INFRASTRUKTURA I EKOLOGIA TERENÓW WIEJSKICH
INFRASTRUCTURE AND ECOLOGY OF RURAL AREAS

Nr IV/4/2015, POLSKA AKADEMIA NAUK, Oddział w Krakowie, s. 1463–1474
Komisja Technicznej Infrastruktury Wsi

DOI: http://dx.medra.org/10.14597/infraeco.2015.4.4.105

ROAD PROJECTS DESIGNING IN RURAL AREAS VERSUS COMMUNITY PARTICIPATION. THE CASE STUDY OF CONSTRUCTION PLANNING THE WESTERN BYPASS OF MYŚLENICE AND BYSINA

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Summary

The main subject of this study was the analysis of the spatial and engineering aspects of planning, which has direct application in decision making and emphasizing the role of citizens in the investment processes. The authors made an analysis of the proposed bypass road of Myślenice. It was suggested to shift the roadway to the north, which would provide a better access to the plough-lands, which would be better utilised. Such alternation was proposed according to the expectations of local inhabitants. Taking into account opinions of local communities, it was found that the route of the western bypass road of Myślenice city can be excluding the areas of Bysina village. What is also important proposed solution requires lower outlays than the primordial version of this investment.

Keywords: road infrastructure planning, spatial policy, spatial planning, public participation

INTRODUCTION

Economic circumstances are among the most frequently mentioned factors limiting road infrastructure development in Poland. Despite the implemented regional policy of the European Union (sustaining the development), the quality of the natural environment (Legutko-Kobus 2011), opinions of the inhabitants or benefits from the realisation of a line investment remain in the background.

We lack a wide assessment of investment economic efficiency, particularly in rural areas. Line investments (roads) are undoubtedly interdisciplinary problems, which require knowledge and involvement of almost all people interested in the processes, including local communities. Some of the proposed infrastructural solutions are unpopular or even cause social disapproval.

Designing road infrastructure has been widely described in scientific papers (Młodożeniec 2010, Głażewski *et al*. 2010). Local roads should be terraced in a such a way that the investment project fits the local conditions. The road should be put directly through a habitat or a liaison junction should be used. In case of supralocal roads, bypassing the middle villages in terracing is admissible (Rolla *et al.*, p.164). Discussion about designing the road course should also include widely understood investment costs comprising property purchases, design and engineering works, operational and environmental costs (Lityński 2015).

Traffic volume affects the rate of the return of expenditure on road construction, therefore in case of low vehicle traffic volume, terracing must be made carefully.

Environmental conditions, particularly configuration of the land, should be taken into consideration, as they may considerably lower the investment costs. Moreover, the course of the roads serving small villages should be designed to allow a possibly full utilization of the existing local potential, but to avoid unnecessary pressure on local inhabitants (Hołuj and Lityński 2015), e.g. owing to wrong terracing or too wide roadway, etc.

From a practical point of view, while designing road solutions one should bypass forest areas and arable lands up to the fourth soil quality class (according to polish bonitation system). It is also recommended not to divide arable or forest lands and the route should be delineated along the border of these areas and put along the plots boundaries (with sporadically used transversal intersections). It is also recommended to make use of already existing unpaved roads and avoiding formation of plots unsuitable for management or agricultural production (e.g. owing to their irregular shapes or location) (Rolla 1988). While demarcating roads it should be remembered that river valleys should be crossed in their narrowest places, which allows to reduce cost and the investment effect on the countryside.

A clash of designing and spatial management with the feelings of local communities poses a serious challenge to decision makers. Social participation in a widely understood planning and designing process should be based on the most exhaustive information and involvement of the citizens in the activities planned and conducted in space. It is difficult to realise, because local potential may be perceived differently by local authorities and communities (Hołuj 2015) inhabiting the areas.

The problem is connected with a necessity to create a complete system of information and education of the society about spatial planning, requirements of spatial order or functioning in compliance with sustainable development principles. Unfortunately, inhabitants, particularly in small villages usually do not actively participate in the commune life. The phenomenon which involves a greater number of local dwellers is a potential "threat" involving e.g. taking possession of a property for the needs of constructed road, pavement, sewer system, etc. It turns out that in practice even realisation of constitutional owner's rights is difficult, because it is the owner who decides when his property becomes a building plot (a building land maybe determined by a current local plan). The right of use should be defined. If no law interpretation, appropriate for the right of use and efficient public control is introduced, the correction of obligatory law regulations will not streamline the spatial planning system (Hołuj 2012).

The paper aims to indicate the aspects of spatial and engineering planning which are important for decision making process and show the role and influence of the inhabitants on the investment process.

DELINEATING THE AREA FOR ANALYSIS AND DISCUSSION OF ENGINEERING ROAD SOLUTION IN RURAL AREA

A number of investment projects were analysed in the Malopolskie voivodship in view of the kind of planned road solution and the "mood" among the local community. The investment called "*Complex improvement of safety and transport in the city and commune of Myślenice – Construction of the western bypass of Myślenice and Bysina*" was selected for further investigations. It is a conception of a new course of county road K1935 which is to function as a transit route between Bysina village (quarry) and national road No. 7 – Myślenice bypass (Fig. 1).

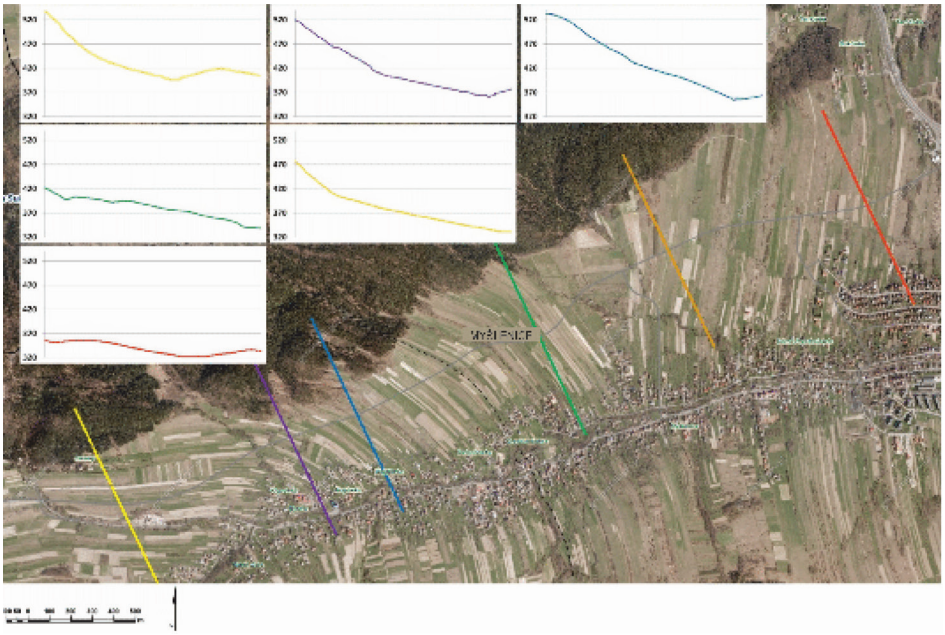
The planned road would bypass the built-up areas in Bysina village, 3 Maja and Średniawskiego streets in Myślenice. The planned county road only theoretically should ensure communication in the new building areas, marked as MN (family housing). The MN sites were designed exclusively in the areas immediately surrounding Myślenice city, omitting Bysina village. The above mentioned procedure is questionable due to two reasons. Firstly, at the meetings with the local inhabitants, Myślenice authorities tried to promote construction of the designed county road offering new building sites, secondly the sites were not proposed in the discussed local spatial management plan of 2010 for Bysina and Jasienica villages. Moreover, regarding the Study of the Conditions and Directions of Spatial Management of Myślenice City and Commune, it may be stated that the space around the designed bypass in Bysina village has not been planned as a built-up area.

Source: https://www.google.pl/maps/

Figure 1. The localization of the discussed terrain.

The established course of the western bypass of Myślenice and Bysina markedly interferes in the natural environment and the countryside. Moreover, the suggested roadway will require a substantial amount of work and financial means due to the landform. Because of the necessity to guarantee the traffic safety, while designing road course one must take into consideration three issues: situational plan, cross section and longitudinal section. According to the literature of the subject it is considered that individual cross sections should be strictly in compliance with the conditions in the area where the investments are made. At the same time, the road purpose must be taken into consideration, including the forecast of vehicle traffic volume (the available forecast of traffic volume is regarded by the Myślenice city authorities to be of poor quality). The road axis is a space curve, whose horizontal projection is the road axis in the plan, whereas the vertical projection is the road longitudinal section. Therefore, examining the road axis in view of establishing a social curve provides the bases for an appropriate addressing the issues of vehicle movement (Rolla *et al.* 1988, Hołuj Lityński 2015). In case of Myślenice and Bysina bypass construction, the landform enforces a considerable interference in the space. The cross sections presented in Fig. 2 and 3 show the kind of potential interference involving construction of

layered embankments cooperating with the native substrate, making indentations and excavations.



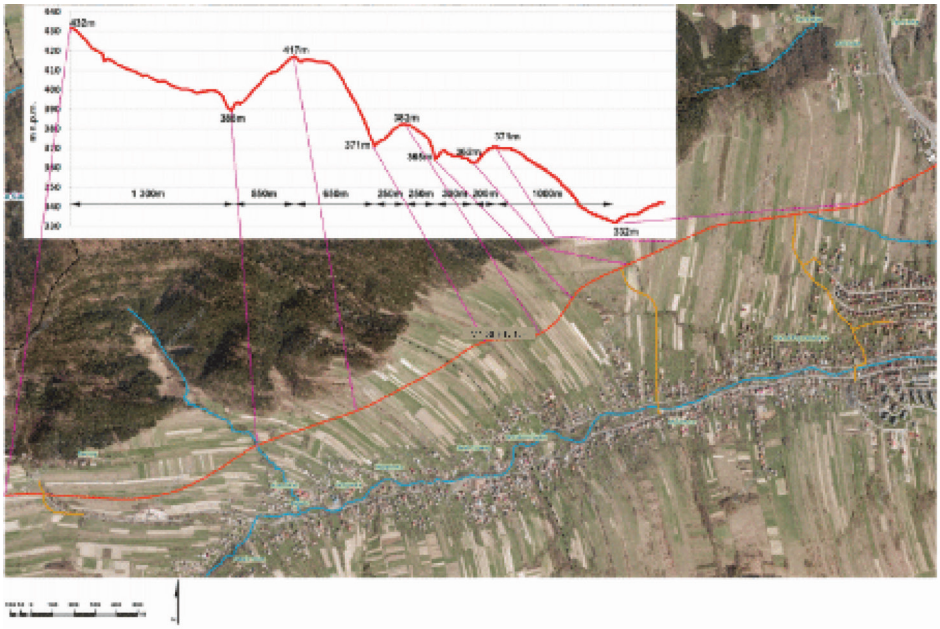
Source: own studies based on the data: geoportal.gov.pl

Figure 2. Planned course of the bypass with the cross-sections of the terrain.

Numerous valley depressions occur in the analysed space. The most diversified relative altitudes are characteristic for Bysina area. Obviously the space most difficult to manage will be the area (called "Stawiska" by Bysina inhabitants) the most westernmost towards Jasienica village.

Analysis of the obtained cross-sections shows, that if realised, the course of planned road would require considerable earthworks in all places of Bysina area. Although the lack of information about the technology of projected embankments and excavations does not allow for any detailed forecasting, it may be supposed that horizontal layers method would be used (Martinek W. 2012). In this case the geological structure of Bysina area is also important. It is situated in the Flysch Carpathians within the Silesian Nappe, where Quaternary deposits occur in the substrate. They are formed as waste of the older substrate deposits with a variable thickness between 5-7m. These are usually Oligocene loams and loams with sandstone pebbles. In case of Oligocene loams, made up by the Krosno layers, it should be assumed that they formed as thin strata of fine-grained mica sandstones interlayered with marl shales. Thickness of these deposits is

considerable and according to the bibliographical data, may reach even 1000m. On the other hand, in the substrate of the analysed terrain it is probably 100m. These deposits sink in under a sharp angle to the south towards the Bysinka stream (Burtanówna 1993).



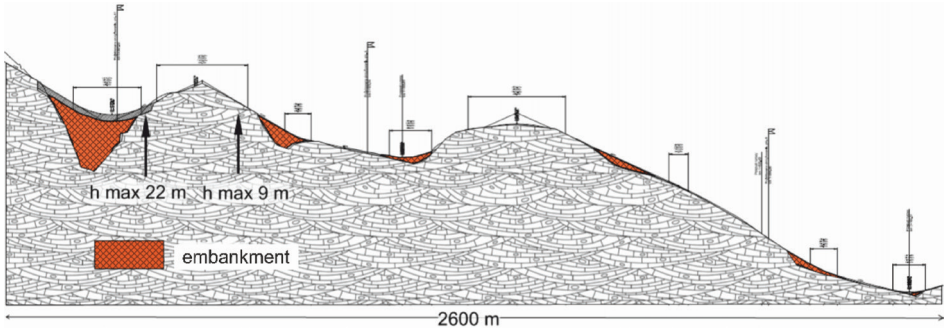
Source: own studies based on the data: geoportal.gov.pl

Figure 3. Planned course of the bypass with the longitudinal profile of the terrain.

The landform and resulting necessary interference in the analysed space during the project realisation were mapped in Fig. 4 (compare cross section in Fig. 3). Distance of over 2.6 km is a very difficult section, considerably affecting the landscape in view of potential road project. Inundation areas should be also considered.

The course of the planned road, delineated along the slope causes that suggested drainage ditches would also drain water flowing from a green catchment. Moreover, in many places the investment will considerably interfere with the slopes, whereas the existing watercourses are receivers of rainwaters from the discussed area and from the green catchment. Projected road arrangement provides the surface water drainage method, which is going to cause concentrated runoff in the areas of intersections. Therefore, problems may be expected with erosion on the embankment and excavation scarps and in the ditches. A low consolidation level of cohesive soils, characterised by low cohesion will cause

a growing problem of water erosion due to pushing during mountain stream swelling. Considering the above, it may be said that the persons responsible for the road project suggest not fully apt solutions. For instance, to protect the scenic values, a separating tree belt based on: maple trees, sycamores, Norway maples, lindens, oaks and bushes has been suggested on the lower part of the slope (Raport 2011, p.105). It seems that the above mentioned tree species will be unable to solve the problems of lost landscape values. Considering the differences in the terrain (Fig.1 and 2) and embankments/bridges (even ~20-25) it may be supposed that in many places it will be impossible to shelter the route of the ring road with trees.



Source: own studies based on the data provided by Myślenice authorities

Figure 4. Projected course of the bypass and the terrain cross-section

LOCAL INHABITANTS' PARTICIPATION IN THE SPACIAL DESIGN PROCESS

Analysis of the work conducted by the local authorities and widely available papers addressing the discussed issue, including the "*Complex improvement of safety and transport in Myślenice city and commune – Construction of the western bypass of Myślenice and Bysina*" (UMiGM 2012) reveals several facts. Firstly, it was observed that owing to the realisation of the western bypass of Myślenice and Bysina, inhabitants of Bysina, particularly its western part, will be unable to use the space as they used to. Secondly, it must be admitted that the ring road construction may prove positive mainly for the improvement of life of Myślenice dwellers and other people for whom the road bypassing Bysina means more comfortable living or farming. For many reasons the road construction may also prove convenient for people running sawmill, quarry, a cement plant owners or bituminous mastic manufacturers.

Analysing the Internet thematic fora one may see that from the point of view of Myślenice inhabitants, the western bypass is most desirable, since re-directing heavy transport would lead to considerable and positive changes in the centre of Myślenice. It has been also pointed out, that increased traffic volume causes building deterioration, dustiness and smokiness.

Unfortunately, these problems were not taken into consideration in case of Bysina inhabitants. This space is treated as "second-hand" or more absorptive for the movement of vehicles arduous for Myślenice inhabitants (Legutko-Kobus 2013) (sustaining the development does not rely on "shifting problems" in space but on their fixing). In one of the monthlies we can read, that: *There is neither solution to the problem, nor city or business development; there is no money for the western road* (Sedno 2013, p.2). The statement that business, particularly its development require construction of the ring road (including Bysina) is groundless. The issue of sustaining development in space is ignored, whereas the short-term "increase" expressed by growing prosperity of a selected group of people seems more important. However, as demonstrated by numerous investigations (Anderson 1993), construction of a ring road in areas comparable to Myślenice and Bysina may lead to a worsening of economic situation connected with target unit losing its status of e.g. goods or service provider.

Following the local discussions, Bysina dwellers requested local authorities to provide a substantive explanation why the "zero" variant of the project presented in the *Report on the project impact on the environment* (Raport 2011), which involved the abandonment of the project, has been regarded inappropriate. It was also mentioned that the presented potential benefits/changes do not qualify this space for such large and expensive investment project.

Other issues were also addressed, such as e.g. whether all necessary analyses and tests included in the Report were conducted in the area of designed project (in compliance with the European Union Directives and Polish legislation), which precisely state the arguments about increased traffic, quality of atmospheric air and the quality of other environmental factors after 2023. Moreover, the inhabitants tried to elicit the answer to the question concerning the arguments for the realisation of the project in Bysina. It was stated in the Report, that conducted analysis (multifaceted analysis in Myślenice and Bysina – according to local authorities) evidences the necessity to take action for the construction of bypass of Myślenice city and Bysina.

At the meetings with local dwellers, it was claimed, that one of the reasons why the new ring road was designed is the necessity to create new building land. However, according to statistical data, over the recent years, on average several decisions about land development conditions were issued, while the total area of undeveloped building land in the villages possessing Local Spatial Management Plans in the Myślenice county exceeds 1200 ha. Also a reserve of green areas should be considered, Moreover, analysing the current study of land use condi-

tions and spatial management directions it should be stated that no building lands were planned around the western bypass (the course of the peripheral road). It looks like it will be a "transit" road through Bysina with no exits and any possibility of developing the surrounding areas.

The other key issue is the actual long-term cost of this investment including the necessary re-organisation of components of the natural environment. Unfortunately, there is no official position on this matter.

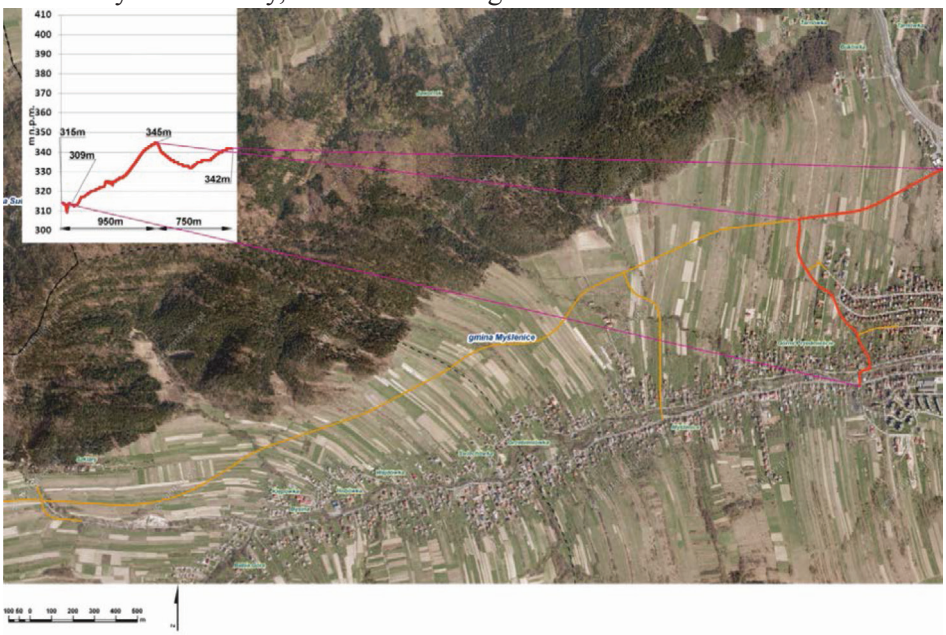
Therefore, a question arises if the requirements of spatial order and environmental protection were taken into consideration and above all, whether Bysina landscape values were considered. Numerous doubts arise as to the last component because of the statements in the Department of Environmental Protection Report, which were not corroborated by appropriate research or arguments. It was only stated that designed road corridor will limit to a minimum tree cutting and the changes of the landscape will be minimised due to new trees planting. Moreover, *"The woodiness along the designed road after tree planting will be satisfactory from the ecology and landscape point of view"*. However, analysing the planned changes in the area it may be supposed that proposed plantings will never compensate the landscape changes because of the tree height. The spaces in this part of Bysina will become re-organised while the landscape will be permanently deformed.

THE PROPOSAL OF CORRECTED COURSE OF MYŚLENICE RING ROAD

Apart from an exhaustive design analysis, field studies were conducted on the basis of which it was determined that in the area of Bysina village – the western part of the investment, agricultural wastelands together with synanthrophic vegetation were delineated imprecisely. The Environment Protection Department Report does not include all orchards, while demarcated mosaic meadow and pasture areas with supplementary arable lands and fresh meadows do not indicate precisely the occurrence of ploughlands. Description in the documentation of Myślenice authorities shows that agricultural production is practically absent in this area (in fact some farming activities are conducted).

Considering the actual use of the areas in the road infrastructure project is undoubtedly important. It may be suggested e.g. to shift the roadway to the north towards the forest, which would provide a better access to the ploughlands, so they would be better utilised, according to the expectations of local inhabitants. Moreover, it would be in compliance with design principles stating the necessity to localise road infrastructure between various forms of land use (in this case: arable lands and forest areas). Considering the opinions of local communities about Bysina and Myślenice, only one rational solution seems evident. The road

route of the western ring road of Myślenice may be demarcated without interference in Bysina territory, marked red in Figure 5.



Source: own studies based on the data provided by Myślenice authorities

Figure 5. Corrected course of Myślenice ring road (Western Myślenice Bypass)

It should be noticed, that this is a transport solution which allows to reduce current problems of Myślenice and requires far lower outlays than the analysed project. The discussed road starts its course in the vicinity of the intersection with Sobieskiego street in Myślenice close to petrol station, then runs to the west where it joins the connecting road and further county road K1935.

ACKNOWLEDGEMENTS

This Research was financed by the Ministry of Science and Higher Education of the Republic of Poland.

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Received: 11.10.2015
Accepted: 11.12.2015