



## **INFRASTRUCTURAL INVESTMENTS AS A FACTOR WHICH DETERMINES THE LOCATION OF STORAGE FACILITIES**

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### ***Abstract***

Implementation of infrastructural investments is a key factor contributing to the development potential of a region. The current law in force, regulating the implementation of infrastructural public purpose investments, simplifies the actions leading to terrain acquisition for road investments.

The research shows a significant dependence between access to public roads and demand for storage facilities. From an entrepreneur's point of view, the necessary condition for further development is implementation of infrastructural investments. Locating the investments in the vicinity of traffic routes is a strategic decision, closely related to the field of business. Too long distances combined with poor condition of road infrastructure generate additional transport costs. This fact is directly reflected in the limited economic and development potential of particular regions.

In the studied case, the theoretical value of statistics (27.868) is almost a half of the calculated value (54.27). Therefore, the null hypothesis is rejected. Calculations carried out at assumed significance level  $\alpha = 0.0005$ , clearly prove, that there is a close correlation between the size of the company, and the choice of the location of the additional storage space with regard to access to infrastructure such as public roads. The carried out analysis confirms the fact, that the enterprise size is directly linked with the selection of location for its additional storage facilities and the transport costs between the locations significantly influence the decisions.

**Keywords:** investments, road infrastructure, public purpose, location.

## INTRODUCTION

Development of infrastructure in the form of public roads is one of the key factors that influence economic development of a country. Successive actions leading to improvement of road network and international connections allows to strengthen the economic position of Poland among highly developed European countries. Any changes simplifying the land acquisition procedures significantly contribute to shortening the time required for the investment process (Siejka, 2012).

The present spatial planning system consists of three levels (Journal of Laws 2016, item 778). Level one is a concept of spatial management of the country, taking into account the rules of sustainable development and the actions necessary to achieve it based on natural, cultural, social and economic conditions. Level two is a spatial management plan of a voivodship. This plan takes into account the countrywide spatial management concept, the conducted analyses and studies as well as the developed concepts and programs, along with landscape audits. The last level is the spatial management plan of an individual commune. This plan determines the function of land belonging to the commune, its development as well as location of public purpose investments. Should a commune lack a spatial management plan, the land function is determined on the basis of a study of conditions and directions of spatial development of the commune. Such study takes into account the countrywide spatial management concept along with the spatial management plan of the voivodship.

A public purpose investment is a project leading to local (i.e. commune-wide) or supralocal (i.e. district-, voivodship – and countrywide) undertakings. Public purpose investments include public roads, bicycle paths, water routes, construction and maintenance of these roads, objects and public transport facilities, along with public communication and traffic signaling (Journal of Laws 2016, item 2147).

Location of public purpose investments and determination of the land management and development is defined in the local spatial management plan (Journal of Laws 2016, item 778). Should there be no local spatial management plan, the land management and development is determined by a decision on land management and development, and the location of a public purpose investment is determined by a decision on public purpose investment location. The legal procedure which determines the location of public purpose investment is initiated upon investor's request.

The request for determination of public purpose investment should contain:

- the borders of the terrain the request concerns,
- investment characteristics,

- determination of the planned land use as well as the characteristics of land development and management, including the function and size of the planned buildings along with the area of the land subject to transformation, presented in descriptive and graphical form,
- determination of characteristic technical parameters of the investment as well as the data related to its environmental impact.

A relevant authority, in a decision-making process related to public purpose location, analyzes the conditions and rules of spatial management and development, resulting from separate regulations. This authority also evaluates the factual and legal status of the land meant for the implementation of investment.

The decision is made after approval is granted by a relevant authority, depending on the type and location of the investment. A decision regarding public purpose investments is made by a mayor or a city president in agreement with the voivodship marshal. The voivodship marshal is involved only in case of voivodship – and countrywide investments.

The decision on public purpose investment location is not required for construction works limited to renovation, installation or rebuilding, as long the way of land use and use of the building and its architectural form remains unchanged. Such decision is also not required for a public purpose investment which has not been qualified as a project requiring the proceedings on environmental impact assessment or does not require a construction permit.

The decision on public purpose investment location includes information regarding type of investment, lines limiting the investment area, conditions and detailed rules of land management and development in order to preserve and create spatial order as well as protect the environment and health of the population.

The records of the public purpose investment location decisions are kept by the voivodship marshal for voivodship – and countrywide investments. For the investments limited to a county or a commune, the records are kept by a mayor or city president.

The procedure for determination of public purpose investment location may be suspended for a period not longer than 12 months from the request submission date. The procedure is resumed and the decision is made as long as during the first two months since the procedure suspension the commune council had not decided to create a local plan, or a local plan had not been adopted or amended during the suspension period.

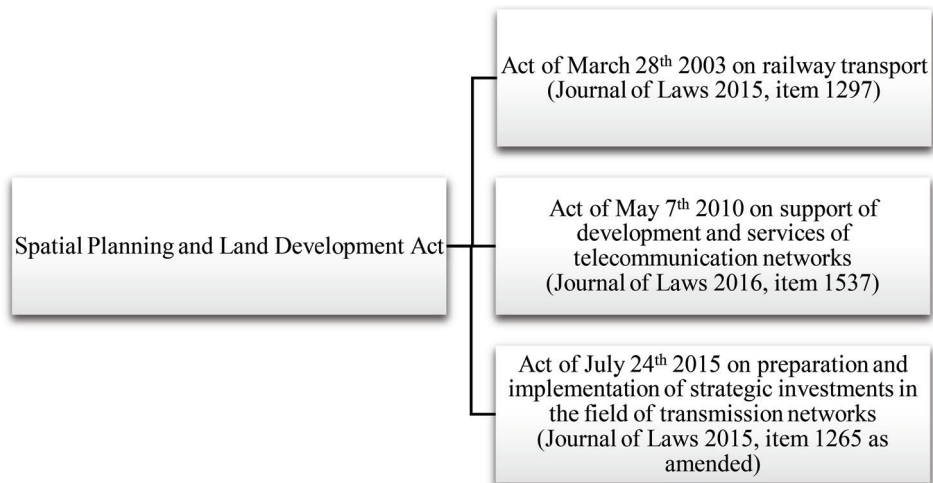
The described legal rules regarding the public purpose investments have an essential meaning for the area of study. The real-estate economy is a set of actions taken by public administration bodies playing a leading role in organization of socio-economic relations. The Act of August 21<sup>st</sup> 1997 on real-estate management defines the concept of public purpose. This act does not regard agricultural lands and forests, to which other acts apply. Nevertheless, this act

limits the right to agricultural lands and forests due to implementation of public purpose investments. Therefore, it is essential to properly determine the location of public purpose investments in order to achieve sustainable development both inside and outside of urban areas (Siejka, 2015; Litwin, Piech, 2013).

## PUBLIC ROADS AS SPECIAL INVESTMENTS

Public roads are a special kind of public purpose investments. The aim of the conducted procedure regarding special investments in the area of public roads is to implement a project fulfilling the economic development needs of communes, counties, voivodships or even the whole country.

The procedure related to obtaining approval for a special investment is regulated by so-called special laws, which wholly or partially eliminate the necessity of applying the law on spatial planning and management or do it partially for the building law act (Figure 1, Figure 2).

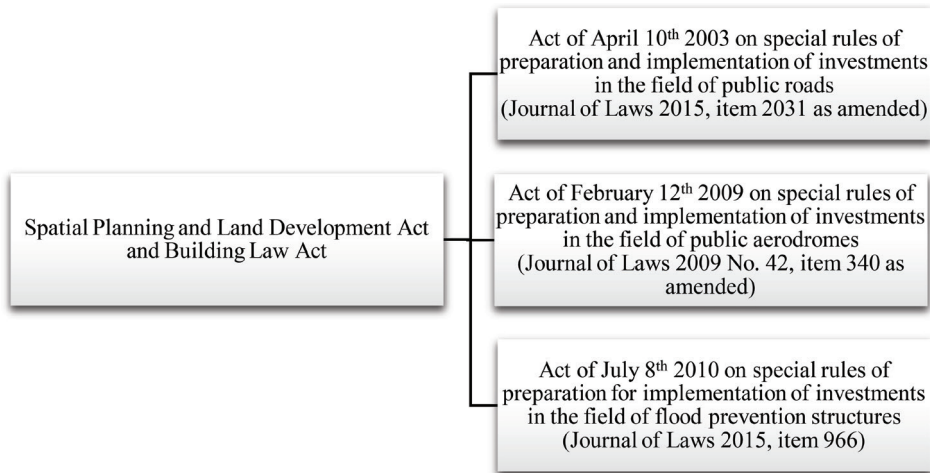


Source: own elaboration

**Figure 1.** Special laws eliminating the necessity of applying the Spatial Planning and Land Development Act.

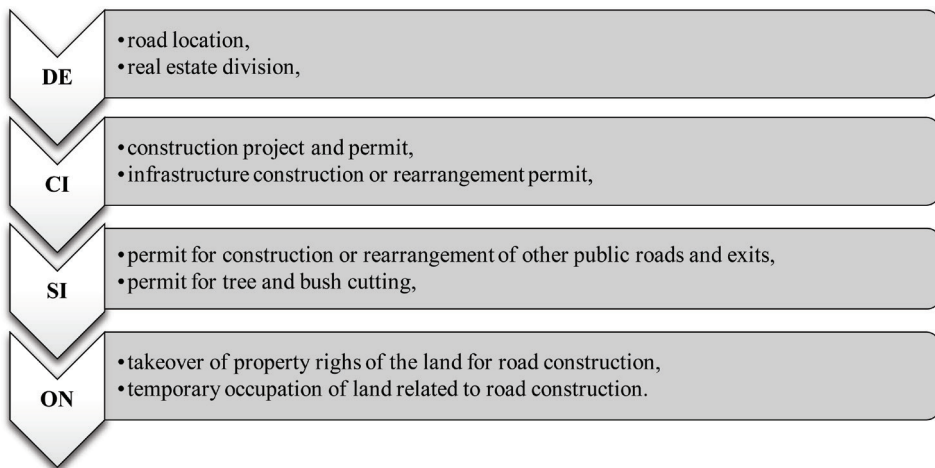
The decision on the road investment permit for public roads, according to the Act of March 21<sup>st</sup> 1985 on public roads (Journal of Laws 2016, item 1440) is issued according to the act of April 10<sup>th</sup> 2003 on special rules of preparation and implementation of investments in the field of public roads (Journal of Laws 2015, item 2031 as amended). This act is in force until December 31<sup>st</sup> 2023.

The decision on the road investment permit for public roads combines procedurally or covers by its spectrum a series of decisions and permits (Figure 3).



Source: own elaboration

**Figure 2.** Special laws eliminating the necessity of applying the Spatial Planning and Land Development Act and partially eliminating the necessity of applying the Building Law Act.



Source: own elaboration based on the act of April 10th 2003 on special rules of preparation and implementation of investments in the field of public roads

**Figure 3.** Decisions and permits included in the road investment permit for public roads.

The next decisions regarding public road investment implementation are: the decision establishing the compensations for acquired properties, the compensations are estimated based on the act on real-estate economy and the decision regarding the road usage permit issued based on the construction law act.

The request for issuing a road investment permit includes:

- proposed route of the road shown on a copy of basic map,
- analysis of connection of the planned road with the existing public roads,
- schemes of division of properties acquired for the construction of the planned road,
- changes in the existing land management infrastructure,
- construction project,
- opinions of relevant bodies, depending on the kind and area of investment.

According to the act of April 10<sup>th</sup> 2003 on special rules of preparation and implementation of investments in the field of public roads, the decision on road investment permit is not required for works improving the technical and operating parameters as well as for restoration of the original condition.

During the investment implementation of national and provincial roads, the decision is issued by the voivode, while in case of county and municipal roads the decision is issued by the local county executive. When a road investment stretches through more than one voivodship or county, the decision is made by the voivode or county executive, whose area of responsibility includes most of the investment. The decision on road investment permit is obtained within 90 days from the request date. This decision may be issued after prior environmental impact evaluation, i.e. according to the act of October 3<sup>rd</sup> 2008 on providing information about environment and its protection, participation of the society in environmental protection and evaluations of environmental impact (Journal of Laws 2016, No 353).

The road administrator submits a request for a decision after obtaining an opinion from the administration of voivodship, county or a mayor or a city president. In this case receiving no answer within 14 days since the request submission date is treated as lack of objections regarding the request. The request, depending on the kind of investment and its location, may need to be complemented with additional opinions issued by e.g. a relevant minister, art restorer or director of state forests. Such organs issue their opinions in no more than 30 days since request submission date. No response within this time period is treated as lack of objections regarding the request.

The current spatial planning system in Poland shows more weaknesses than strengths and the existing Spatial Planning and Development Act of 27 March 2003 does not regulate effectively the issues regarding proper land management interests. In the process of change of Polish spatial planning system, particular attention should be devoted to threats resulting from external factors related to malfunctioning of local government units, unregulated legal status of

real properties, and available documents used in the process of spatial planning (Pluta, 2016).

The EU support funds allow the communes to implement costly infrastructural investments, which improve the standard of living of citizens. The implemented investments have a significant influence on the socio-economic development both regionally and locally (Dudzińska, Prus, 2017). The above analysis of law indicates, that classifying roads as special investments insignificantly simplified the procedures necessary to obtain an implementation decision.

Research conducted in Małopolskie Voivodship were aimed to show the whether the enterprise size influences the choice of location of its additional storage facilities. To test whether the studied relationship is statistically significant, it is necessary to compare calculated chi-squared statistic with the theoretical statistics read from the chi-square distribution tables.

### RESEARCH METHOD AND RESULTS

In order to present the justification and necessity of road infrastructure investment implementation a telephone survey was conducted. During the survey randomly selected companies were asked how far from their headquarters they would decide to locate an additional storage facility at the present state of road infrastructure, assuming a 15% increase on the produced/sold goods, without a detailed analysis of the costs of transport between locations. The results are presented in table 1.

Table 1. The results telephone survey.

Observed values – <i>O</i>	Within city district	Within commune	Within county	Within voivodship	Outside of voivodship	Row sum
Micro-enterprise*	28	19	8	0	0	55
Small enterprise**	18	13	10	8	6	55
Medium enterprise***	2	5	9	11	13	40
Column sum	48	37	27	19	19	150

Source: own elaboration

(\*micro-enterprise – less than 10 employees, \*\*small enterprise – less than 50 employees, \*\*\*medium enterprise – less than 250 employees)

To analyze the survey chi-square test was used:

$$\chi^2 = \sum_{i=1}^n \frac{(O_i - E_i)^2}{E_i} \tag{1}$$

Where:

$O$  – observed value,

$E$  – expected value.

Based on the obtained survey data (observed values –  $O$ ), in order to verify whether the values are independent, the following hypotheses were made:

$H_0$  – the enterprise size is unrelated to the choice of location of its additional storage facilities (variables are independent).

$H_1$  – the enterprise size influences the choice of location of its additional storage facilities (variables are dependent).

We assume that the  $H_0$  hypothesis is significant with the acceptable error probability which significance level equals  $\alpha = 0.0005$ .

Table 2 presents the calculated expected values ( $E$ ) with use of the following formula:

$$E = \frac{(\text{row sum}) \times (\text{column sum})}{(\text{total sum})} \quad (2)$$

**Table 2.** Calculated expected values.

Expected values – $E$	Within city district	Within commune	Within county	Within voivodship	Outside of voivodship
Micro-enterprise	17.60	13.57	9.90	6.97	6.97
Small enterprise	17.60	13.57	9.90	6.97	6.97
Medium enterprise	12.80	9.87	7.20	5.07	5.07

Source: own elaboration

After calculating the expected values ( $E$ ), with use of formula (1) the chi-square statistics were calculated. Table 3 presents the results.

**Table 3.** Results the chi-square statistics.

$\chi^2$	Within city district	Within commune	Within county	Within voivodship	Outside of voivodship	Row sum
Micro-enterprise	6.15	2.18	0.36	6.97	6.97	22.62
Small enterprise	0.01	0.02	0.00	0.15	0.13	0.32
Medium enterprise	9.11	2.40	0.45	6.95	12.42	31.33
Column sum	15.27	4.60	0.82	14.07	19.52	54.27

Source: own elaboration



In order to verify the significance of the statistics, degrees of freedom were calculated with use of the following formula:

$$d = (a - 1) \times (b - 1) \quad (3)$$

where:

$d$  – number of degrees of freedom,

$a$  – number of levels of the first variable,

$b$  – number of levels of the second variable.

In the analyzed case there are three levels of the first variable (i.e. micro-enterprise, small enterprise and medium enterprise) and five levels of the second variable (i.e. within city district, within commune, within county, within voivodship, outside of voivodship). For such task, the number of degrees of freedom is equal:

$$d = (3 - 1) \times (5 - 1) = 8$$

The level of significance assumed for the purpose of the test calculation is equal  $\alpha = 0.0005$ . To test whether the studied relationship is statistically significant, it is necessary to compare the calculated chi-squared statistic  $\chi^2 = 54.27$  with the theoretical statistics read from the chi-square distribution tables, which is 27.868.

## CONCLUSIONS

In the studied case, the theoretical value of statistics (27.868) is almost a half of the calculated value (54.27). Therefore, the null hypothesis is rejected. Calculations carried out at assumed significance level  $\alpha = 0.0005$ , clearly prove, that there is a close correlation between the size of the company, and the choice of the location of the additional storage space with regard to access to infrastructure such as public roads. The carried out analysis confirms the fact, that the enterprise size is directly linked with the selection of location for its additional storage facilities and the transport costs between the locations significantly influence the decisions.

The acts regulating the public purpose investments are meant to make implementation easier and shorten the time of administrative proceedings. The laws currently in force, which regulate the public purpose investment implementation, simplify the actions leading to land acquisition for the investments. They determine the rules of estimating and paying compensations for real estate expropriated for the needs of the investments. They also limit the potential annulments of the decisions, as well as the necessity of re-opening the proceedings.

In case of dynamic growth of local road infrastructure, the demand for storage facilities will grow. From entrepreneur's point of view, the potential enterprise development is highly influenced by the position relative to local and regional traffic routes, both existing and planned. It is a fact, that choosing storage facilities location is a strategic decision, closely related to the type of business activity. Long distances combined with poor road infrastructure conditions, generate utterly unnecessary transport costs, which in turn inhibits the economic potential of the region.

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