

## ABSTRACT

The significance of integration of the land use policy and the transport policy has been emphasized for quite a long time both in the literature of the subject [Stopher and Stanley 2014] and in numerous strategic documents of the European Union and the individual EU member states. The development of the infrastructural network and organization of transport are, on the one hand, an effect of distribution in space of population and economic activity, and, on the other hand, they can constitute the instrument of the land use economy, and, consequently, of the shaping of territorial dimension of development. That is exactly why in the recent years there has been an increase of significance regarding geographical evaluation of transport policies. This is confirmed by the studies, carried out in the domains of economics and of socio-economic geography. These studies demonstrate, in particular, that the development of linkages over a broader national and international scale necessitates a new perspective on the city as a central place [in Christaller's terms, see Domański 2022], whose position depends upon external influences [Castells 2009; Taylor *et al.* 2010], including the ones coming from abroad. External linkages are being mostly realized over the transport networks. On the other hand, transport definitely shapes land use on the regional as well as local scales. It is the basis for the appropriate accessibility of the labour markets and the services of general public interests. Organisation of transport influences the level of threat of social exclusion. Likewise, the influence exerted by transport on the environment has both the global dimension (emissions of greenhouse gases, climate change), and the local one (dust emission, smog, fragmentation of ecosystems). Such considerations unavoidably lead to the question concerning the level of territorial organisation on which the most effective conduct is possible of the territorially oriented transport policy. The answer is not unambiguous. In the case of the middle sized European countries (such as Poland) the role of the regional level (NUTS2) appears to be significant. It allows for the association of the global and local perspectives. Thereby, the boundaries of the basic units of territorial self-government are transgressed, these units not always being ready to cooperate, which makes possible the functional insight (*e.g.* in the metropolitan areas). This enables integration of the objectives with respect to the other sectoral policies, and the organizational integration of public transport with the advantages for its users.

Along with the proceeding socio-economic changes, the development of infrastructure to date and the new external conditioning, there is an increasing need for the precise territorialisation of transport policy, particularly in Poland. An essential element of this territorialisation is constituted by the regional transport policy, implemented by the self-governmental authorities of the provincial level. At the same time, the demographic and the socio-economic processes, shaping the demand for transport, are undergoing acceleration in Poland. There is continuing concentration of population, along with depopulation and transformation of the demographic structure within numerous peripheral areas. Suburbanisation progresses, not only around large metropolises, but also in the neighbourhoods of the middle-sized and even smaller towns. The European development convergence, taking place at the level of metropolises and regions, brings in some regions the increase of the intra-regional territorial inequalities. Polish units do function in an increasing degree in the global space of flows. They are economically and socially dependent upon other – often geographically distant – regions. Consequently, there is an increase in the significance of the spatial precision in the study of the processes in question, as well as in the conduct of the investment related and organisational undertakings regarding transport.

In addition, in the period of 2020-2021, new, largely unexpected external conditions emerged. They include the pandemics of COVID-19, the Russian aggression against Ukraine, but also the changes in the European policy (the new EU Territorial Agenda, the change in the objectives of the cohesion policy, the new instruments, such as the National Recovery Plan and the Just Transition Fund). The pandemics, side by side with its more short-term impact on demand, may also, over a longer time horizon, change the directions and the distances of transport of people (teleworking, e-services) and of goods (changes in the supply chains). War in Ukraine made the challenges appear that have not been known until now for the setting of international transport connections in Europe, and hence also in Poland. The new institutional conditioning at the level of the European Union brought an increase of significance of climate change and environmental protection as essential aspects in the development of transport. The consequences thereof include also an increased – in comparison with the preceding period – role of transport planning at the regional level. It is necessary for the financial perspective 2021-2027 to prepare the Regional Transport Plans for the provinces.

The present book has two complementary objectives – the methodological and the applied one. The methodological objective is associated with the adaptation and presentation of the evaluation methods in transport, applied in the scientific studies meant for the Polish institutions at various levels of territorial governance. The applied objective, on the other hand, is constituted by the provision to the central and self-governmental authorities, as well as other potential users, of a set of methods, allowing for the assessment of the transport-related programs and investment projects. The book is also intended to constitute a compendium of knowledge useful for the correct integration of the cohesion policy, spatial policy and transport policy. We emphasise here the dual character of the determining factors of the investment undertakings, expressed through the parallel implementation of the objectives, resulting from

the already existing demand for transport and infrastructure, and from the goals of the regional policy, aiming at the support for definite territories and towns.

The book contains a survey of the methods for evaluating the spatial effects of transport-related investment projects, first of all at the regional level. The ways of identifying the demand for infrastructure and for transport of people and goods are presented (including the functional-spatial aspect, in relation to job commuting, migrations, and exports). Against this background the methods are considered of evaluating the networks of road, railway, air and waterway transport, as well as the multimodal one, in particular – the methods of spatial accessibility assessment. A separate part of the book concerns the modelling of flows of people and goods. Besides, the approaches are indicated to the assessment of the degree of contribution from the spatial transport policy to the achievement of goals in the domain of climate and environmental protection. Other criteria of evaluation have also been taken into account, such as, for instance, road safety. The methods are demonstrated of synthetic and comprehensive assessment of challenges, goals and actions in the framework of the regional transport policy. Innovative criteria of option generation have been proposed for the ways of realization of transport-related objectives and selection of investment projects. The methods and the solution proposals presented are positioned against the background of the literature from the domains of socio-economic geography, spatial planning, as well as traffic economy and engineering. The entirety of the considerations has been illustrated with the results of evaluation analyses, performed for the Polish ministries and several regions, and also with the results of studies on the national and European scale (including the investigations, carried out in the framework of ESPON, HORIZON 2020 and Polish nationally funded projects). Use was made of the experiences of the authors concerning the elaboration of designs for the regional transport plans of Podkarpackie, Podlaskie, Lubuskie and Warmińsko-Mazurskie provinces.

The conclusions from the material presented confirm that in Polish conditions the effective transport policy necessitates multi-level actions. From the standpoint of the branch-related integration, stimulation of modal changes, as well as coordination of public transport, quite a special role is assigned to the regional level. Transport systems may be getting closed in the perspective of the regional settings. Besides, it is possible, from the level of a province, to coordinate the investment projects and other undertakings, concerning functional settings (metropolitan areas, urban functional areas, areas threatened by permanent marginalization, and so on). It can also be expected that the spatial reach of the zones of integration of transport policy shall rather be increasing in the consecutive years.

The dynamics of changes in the demand for transport and the increasing polarization in the economic development and quality of life causes that transport policy has to be territorially flexible. It ought to be possibly independent of the stiff administrative boundaries, following, instead, the changing interrelations formed by the functional linkages in space. In order to make this possible, it is necessary to increase the pool of data, collected with respect to the settings of the linkages and flows. The current systems of public statistics (both Polish and international, including also Eurostat) dispose of such kinds of data in an only very limited degree.

Founding of investment undertakings and organization of transport on measurable indicators of relations and on the measures of transport accessibility makes it possible to perform evaluation not only in the perspective of demand (regarding the current and forecasted traffic), but also from the point of view of the regional policy (cohesion policy). This opens the possibility of making evaluation more creative than reactive with regard to the changing socio-economic reality. In addition, knowledge of data on flows in the matrix setting allows for a much more precise modelling of traffic than when it is based on the production-attraction pattern.

Transport ought to be perceived as a general purpose service, and, at the same time, a common good, which, however, does not mean that this refers solely to the publicly organized transport. This concerns, instead, the whole of the multimodal transport system, including the individually realized one. Infrastructure is also a part of this image. That is why transport policy ought to be as much as possible integrated with the policy of provision of services of general public interests, since they contribute together to the quality of life.

The closing of the networks of the basic road and railway connections, registered in the studies of transport accessibility, shall lead to the termination (in the perspective of 10 years) of the period of almost a quarter of century, in which the transport accessibility of all the local level units in Poland has been systematically increasing. The changes may get negative over a longer time horizon, which would partly be the effect of the progressing demographic crisis and the difficulties in the overcoming of the present concentration in generation of the domestic product. The accessibility of some depopulating and poorly developed peripheral areas shall start to decline. The response from the side of transport policy must then be a change in the geographical scale of the evaluation analyses and application of alternative indicators, like, for instance, measures of accessibility to services of general public interests, which would allow for the assessment of the investment projects and organizational undertakings from the point of view of quality of life of the inhabitants.

Summing up the considerations, concerning the content of the territorial documents relative to transport (such as, *e.g.*, the regional transport plan) it can be assumed that such documents of the new generation should fulfil the following general principles:

- clearly defined scope of diagnosis, limited to the issues, related to transport policy;
- comprehensive approach, encompassing also the elements remaining in the competence of the central authorities and the local self-government bodies;
- horizontal linkages with the documents, valid for the neighbouring units;
- innovative character of the indicators (including the spatial accessibility indicators);
- spatial analysis based on GIS;
- demand analysis based on respective matrices and on traffic generators;
- traffic modelling, performed whenever the models can be fed with reliable data (including the data on the future planned investment projects and organizational undertakings);

- clearly defined path to the achievement of well-established goals, planning variants, as well as concrete undertakings and project selection criteria;
- ensuring participation of the local stakeholders in the development of a Plan (expert panels, questionnaires);
- clearly constructed principles of monitoring.

**Keywords:** Evaluation, region, traffic modeling, transport accessibility, transport policy.