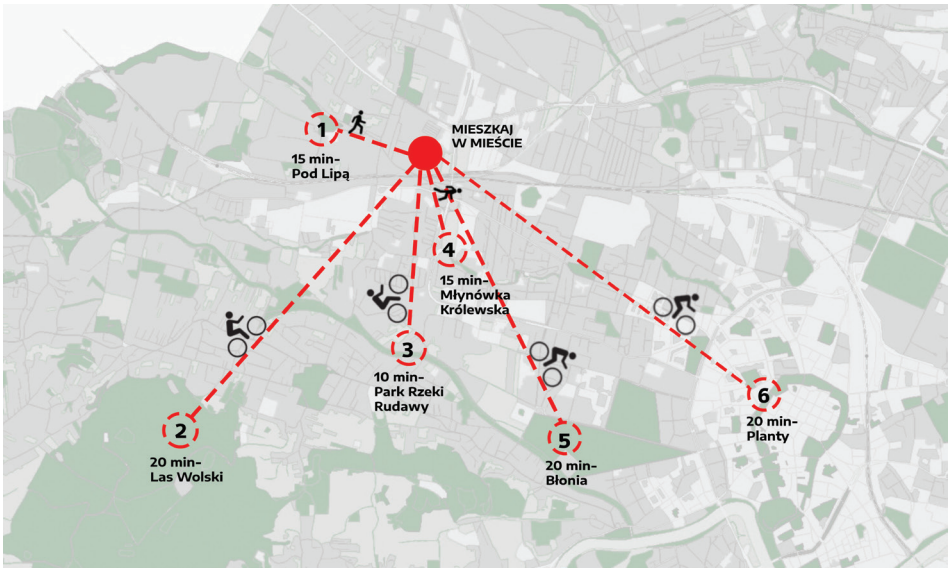

Fig. 2. Wizjonerów Estate in Krakow. Distances from residential area to open spaces with approximate arrival time (elaborated by R. Oleksik based on www.msip.krakow.pl)

Il. 2. Osiedle Wizjonerów w Krakowie. Odległości od osiedla do terenów otwartych z podaniem przybliżonego czasu dotarcia (oprac. R. Oleksik na podstawie www.msip.krakow.pl)

Fig. 3. Wizjonerów Estate in Krakow.
Wizjonerów stage with view on the northern slope
of the Wolski Forest
(photo by R. Oleksik)

Il. 3. Osiedle Wizjonerów w Krakowie.
Etap Wizjonerów z widokiem na północne zbocze Lasu Wolskiego
(fot. R. Oleksik)

existing water channel through two districts of Krakow: Krowodrza and Bronowice. The Młynówka Królewska Park is one of the urban river parks which are gaining popularity worldwide thanks to reducing the heat island effect and the risk of flooding [10]. Heading west, you can reach undeveloped, green areas of Bronowice with the attractions such as the "Bronowice" shelter or the popular "Pod lipą" ("Under the linden tree") viewing spot. The 3.15-hectare park with attractions for residents is to be created in the immediate vicinity of the housing estate. As it is assumed, it will include a playground, sports fields, ping-pong tables and a fountain. In a broader context, it should be mentioned that the estate is located in the vicinity of elements of the "western wedge of greenery" having its beginning in Błonia with, among others, the Wolski Forest being a part of the Bielańsko-Tyniecki Landscape Park (Fig. 3). This part of Krakow is an area of high natural and cultural values, and due to the characteristic terrain it is exceptionally important in terms of landscape [11]. The estate offers its residents a view of the northern slope of the Wolski Forest, which can be reached by bicycle in 20 min. It takes 20 min to get to Błonia and Planty Park and 10 min to get to the Rudawa River Park. Due to the location of the estate in the north-western part of Krakow in the vicinity of the road No. 7, the investment can be a good starting point for the car or bicycle trips to the Krakow Valley Landscape Park or the Ojców National Park. To sum up, the investment has access to attractive open areas located within a short distance from the estate.

3. Connection of the housing estate with the city by public transport

In the vicinity of the investment there is Krakow Bronowice railway station which connects the housing estate with the city centre in 10 min by fast agglomeration railway. In the neighbourhood there are also bus stops, including *Rondo Ofiar Katynia* or *Katowicka*, which residents can reach in 5 min on foot, from where they can get to most important places in the city. Based on the above-mentioned information, it can be preliminarily assessed that public transport accessibility is good. However, this should be further explored as part of further research work related to this estate.

Fig. 4. Wizjonerów Estate in Krakow.
Distinctive colour scheme for common spaces
in the Wizjonerów stage (photo by R. Oleksik)

Il. 4. Osiedle Wizjonerów w Krakowie.
Wyraźna kolorystyka przestrzeni wspólnych
– etap Wizjonerów
(fot. R. Oleksik)

Housing estate

1. Access for the elderly and disabled

Every new investment in Poland must meet the requirements of numerous legal acts for a building permit and then an occupancy permit to be granted. In this context, it is important to ensure accessibility and adaptation of space for people with various dysfunctions. Thanks to properly constructed regulations, the new investments must be adjusted for all potential disabled users. It is no different in the case of Mieszkaj w Mieście – Wizjonerów Estate. In the Wizjonerów and Kompozytorów stages the buildings have parking spaces, ramps and lifts adapted for the disabled and facilitating the movement of the elderly as well as parents with prams and small children. The estate is provided with the visual identity system that has been well designed. Its primary function is to help residents and

their guests find their way. In the investment, clear colours for individual stages (Fig. 4) and characteristic graphic elements in common areas have been used, which may have a positive influence on locating one's living space by people with visual or memory dysfunctions as well as the youngest residents of the complex. Based on such observations as well as analysing the legal requirements, it can be stated that the estate is adapted to the needs of people with disabilities.

2. Neighbourhood security

The investment is advertised as an open housing estate without fences, for people of different ages who want to live according to the idea of a neighbourhood community, which is contrary to the idea of building the closed housing estates that were popular beginning with the late 1990s. The quantitative research carried out in 2006 and 2008 among the residents of enclosed and open housing estates in Warsaw by Maria Lewicka's team showed that fencing off the housing estate increases the residents' sense of security. At the same time, people living in gated communities are less socially active and not community-oriented, and are more attached to their flat than to the surrounding space [12]. Paradoxically, despite such results, it seems clear that building a sense of community and trust has a greater impact on our health than isolation, as was also proved by the experience during the Covid-19 pandemic quarantine period. The district where the investment is located – Bronowice – was considered safe by about 93% of respondents in 2019 (along with Zwierzyniec, Prądnik Czerwony, Prądnik Biały and Dębniki) [13]. The available information, such as mentioned above, applies to the whole district. Ultimately, in order to obtain reliable results on the sense of security of tenants, it is proposed to narrow the research area to the group of estate residents.

3. Access to green and recreational areas

The beneficial influence of greenery on our mental and physical health is indisputable. Many new housing investments are based on the principle of maximum amount of usable flat space on the plot. The aim of Mieszkaj w Mieście – Wizjonerów Estate is to stand out from the competition, hence the importance of a large amount of green areas in the project. In the Wizionerów stage, at its widest point, the distance between the individual wings is 65 m. The spaces between the buildings are filled with greenery in the form of plantings and lawns (Fig. 5). This has been achieved by elimination of vehicular traffic. The courtyard space has been supplemented with small architecture made of safe materials.

4. Access to services

The housing estate promoted as a self-sufficient city within a city must have services in its immediate vicinity. As part of the investment, the basic retail and service points have been developed, including as follows: two nurseries (public and non-public), kindergarten, paediatrician's office, multi-branch shop with healthy food, bakery, café or car wash. The individual services are implemented in each stage so that they can fulfil the residents' needs on an on-going basis. It is worth mentioning that within 1.5 km from the investment there is a complex of large-format shops. The access to public utility buildings is also important. There is a primary school located directly at the south-western border of the estate and a church 0.5 km to the south. Based on this information, it can be assumed that the estate has good access to basic services and public buildings located both on the site and in its vicinity.

5. Opportunity to build social relationships

Our mental and physical health is greatly influenced by contact with other people. Human relationships prevent us

Fig. 5. Wizjonerów Estate in Krakow. Inner courtyard of the Wizjonerów stage (photo by R. Oleksik)

Il. 5. Osiedle Wizjonerów w Krakowie. Dziedziniec wewnętrzny etapu Wizjonerów (fot. R. Oleksik)

Fig. 6. Wizjonerów Estate in Krakow.
Glass case of the K_2O housing estate club (photo by R. Oleksik)

Il. 6. Osiedle Wizjonerów w Krakowie.
Witryna klubu osiedlowego K_2O (fot. R. Oleksik)

from loneliness and stress. Human beings are social creatures by nature, so when planning a housing complex, it is important to provide opportunities for contact with other people and to create the scenario for building relationships. Here, the appropriate scale of buildings is important. The idea of a modernist housing estate, according to which high-intensity point buildings were created, still has a negative impact on the planning of new residential complexes today. In this investment we are dealing with a diversified, multi-stage urban assumption with a balanced scale of buildings with the number of storeys from 2 to 8. The arrangement of neighbourhood spaces filled with low greenery, places for recreation and rest may have a positive influence on the creation of relations. The *K_2O housing estate club* (Fig. 6) should be mentioned here, which is undoubtedly a reference to the clubs in housing estates in communist times. It is a place for various common activities and events in which the estate residents can participate. The club also promotes the activities of local artists. By offering such spaces, the estate provides ample opportunity to build neighbourly relationships.

Flat

1. Sense of security and privacy

Apart from the health benefits that result from building relationships, the space is important to provide a sense of security and privacy, allowing us to completely separate from the surroundings. Naturally, the residents with flats located on the ground floor have the biggest problem with privacy. With the floor level high above the ground, this is not as much of a problem. Often the building is set so high that we are not able to see into a flat from the street. However, when the "zero" level is equal to the ground, the tenant gardens are usually provided, i.e., sections of green area with a terrace, which belong to the flat, separated by a fence. The second solution gives a substitute of a private garden and provides direct access to green areas. In the Mieszkaj w Mieście – Wizjonerów Estate investment, both solutions can be found in particular stages. Another issue worth mentioning is the proximity of buildings. In case of the first completed stage of Naukowców estate, the distance between the five-storey buildings is about 24 m. In the Wizjonerów stage, in a quarter of buildings of similar height, as already mentioned, the width of the courtyard is about 65 m, while the shortest distance between the buildings is 20 m. The situation is different in the Kompozytorów stage. Here, with eight overground storeys, the smallest distance between the buildings is about 13 m [14]. To sum up, the Wizjonerów stage can be assessed best, while the Kompozytorów stage seems to be the least "resident-friendly".

2. Usable floor space per inhabitant

In flats completed in Poland in the 1st half of 2020 in multi-family buildings, the average floor area of flats was 52.5 m^2 [15]. For comparison, the average area of flats in one of the stages of the Mieszkaj w Mieście – Wizjonerów Estate, i.e., the Kompozytorów stage currently under construction, is approximately 55.67 m^2. If the floor area of all flats in this part of the investment was divided by the marketing number of beds shown on the dwelling cards, the result would be approximately 21.9 m^2 per resident. Referring to the average living area per person in 2019 in Poland, which was 28.7 m^2 [16], this is still a much lower result. At the same time, if the European average is taken into account, the area per person in a housing estate should be twice as high. However, it is worth mentioning that single-family houses contribute to these figures and significantly increase the average. It is also necessary to take into account the economic capabilities of the society and the fact that in the "old" estates the area per inhabitant was significantly lower. Summarising the above data, it may be concluded that the average flat of 55.67 m^2 having an area of 21.9 m^2 per inhabitant is a good result.

3. Microclimate quality and protection against external weather conditions

The buildings use triple-glazed windows in tight assembly and 22 cm thick thermal insulation wool [17]. The currently required *U* value resulting from the *Rozporządzenie Ministra Infrastruktury z dnia 12 kwietnia 2002 r. w sprawie warunków technicznych*… [5] is 0.20 W/m^2K. To guarantee this, it is sufficient to use 18 cm of mineral wool with the thermal conductivity coefficient λ = 0.038 W/(m K), assuming that the wall construction material is reinforced concrete. Such data may suggest that the thermal transmittance for external walls is better than that required by the regulations[1]. Partitions with a reduced thermal transmittance can maintain an optimum temperature in summer and reduce the energy required to heat the building in winter. Further research should verify this information and the effectiveness of materials used, e.g., by carrying out an energy audit of the building. Also, it will be impor-

[1] Note that in order to verify in detail the thermal transmittance for individual external walls of an investment, the data on the exact λ coefficients of the individual materials are needed.

tant to investigate the microclimate in common spaces of the estate.

4. Ecological quality of materials and their impact on human health

In the Mieszkaj w Mieście – Wizjonerów Estate, a variety of façade materials were used, such as clinker façade in the Wizjonerów stage (Fig. 7). This material is natural. It is resistant to weather conditions and has high mechanical strength, thanks to which it does not require frequent preservation. It is resistant to fire, chemical and biological corrosion, and to the factors that may cause allergies. In the subsequent stages, the façades were made using the ventilated façade system (Fig. 8). The structural walls are made of reinforced concrete, and on the higher storeys they are partly brick-built. The ceilings of all buildings are also made of reinforced concrete. Due to the use of reinforced concrete in future, it is worth analysing the influence of reinforcement used in the building on the level of electric field generated by wireless communication systems [18]. To sum up, according to the Polish construction law [19], every new investment commissioned (including the housing estate discussed here) should meet the basic

Fig. 7. Wizjonerów Estate in Krakow. Wizjonerów stage with visible clinker façade (photo by R. Oleksik)

Il. 7. Osiedle Wizjonerów w Krakowie. Etap Wizjonerów z widoczną klinkierową fasadą (fot. R. Oleksik)

Fig. 8. Wizjonerów Estate in Krakow. Kompozytorów stage with visible ventilated façade (photo by R. Oleksik)

Il. 8. Osiedle Wizjonerów w Krakowie. Etap Kompozytorów z widoczną fasadą wentylowaną (fot. R. Oleksik)

requirements concerning, among others, hygiene, health and environment. This applies also to building materials placed on the market. Additionally, it is worth mentioning the certificates and attestations used on the Polish market, which provide information about the environmental performance and influence of building materials on human health. This topic should be further explored in future studies due to the long-term exposure of residents to the technologies and materials used in the housing estate and their impact on health.

Research methods

The characteristic features of a healthy housing environment listed and discussed on the example of Mieszkaj w Mieście – Wizjonerów Estate may be considered appropriate for the future research. Due to the incomplete view on the issue discussed, further steps should be taken to complete the data on "healthy" housing environment in the context of this estate. Detailed research should be carried out using methods appropriate to particular issues.

At this stage, it is proposed to use the following research methods. When evaluating the criteria related to ecology and environment, i.e., *air quality*, *microclimate quality and protection from external atmospheric conditions*, *as well as ecological quality of materials and their impact on human health*, it can be proposed to use the BREEAM method of assessing buildings for their ecological aspects [20]. The assessment areas addressed by this certification are related to the above mentioned issues. Another proven research method that can be valuable for the criteria related to the inhabitants' use of the space as well as their well-being is POE (Post-Occupancy Evaluation). This method is a special one because it takes into account the point of view of users and not only of experts in a given field [21]. This method can be used to assess behavioural issues, in particular the accessibility for elderly and disabled people, as well as other criteria related to the feeling of safety and quality of the microclimate. For the issues focusing on accessibility to particular spaces within the estate and in the city, the observational studies and surveys can be proposed. For the issue of availability of green and recreational spaces, it may be valuable to make a comparative analysis of the "Mieszkaj w Mieście – Wizjonerów Estate" investment and other Polish and foreign housing estates with similar building intensity parameters and a similar number of inhabitants. In all examples, their biodiversity should be analysed and compared. Turning to the aspect of opportunities for building neighbourhood relations, it is worth referring to the model example of a European community-oriented housing estate such as LILAC in Leeds, UK [22]. To begin with, the difference in the scale of the investment may be problematic – LILAC, which is currently inhabited by 50 people, forms a small community, whereas the investment discussed in this paper is to include 2200 flats. Nevertheless, for both examples it is possible to propose a survey of satisfaction with building neighbourhood relations, the degree of membership in a social group, or general satisfaction with living in a given space. Other comparative analyses can be carried out as a part of the study of accessibility of the investment to services by comparing the estate in question to other Polish housing complexes which share the same characteristics. It is worth focusing on the projects in cities with a population of over 500,000 inhabitants, carried out, similarly to the investment discussed, outside the very centre of the city. Also, it would be valuable to check the service area parameters per one inhabitant, as well as the number of children in relation to the places available in nurseries, kindergartens, schools, etc.

Summary

Due to the wide range of issues involved in assessing the housing environment and the fact that this estate discussed is currently under construction, it is essential to carry out reliable studies to address the above-mentioned features of a "healthy" estate once all the stages have been completed. The investment is being built gradually, so not all issues can be reliably assessed now. It may be problematic, for example, to assess the sense of privacy in a flat which currently has no exposure to another building, but this will change in the near future. It is reasonable to continue research regarding these issues using the methods outlined above. Reliable assessment of a housing estate can also be of great value to the developers.

At the present stage of research, the preliminary conclusions may be drawn in relation to the adopted individual evaluation criteria. On the scale of the city, in terms of features such as *access to open spaces* or *connection of the housing estate with the city by public transport*, a great advantage of the investment is its location. However, it should be borne in mind that these are the features resulting from a good location and not from the design. In terms of the *air quality* factor, the situation has improved in this part of the city over the last two years. Moving on to the scale of the estate, Mieszkaj w Mieście – Wizjonerów Estate in the common spaces is accessible to the elderly and disabled by meeting the regulations defining these requirements and by using a well thought-out visual identity making it easier to find one's living space. In terms of neighbourhood safety, the investment is located in a neighbourhood that residents rate as safe. As it had been assumed, the tenants were also provided with access to green and recreational areas through appropriate development of the areas between the buildings and exclusion of the wheeled traffic. The added value of the Wizjonerów stage is a large distance between the buildings, with five overground storeys. Comparing this quarter to Krakow's standards[2], one may assume that the investor could have obtained more usable space for sale. In terms of *access to services*, apart from the basic service premises designed as part of the assumption, the good rating may be largely due to the location of this investment. An important added

[2] To put it simply, the distances between buildings in many Krakow investments are reduced in order to obtain the largest possible usable area of flats. The Fi estate on Tadeusza Szafrana Street is a good example. With seven overground storeys, the distances between individual buildings range from 20 m to 24 m.

value of the *possibility to build social relations* factor is the introduction of spaces intended to help build relations between residents, such as a *K_2O. Housing Estate Club.* This topic is worth deeper consideration after the return to the so-called post-covid normality, when it will be possible to reliably check how this space functions. Turning to the housing evaluation criterion, it is difficult to comment on the feature of feeling safe and private until detailed surveys have been carried out with the residents. However, it can be assumed that due to the varying distance between buildings in the different stages, the scores may vary. Based on the data from one of the stages, the ratio of the average area per inhabitant to the 2019 average area per inhabitant in Poland of 0.76 can be considered a good result. The factors such as *microclimate quality* and *protection against external weather conditions* can initially be assessed as good on the basis of the insulation materials used, while the ecological quality of the materials and their impact on health is based on the characteristics of the façade and construction materials used. The assessment of this issue requires an extremely reliable approach in future research.

If you look at the housing estates being built in Poland today, among the many that are mainly profit-oriented, you can see the examples of projects that are carried out with residents in mind. One of such investments is the Mieszkaj w Mieście – Wizjonerów Estate in Krakow designed by the Medusa Group. Despite many uncertainties, the stages of the estate completed so far have the features of a resident-friendly environment, worthy of imitation by both investors and architects.

Translated by
Agnieszka Siedlecka

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Abstract

Healthy housing environment in contemporary investments.
Contribution to the research on the Mieszkaj w Mieście – Wizjonerów Estate in Krakow

The article is devoted to the contemporary, multi-stage, Krakow-based investment Mieszkaj w Mieście – Osiedle Wizjonerów. The study mainly refers to its completed stages, Wizjonerów and Kompozytorów, however, while discussing the individual features of the investment, due to the context and the multi-stage nature of the estate, information on its other phases was also used. The first part of this article is devoted to an attempt to define the concept of a "healthy housing environment" by formulating its features in relation to the scale of the city, housing estate and apartment. In

the second part, the characteristics of the investment were made based on the above-mentioned features. This fragment was prepared using available information about the estate, statistical data, spatial data, existing research on the district in which the investment is located, literature and legal acts review, as well as our own observations. After performing the characteristics, it was found that the adopted features of the "healthy housing environment" are appropriate from the point of view of future research. As a consequence, exemplary research methods that can be used to carry out a detailed analysis of the housing estate were proposed, and a preliminary evaluation of the estate in the context of the issues discussed was made.

Key words: contemporary housing estate, healthy housing environment, Mieszkaj w Mieście – Osiedle Wizjonerów

Streszczenie

Zdrowe środowisko mieszkaniowe a współczesne inwestycje. Przyczynek do badań nad Mieszkaj w Mieście – Osiedle Wizjonerów w Krakowie

Artykuł poświęcony jest współczesnej, wieloetapowej, krakowskiej inwestycji Mieszkaj w Mieście – Osiedle Wizjonerów. Praca odnosi się głównie do jej zrealizowanych etapów tj. Wizjonerów i Kompozytorów, jednak omawiając poszczególne cechy inwestycji, ze względu na kontekst oraz wieloetapowy charakter osiedla wykorzystano również informacje na temat pozostałych jego faz. Pierwszą część niniejszego artykułu poświęcono próbie zdefiniowania pojęcia „zdrowe środowisko mieszkaniowe" poprzez sformułowanie tworzących je cech w odniesieniu do skali miasta, osiedla i mieszkania. W drugiej części dokonano charakterystyki inwestycji w oparciu o przytoczone wyżej cechy. Ten fragment wykonano, wykorzystując dostępne informacje na temat osiedla, dane statystyczne, dane przestrzenne, istniejące badania dotyczące dzielnicy, w której zlokalizowana jest inwestycja, przegląd literatury przedmiotu oraz aktów prawnych, a także własne obserwacje. Po wykonaniu charakterystyki uznano, iż przyjęte cechy „zdrowego środowiska mieszkaniowego" są właściwe z punktu widzenia przyszłych badań. W konsekwencji zaproponowano przykładowe metody badawcze, jakie można zastosować w celu przeprowadzenia szczegółowej analizy osiedla, a także dokonano wstępnej oceny osiedla w kontekście omawianych zagadnień.

Słowa kluczowe: współczesne osiedle, zdrowe środowisko mieszkaniowe, Mieszkaj w Mieście – Osiedle Wizjonerów