Impact of the current local spatial development plans on the activity of investor on the Polish residential real estate market

A Leśniak, E Plebankiewicz, R Kozik, K Amanowicz-Marcinkowska

1Cracow University of Technology, Faculty of Civil Engineering, Chair of Construction Management, Warszawska 24 st., 31-155 Cracow, Poland

alesniak@L7.pk.edu.pl

Abstract. The local spatial development plan is an instrument of spatial policy which aims at shaping spatial order. The local plan includes solutions ensuring protection against emerging pollutants, as well as restoring the environment to its proper condition and setting the conditions for the implementation of projects, enabling optimal effects in the field of environmental protection. Land use and land development should also ensure the preservation of all landscape values as much as possible. When creating and adopting a local spatial development plan, a municipality as a local government unit must take into account both public and private interests. The paper attempts to answer the question whether city planning has an impact on investors' activity on the real estate market. Four selected cities located in different parts of Poland were analysed. The authors proposed determining the investor activity indicator as a measure of this impact.

1. Introduction
The construction of a building is usually associated with the development of a biologically active area and, subsequently, with a load on the environment [1]. This applies both to housing construction [2] and large infrastructure projects [3]. The strength of the environmental impact varies depending on the stage of the building life cycle. The authors [4] believe that the welfare of the whole society depends on the sustainability of the built environment. A modern building must be designed, built, used and demolished in accordance with sustainable development requirements. Much attention is paid to the location of the building [5], the materials from which it will be made [6-7], efficiency and energy assessment [8-10]. The latest publications pay attention to noise that can occur near the newly built properties [11, 12]. Building construction costs are considered not only for the implementation stage [13] but also for the whole life cycle [14].

In the case of urban development, the instrument of spatial policy is the local spatial development plan. It aims at shaping spatial order, preventing conflicts, associating convergent activities and interests of entities, protection and rational use of natural resources and cultural values, preventing conflicts between planned development and environmental protection. The local spatial development plan plays a special role in environmental protection. At all levels of planning - national, regional and local, ecological goals are the overarching goals in connection with economic and social goals. Therefore, the content of the plan determines, depending on the needs: the boundaries and principles of land development or facilities subject to protection, and specific conditions for land development. These include a land development ban, resulting from the need to protect the natural and cultural
environment, water resources and human health, proper management of nature resources and the protection of agricultural and forest land.

The paper by [15] analyses designed residential zones of one of the European cities and deduce the index of development level for parts of the city. It was noted that there may be problems with land use and other limits which are created by collision of city plan and other limits set by the authorities.

The aim of the paper is to examine whether city planning has an impact on investors’ activity on the residential real estate market. As a measure of this influence the authors proposed to determine the indicator of investors’ activity. They selected four Polish cities for the analysis and determined the share of the area covered by the binding local plans in the area of these cities, the number of population and the number of dwellings whose construction has begun.

2. Shaping the spatial management of the municipality in Poland

2.1. Local spatial development plan

In accordance with the Spatial Planning and Development Act, which is binding in Poland [16], the municipality's basic planning study outlining the municipality's planning policy and constituting the basis for developing or amending the local spatial development plan is a study of the municipality's spatial development conditions and directions. This document is prepared in order to define the municipality's spatial policy, including local spatial development principles, taking into account the principles set out in the spatial development concept for the province and the country. The study is obligatory, drawn up for the entire municipality, often for many years, and its findings are important for further development of the area. The formal and legal procedure of preparing and passing the study of conditions is regulated by the aforementioned Act [16]. The study contains arrangements which must then be taken into account when developing local spatial development plans.

The local spatial development plan (LSDP) of the municipality, abbreviated as the local plan, is the second planning document. It is a record of the binding planning arrangements and it may cover the entire area of the municipality, as well as its part. The objectives of the local plan are specified in the Act and include, among others [16]: determination of the purpose of the areas, determination of the methods of their development, determination of the development conditions, distribution of investments implementing a public purpose and execution of the ownership right.

There are four basic functions of the local plan: regulatory, informational, coordination and inspirational [17]. According to [17], they have the following objectives: the regulatory function determines the conditions of conducting activities which result in the development of the space. These arrangements are aimed at conflict prevention, protection and rational use of natural resources and cultural values, prevention of conflicts between development and environmental protection. The information function is to provide local government bodies with the necessary information to conduct an effective offer and promotion policy for the municipality. The coordinating function is to indicate mutual relations between the entities participating in the planning process, to determine the territorial range of jointly undertaken activities. The inspirational function manifests itself in emphasizing the unique values of the space and creating innovative solutions that increase the attractiveness of the entities' activities.

The Act on Spatial Planning and Development [16] defines the status of the local spatial development plan as an act of local law. It specifies in detail what is specified in the local plan. These include, among other things, land use, rules of protection and shaping of spatial order, rules of shaping development, boundaries of areas of distribution of public purpose investments of local importance. The arrangements concerning the designation of areas should include the designation of particular areas or the rules of their development, as well as the letter symbol and number distinguishing it from other areas.

Adoption of a local plan improves the investment process. It also entails financial consequences which, according to [18], can be divided as follows:
3. Analysis of the impact of LSDP on investor activity in selected voivodship cities.

3.1. Methodology

Four voivodship cities were selected as the research area of the impact of the current local plans on the activity of investors on the residential real estate market: Gdańsk, Łódź, Wrocław and Kraków, located in the northern, central and southern part of Poland, respectively. According to the data of the Central Statistical Office, the number of inhabitants in these cities ranges from approx. 466,000 to approx. 770,000. These borders are determined by Gdańsk (the smallest number) and Kraków (the largest number).

Their planning coverage in the two-year period in the years 2014-2016 and the activity of investors in the years 2015-2017 were analysed. Data from the Central Statistical Office of the Central Statistical Office (GUS) were used for the analysis (http://stat.gov.pl). Data on the area covered by local plans in force in the city’s total area at the end of a given year were assumed, while investor activity was examined in the following year.

As a measure of investors’ activity, the number of apartments whose construction has started per
1000 inhabitants of a given city was used. The investors’ activity rate was proposed according to the formula:

\[
A = \frac{Lm}{L} \times 1000
\]

where: \( A \) - investor activity rate, \( Lm \) - number of flats under construction, \( L \) - the population of the city.

The analysis includes flats constructed in individual construction, flats for sale or rent (constructed by developers), flats constructed in cooperative, communal, social rental and company form of construction. The share of area covered by valid local plans in the total area of the city at the end of a given year was analyzed, while investors’ activity was examined in the following year.

### 3.2. Research results

Such data as: the share of the area covered by the local spatial development plans in the total area of the city, the population, the number of dwellings the construction of which has been commenced and the value of the specified indicator of investors' activity were compared in particular years for the following cities: Gdańsk, Łódź, Wrocław, Kraków, in the following years:

- 2014-2015 in Table 1;
- 2015-2016 in Table 2;
- 2016-2017 in Table 3.

#### Table 1. Share of the area covered by local plans in 2014 and number of apartments whose construction has started in 2015.

| City     | Share of the area covered by the existing LSDPs in the total city area [%] | Number of flats under construction [units] | Population number [person] | Investor activity rate |
|----------|-------------------------------------------------------------------------------|-------------------------------------------|---------------------------|------------------------|
| Gdańsk   | 64.8                                                                          | 6007                                      | 462249                    | 13.0                   |
| Łódź     | 8.7                                                                           | 2717                                      | 700982                    | 3.9                    |
| Wrocław | 56.1                                                                          | 9422                                      | 635759                    | 14.8                   |
| Kraków   | 49.5                                                                          | 10942                                     | 761069                    | 14.4                   |

Source: Own study based on GUS data (http://stat.gov.pl/)

In 2014, Gdańsk stood out from the cities compared, with 64.8% of the city area covered by local plans. Łódź was the weakest with 8.7%. The reason may be low efficiency of the community’s activity or no need to develop local plans. The highest ratio, the number of apartments whose construction started per 1,000 inhabitants, was maintained by Wrocław (14.8) and Kraków (14.4).

In 2015, Gdańsk still achieved the highest coverage of local plans compared to the other cities: 65% of the city area. Although Łódź recorded an increase in plan coverage compared to 2014, it was still the lowest (10.6). The highest ratio, the number of apartments whose construction started per 1,000 inhabitants in 2016, was recorded in Wrocław (14.4), followed by Gdańsk (13.9). Compared to 2014, the activity rate apparently decreased in Kraków.
Table 2. Share of the area covered by local plans in 2015 and number of apartments whose construction has started in 2016.

| City   | Share of the area covered by the existing LSDPs in the total city area [%] | Number of flats under construction [units] | Population number [person] | Investor activity rate |
|--------|------------------------------------------------------------------------|---------------------------------------------|----------------------------|------------------------|
| Gdańsk | 65.0                                                                   | 6461                                        | 463754                     | 13.9                   |
| Łódź   | 10.6                                                                   | 2340                                        | 696503                     | 3.4                    |
| Wrocław | 56.7                                                               | 9205                                        | 637683                     | 14.4                   |
| Kraków | 48.2                                                                   | 8054                                        | 765320                     | 10.5                   |

Source: Own study based on GUS data (http://stat.gov.pl/)

Table 3. Share of the area covered by local plans in 2016 and number of apartments whose construction has started in 2017.

| City   | Share of the area covered by the existing LSDPs in the total city area [%] | Number of flats under construction [units] | Population number [person] | Investor activity rate |
|--------|------------------------------------------------------------------------|---------------------------------------------|----------------------------|------------------------|
| Gdańsk | 65.4                                                                   | 8002                                        | 464254                     | 17.2                   |
| Łódź   | 16.1                                                                   | 3552                                        | 690422                     | 5.1                    |
| Wrocław | 56.8                                                               | 10276                                       | 638586                     | 16.1                   |
| Kraków | 48.7                                                                   | 10582                                       | 767348                     | 13.8                   |

Source: Own study based on GUS data (http://stat.gov.pl/)

In 2016, Gdańsk still achieved the highest coverage of local plans compared to the other cities: 65.4% of the city area. Although Łódź recorded an increase in plan coverage compared to 2015, it was still the lowest (16.1). The highest ratio, the number of apartments whose construction started per 1,000 inhabitants in 2017 was achieved by Gdańsk (17.2) and Wrocław (16.1). The lowest number of apartments started in 2017 in relation to the number of inhabitants can be observed in Łódź (5.1).

3.3. Discussion

This chapter compares planning coverage and activity on the residential real estate market in the analysed voivodship cities, Gdańsk, Łódź, Wrocław and Kraków. The share of the area covered by plans in the area of the analysed cities is presented below in Figure 1.

Analysing Figure 1, it can be seen that three out of the four selected voivodship cities create an upward trend in the city's planned coverage. The most obvious, almost twofold, increase was observed in Łódź. In spite of that, the indicators achieved in other cities are not similar. On the other hand, Kraków is a city in which the planning coverage is very slowly decreasing from year to year. In Gdańsk and Wrocław, the changes in the analysed years are small. The indicator of investors’ activity in the years 2015-2017 for individual cities is shown in Figure 2.

The analysis of Figure 1 reveals that a clear and systematic increase in investor activity is taking place in Gdańsk. In the remaining cities, a decrease, more or less visible, was recorded in 2016. In 2017, a clear increase in the number of flats whose construction has started per 1,000 inhabitants was noted in most cities.
Figure 1. Changes in the share of the area covered by development plans in the city’s area over 3 years. Source: Own study

Figure 2. Indicator of investors’ activity in particular cities in the years 2015–2017.

At the end of the analysis, the question whether the cities’ planning coverage has an impact on investors’ activity on the residential market was answered (Figure 3). Figure 3 illustrates the influence of the city’s planning coverage on investors’ activity on the housing market. On the basis of the trend line drawn, the impact of city planning coverage on investor activity on the housing market can be observed. The equation of the trend line and the $R^2$ value are given in the Figure 3. The greater the plan coverage, the higher the activity rate value.
4. Conclusion

Cities should use their space in such a way that it meets the expectations and needs of the local community. The basic instrument that allows for the implementation of tasks in this respect is the Local Spatial Development Plan (LSDP). Its purpose is to determine the purpose of the area, the distribution of public purpose investments or to determine the manner of development and conditions of land development. The Local Spatial Development Plan is also to shape the manner of exercising the ownership right to the property. When developing the local plan, an ecophysiographic study should be carried out, prepared prior to the commencement of work on the local plan, and an environmental impact forecast, already carried out during the planning procedure, as a result of a strategic environmental impact assessment. The provisions on spatial planning require the location of technical infrastructure in a way that limits their negative impact on the environment, including the protection of landscape values and the possibility of the movement of wild animals. In addition, it is forbidden to build industrial factories within the city's administrative borders and within densely built-up villages, that pose a serious threat to human life or health, particularly the risk of major accidents.

The paper analyses 4 voivodship cities located in the northern, central and southern part of Poland. Their planning coverage in the years 2014-2016 and the activity of investors in the years 2015-2017 were analyzed. The results of the conducted analyses allow to draw the following conclusions. The local spatial development plans in force have an impact on the activity of investors in the residential property market. As a result of the conducted research, a trend can be observed that the more advanced the planning process is in a given city in a given year, the greater is the activity of investors in a given housing market in the following year (measured by the number of apartments the construction of which has started per 1000 inhabitants). It may be claimed that investors, when buying a property covered by the binding local spatial development plan, bear a lesser risk. The binding local plan facilitates the process of obtaining a building permit, which increases the probability that the project they have planned will be concluded.

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