

Car-free housing estate project – opportunities, possibilities, perspectives



dr inż. arch.
AGNIESZKA SZUMILAS
Politechnika Wroclawska
Wydział Architektury
ORCID: 0000-0001-7287-2383

The main purpose of the article is to analyse the system of functioning of car-free settlements in Europe and in the world as well as to determine the factors favoring such investments. The complementary goal is to present the possibilities of implementing this type of housing estates in Polish cities, taking into account possible social, planning and spatial barriers.

The appearance of the car changed the face of many cities, planners were forced to put in the reins a seemingly harmless problem, but as the decades showed - this problem has grown with every decade. In a relatively short period of time, cars and the infrastructure they need appear in the form of widening roads, beltways, highways as well as petrol stations, showrooms and workshops. The car that people use to move around the city in such a simple way slowly dominates it. At the beginning of the 21st century, we can ask ourselves: Who is the city for? Is it still for people or for cars? Owning a car connects with many aspects important for urban planning. One of them is the organisation of parking space, which is largely the subject of research carried out as part of this work. The indirect goal of the research was to review housing estates without cars, their size, location and mobility of residents on the example of European solutions. However, the main goal of the research was to present the possibilities of housing estates without cars in Polish realities, taking into account possible social, planning and spatial barriers.

Research methods first included analysis of the literature on the subject in terms of residents mobility and transport policy. The focus was put on items presenting research results on car-free housing estates in Europe and around the world. The next stage of work was the analysis of masterplans for Wrocław. Requirements for parking space in housing estates were analyzed. The conclusions of the study were summarized and presented in the work summary.

Parking Policy of the 21st century city

Creating a housing estate without cars that will be willingly inhabited by residents is the last stage of a very complex process, which,

as shown by the practice of European cities, can take 20-30 years. This process is associated with limiting the number of cars in the city and systematic improvement of public transport. Researchers [1] compared the habits to reduce the number of cars in the city by comparing travel habits in Munich, Berlin, Hamburg, Vienna and Zurich after 1990. In all cities the number of cars decreased and this was possible thanks to coordinated transport and spatial activities. The set of actions implemented in each city was slightly different. In German cities the focus was on promoting cycling, while in Zurich and Vienna public transport was expanded. Of the various "policies" limiting the number of cars in the city - parking lot management was by far the most important. Team research has shown that for the first time the number of cars between generations in the cities studied is slightly lower or stable. The number of cars was compared in 1980, 1990, 2000 and 2010 in Berlin, Zurich, Vienna, Hamburg, Munich. In every city except Munich, the number of cars has decreased. This means that the younger generation uses less than previous generations of the car, but is more likely to use public transport, walking and cycling. It is therefore the right time to implement changes in the city's transport system. In this situation, the modernisation of the city's communication system should be met with public approval.

In order to reduce the number of cars in the centre [1], parking hours were reduced and fees increased. The number of parking spaces has been reduced, and the Park and Ride and Park and Walk systems have been expanded. According to researchers in all cities, the number of car trips per day decreased on average from 40% to 27%. As documented, the largest cities in Austria, Switzerland and Germany have finally managed to reduce

the share of cars in travel over the past 25 years: from 40% to 27% in Vienna, from 40% to 33% in Munich, from 35% to 30% in Berlin, from 39% to 30% in Zurich and from 48% to 42% in Hamburg. England is a country where parking policy has undergone a huge change. Here, to a large extent, actions were taken to promote public transport and reduce the number of cars in the city. The analysis carried out by researchers in East Anglia [Stubbs, 2002] presents the evolution of the policy in terms of parking standards and how the approach to parking cars has changed both by city authorities, urban planners and residents. The authors presented in their research an overview of parking policy and its evolution in England and Wales. It was already decided in 1998 that a maximum of one parking space should be established for one flat. The entry of parking coefficients, which originally assumed minimum requirements (e.g. 1- 1.5 parking spaces per apartment) was also changed. The minimum values have been replaced with the maximum ones. The most important findings of the report can be summarised in several points [2].

1. There is a strong relationship between the availability of public transport and the ownership of a car in the household. The better the public transport system, the smaller the number of cars in a given area.
2. The more parking spaces the new housing estate provides, the more cars the residents have. Thus, they become more attractive to the household
3. Providing more parking spaces causes more cars and these determine more everyday car trips.

In the context of discussing the problem, two important issues should be distinguished: whether the lack of car ownership

Tab. 1. List of parking entries in selected local plans

Act number	Date of Enactment	Estate	Parking in multi-family housing
LIV/3244/06	2006	Złotniki	Minimum parking ratio: 1.2 / apartment
XXIX/2255/04	2018	Kowale	Minimum parking ratio: 1.2 / apartment
LI/3167/06	2019	Śródmieście	Underground garage providing even 1.2 spaces for an apartment
LIV/3243/06	2006	Osobowice	Parking ratio equal 1,2 / apartment
XLI/2535/05	2006	Oś. Kosmonautów	Minimum parking ratio: 1.1 / apartment
XXVIII/625/12	2012	Śródmieście	Determination of the maximum share of open outdoor car parks in the area of internal partitions (Maximum 30%)
LI/3167/06	2006	Śródmieście	Underground garage providing even 1.2 spaces for an apartment
LVI/3354/06	2006	Huby	Minimum parking ratio: 1.1 / apartment
XVIII/369/11	2012	Książę Małe	Parking coefficient of 1.3 per apartment

is due to choice or to a limitation (financial or lack of parking space). The following are the results of a study [3] conducted in 2012 in California. The aim of the study was to identify and divide car-free households into two groups: car-less and car-free. They looked for answers to two questions: what is the ratio of car-less households (in which the car is not available for financial or other reasons) to car-free (households in which not having a car is a conscious choice) and how are the motivations not having a car translate into differences in mobility (e.g. the number of daily trips or kilometers driven). As part of the study, 84,926 people were asked to complete a travel journal. Of these, nearly 4% are people who do not own a car. They asked, among others, why a given household does not have a car and what are the motivations for it. The research results showed that only 2,336 people from among the respondents were people without cars. Most of them - 80% are people belonging to the car-less group and only 20% to the car-free group. For people belonging to the car-less group, the car is too expensive (1222); their health or age prevents them from driving (251) or they do not have a driving license (478). For people belonging to the car-free group, the motivations were: Fear for environmental impact (40), no need to own a car (445). Research shows that only 0.5% of those surveyed gave up their car knowingly.

It should be remembered that having a car (not only in Poland) has been associated with a sufficiently high social status for decades. Everyone who could afford a car - owned it. The tendency (car-free) of freeing from the car due to care for the environment and the space of the city is relatively new. This is a media topic, often treated as a curiosity. The cited studies also show that not having a car is a luxury. People who resigned from this

means of communication are people who can not afford a car, live in a well-connected part of the city, and if necessary can afford a taxi or rent a car.

Car-free housing estate - "Car-free"

Housing estates with limited parking space and car-free housing estates have been built for many years [4]. In Europe [5] car-free assumptions take the form of housing estates, before the era of the dominance of individual transport - each estate could be described as "car-free", now the term is gaining new meaning. There are traffic-free spaces in cities where it is completely accepted by the residents. These include old towns, shopping centres, calmed traffic zones and pedestrian zones. However, this is the space in which we find ourselves, on the way, for a while. The project related to the construction of a housing estate without cars is much more complicated. Car-free estates give the opportunity to organise a larger green area, organise space for safe play or gardens in a place where parking would be included in the standard layout. The very concept - a housing estate without a car - is not straightforward, which is why various forms of space without cars are listed below.

- A. Visually car-free. It is a housing estate, in the central part of which there are no streets and parking lots, but there is greenery and walking paths.
- B. Low-car / car-reduced. Space with a reduced number of cars - the estate includes an area where authorized parking, e.g. disabled people, is allowed.
- C. Car-free. Car-free space.

When analysing the problem of parking in cities, one should focus on two aspects: spatial and social issues. research shows that res-

idents are reluctant to give up car ownership, and just having a seat is important in perceiving real estate. An important conclusion from the research is that lowering down parking standards does not guarantee better housing conditions with less car dominance [6]. The reduction of parking coefficients results in the fact that there are fewer designated parking spaces in the urban landscape, for full success integrated actions are needed on many levels. An issue that deserves attention is also the use of company cars, which also require parking space under the house, work, as well as in other places. Negative effects resulting from the possession of company cars have been emphasized several dozen years ago [7]. It was discovered then that employees accepted longer commutes in exchange for additional amenities. Unfortunately, the benefits for the individual have indirectly been increased by the negative effects of congestion and the rising air pollution that everyone faces.

Resident profile

The research results presented below present the work of Bruno Franco Da Silva Borges & Lenise Grando Goldner [8], who undertook the analysis of factors that influenced the success of the car-free district and determining the profile of potential residents. Respondents were asked what the three most important aspects of living in a car-free estate would be. The results of the survey are as follows: 61%; - the presence of services and business., 38% - excellent public transport; 27% - no crime; 16% - good conditions for bicycles and pedestrians. They also asked about the most difficult situations in housing estates without cars (care free), to which respondents responded: 16% - emergency situations; 16% - transport of heavy materials. Residents were in favor of renting a car if needed.

Car Sharing

One of the conveniences introduced in housing estates without a car is the car-sharing system. At the same time, this idea should be treated as an idea of limiting the number of cars in the city. This is a solution that is more and more frequent, and the forms of car sharing are different: neighbourly or commercial. The car-sharing system works can be based on a contract that the estate management board signs with the car rental company. Residents have preferential conditions and can obtain a car in a short time. As the researchers present [9], in Portland, Oregon - in housing estates where the car sharing system is used, in the formula discussed the parking coefficient decreased from 1-1.5 to 0.4-1. The idea of car-sharing requires consideration in urban planning (urban design) and in the planning record (Masterplan). Research [10] carried out in Sydney shows that urban planning must be an integral part of the car sharing process. In Sydney, specially designated areas have been designated, which are intended for parking only shared cars. These spaces are located in an attractive, well-connected place.

Car-free estate and car use

As part of the study, several implementations of existing housing estates without cars were reviewed. The first of the presented is the well-known estate [5] Vauban in Friborg (Germany). This implementation shows that a flat in the estate, which has very good access to public transport and is located in an attractive environment - can reduce the number of cars in the city. 81% of the residents of the Vauban housing estate once had a car, of which 57% sold the car after moving. Parking is required in large perimeter garage parking lots to remove cars from residential areas. Cars traveling on roads around the estate are traveling at a speed of 30 km / h. Suppliers can enter the car-free zone, but the condition is driving at a walking pace. Freiburg [11] is a city that frees residents from cars. The city's multi-layered transport strategy is based on five main assumptions:

- expansion of the public transport network
- cycling promotion
- traffic calming down
- directing / scanning of car traffic
- parking space management

Another project is GWL-Terrein in Amsterdam. The estate was proposed for the Westerpark district. The issue of owning a car was solved as follows: 135 parking spaces were planned for the 600 apartments. Four parking spaces are intended for vehicles for shared use. These cars were organised for residents by the building manager. Thanks to the close location of the tram stop, residents have easy access to the centre.

Conclusions – the possibility of housing estates without cars in Poland

The implementation of the project, which is the construction of a car-free housing estate in Polish conditions, is a difficult issue. There are both social and spatial factors - unfavorable to such settlements. This does not mean, however, that the research topic should be abandoned. Quite the opposite - problem areas should be identified and solutions sought.

1. A growing number of cars

The number of cars in Polish cities is still increasing, each subsequent generation has more cars than its predecessors, which is confirmed not only by statistical data but also by the degree of traffic jams. Car ownership is still seen as synonymous with luxury. The results of research carried out by Buehler R., Gerike R., Götschi T., Pucher J. show that in many European cities the activities related to freeing cities from cars were successful when the number of cars began to decrease even slightly.

To achieve this effect, it is necessary (paradoxically) to introduce many restrictions and facilities simultaneously. Restrictions may include, closing the downtown for cars or increasing parking fees. Restrictions are accompanied by facilities for people using other forms of transportation than cars, e.g. developing car sharing system or financial discounts for cyclists.

2. Modification of planning notation

Construction of a car-free housing estate requires modification of planning records. Currently, parking needs are balanced in a residential area, which is justified. Masterplans mostly specify minimum and not maximum parking coefficients. Many European countries have changed this notation, specifying the maximum number of parking spaces per apartment [6]. In the current legal situation - implementation of the car-free estate would require a separate procedure. Other countries have encountered the same problem. In Great Britain there is a system supporting housing estates without a car. This contrasts with the situation in Germany and the USA, where each car-free estate must be accepted as a departure from applicable regulations [9]. The table below summarises the applicable parking coefficients adopted in Wrocław's multi-family housing areas in various years and in various housing estates.

As part of the research, masterplans for Wrocław were analyzed. The analysis concerned the provisions on parking space in multi-family housing estates in the years 1998 - 2019. The number of all valid masterplans is

455 (February 2020). Out of which 160 masterplans, which establish the purpose of the area for multi-family housing (MW) were cataloged. These documents were subjected to a detailed analysis in terms of parking ratios and additional provisions regarding the shaping of parking space.

In the vast majority of documents, only the minimum value of the parking ratio appears, for residential development in Wrocław it ranges from 0.5 to 1.5. The ratio varies depending on the year and part of the city. It decreases over the years, which should be considered a positive phenomenon. Another trend that can be observed is the increasing number of restrictions regarding the parking space. While 20 years ago, the provisions mainly included the definition of a minimum parking ratio, in the following years requirements specifying more details started to appear. The new restrictions include: the maximum size of the car park (expressed in %), the designation of a parking zone and the required number of parking spaces located in an underground car park.

3. Society's readiness

The number of registered cars in Polish cities is still growing. Daily commutes take more time, and the time spent in the car is getting longer. This state of affairs was due to many factors, such as urban sprawl, inefficient public transport system, and a change in the lifestyle of the 21st century inhabitant.

Many factors are needed for car-free settlements in Polish cities, and the most important of these is the willingness of the inhabitants. However, for residents to want to live in a car-free space of their own accord, multi-faceted activities are needed.

Research results show that the implementation of the car-free estate is a difficult investment. For residents to resign from having a car, they must believe in an efficient public transport system and be able to rent a car if necessary. The location of the car-free housing area is also important. Residents should move in a compact space so that they can get to their destination by bicycle, on foot or by public transport. A number of actions are needed at national and local levels. These are urban activities - regarding urban density and urban sprawl restrictions; political - implementing parking and transport policy - creating an efficient mobility system for residents. It is also important to create tools and regulations enabling the implementation of car-free housing estates. Currently, masterplans do not provide for this type of investment.

Considering the limited area of the cities we live in, climate change and the development of the service system in the form of car-sharing, it should be believed that the idea of car-free housing area will be gaining in importance every passing year.

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CORRECT METHOD OF QUOTATION

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Abstract: The number of cars in Polish cities increases every year. Despite the coexistence of other means of transport, such as public transport or cycling - the car is still the favorite means of transport for many residents. The significant increase in the number of registered cars, which can be observed consistently since the beginning of the 1990s, has left its mark throughout the city, especially in the human residence zone. Car-free housing estates are an alternative. Residents consciously give up parking space deciding on the city's communication system. The main purpose of the article is to analyse the system of functioning of car-free settlements in Europe and in the world as well as to determine the factors favoring such investments. The complementary goal is to present the possibilities of implementing this type of housing estates in Polish cities, taking into account possible social, planning and spatial barriers.

Keywords: urban planning, parking policy, car free estate

Streszczenie: PROJEKT OSIEDLA BEZ SAMOCHODÓW – SZANSE, MOŻLIWOŚCI, PERSPEKTYWY. Liczba samochodów w polskich miastach zwiększa się każdego roku. Pomimo współistnienia innych opcji transportu, jak komunikacja zbiorowa czy rowerowa – samochód wciąż jest ulubionym środkiem transportu wielu mieszkańców. Znaczący wzrost liczby zarejestrowanych samochodów, który obserwować można niezmiennie od początku lat 90. XX wieku odciska piętno na przestrzeni miasta, a szczególnie w strefie zamieszkania człowieka. Alternatywą są osiedla wolne od samochodów. Mieszkańcy świadomie rezygnują z miejsca postojowego, decydując się na miejski system komunikacyjny. Głównym celem artykułu jest analiza systemu funkcjonowania osiedli wolnych od samochodów w Europie oraz na świecie, jak również określenie czynników sprzyjających tego typu inwestycjom. Celem uzupełniającym jest przedstawienie możliwości realizacji tego typu osiedli w polskich miastach, uwzględniając możliwe bariery zarówno społeczne, planistyczne, jak i przestrzenne.

Słowa kluczowe: urbanistyka, polityka parkingowa, osiedle wolne od samochodów

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