REGIONAL LOGISTICS PROJECTS - THE IMPLEMENTATION CONDITIONS AND IMPACT ASSESSMENT

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Abstract: The main objective of the article is to present the selected conditions of implementation and preferred directions of action of regional logistics projects in the context of their effectiveness and efficiency. The first part of the article presents essence and types of regional logistics projects. Next the stages and actions of implementation of the effective and efficient project solutions in the field of regional logistics systems are presented. The second part of the paper includes the classification of regional logistics projects, taking into account factors such as the size of investment expenditures and the necessity of legislative and administrative changes to implement them.

Keywords: regional logistics project, assessment, effectiveness, efficiency.

1 Introduction

In the conditions of contemporary economy the correct and sustainable socio-economic development of a region and its inhabitants, accompanied by maintaining adequate social responsibility in managing its processes, frequently requires the application of an appropriate set of actions and tools, as well as an integrated and systemic approach. Therefore, the broadly understood care for better life quality of region dwellers should appear and be well noticeable in many aspects of its development. The absence of such approach, as well as proper mechanisms and actions at the level of the decision making bodies, may result in the fact that such development will be brought to a halt and, in consequence, lead to region stagnation, which can have an adverse influence on meeting its residents' needs in an economic, social or environmental sphere.

The specific nature of a region, results in the occurrence of numerous problems in competition for limited infrastructure ensuring mobility and storage which, on the other hand, influences the growing costs of functioning and living in a region. Such situation requires proper region management and the crucial role in achieving both, effectiveness and efficiency of the actions performed is played by implementation and management of regional logistics projects. The solutions, in the form of various projects and ventures, undertaken in this area can become an important tool in improving the life quality of region dwellers and constitute the manifestation of managing its area in a socially responsible manner.

Therefore, it can be stated that regional logistics projects covers activities depending on movement, consisting in a daily life cycle of a region, its economic, social and cultural space. It can constitute a tool for solving problems resulting from such movement within region areas, i.e. villages, cities, tourist reception areas, etc.

2 The essence and types of regional logistics projects

Various types of projects constitute a practical dimension of solutions which should be implemented in order to avoid or alleviate problems resulting from development. Among them the significant role is played by the regional logistics projects, the objectives of which are focused on, among others, goods, people and information flows optimization in a region area.

According to J. Witkowski and B. Rodawski [2008, p. 87-89] logistics projects represent individual, limited in time and budget ventures, the implementation of which aims at the improvement of effectiveness and efficiency in the flow of goods and the accompanied information in enterprises, supply chains or spatial systems.

Among them the following ventures can be distinguished: distribution of manufacturing plants and warehouses, transport, storage, development or modernization of linear logistics infrastructure components, stock management, customer service [Witkowski J., Rodawski B., 2007, p. 3].

Therefore, one can state that a regional logistics projects presents a specific type of a project which can be defined as unique, one-time venture featuring the specifically defined time frame and budget, the execution of which aims at the improvement of both, effectiveness and efficiency in the flow of goods, people and the associated information in regional logistics systems [cf. Meredith J. R., Mantel Jr. S. J., 2003, pp. 8-9]

While discussing the concept of a regional logistics system, defined as regional facilities indispensable to function and manage both, supply and network chains effectively in its area, as well as the infrastructure used for serving and managing flows of goods, people and the associated information in a region, a wide spectrum of projects can be indicated. In this respect the regional logistics projects can be divided into ventures related to infrastructure construction and modernization covering as follows:

- tracts of the particular modes of transport in a region (roads, inland waterways, passage networks, railroad tracks, etc.),
- transport nodes and points in a region (cross-roads, road junctions, depots, railway or bus stations, relay stations, interchange centre, sea and river ports, regional airports, etc.);
- storage processes (intermodal hubs, depositories, warehouses, distribution centers, landfills, freight villages, intermodal terminals, etc.) and also their technical equipment [Pawęska K. (ed.), 2008, p. 15];
- telecommunication and data transmission (telecommunication and information networks and hubs, regional databases, etc.).

The supporting role of this kind of projects (so-called “hard projects”) is played by the implementation of ventures and carrying out information, training, education or legislation oriented activities (so-called “soft projects”). [Drobniak, 2008, p. 26].

The scope of activities, and thus also the subject matter of potential regional logistics projects, is subject to extensive diversifications. It also has a direct impact on the list of entities which can initiate them. Therefore, the following projects are taken into account: public, quasi-public, private or based on public-private partnership (e.g. by applying BOT model) – table 1.

Table 1. Summary of regional logistics projects due to the visions/goals and sources of financing

			Vision and goals	
			Having a public character	**Having a commercial character**
		Description	The main objective is the realization of social needs and achieve environmental and economic benefits	The main objective is to maximize the benefits for private investors
Type of entity	**Public sector entities**	Dispose of public funds	***Public projects*** - initiated and implemented by the regional authorities eg. project for the construction of public roads, ring roads of cities.	***Commercial projects implemented by public authorities (quasi-public)*** carried out by utility companies with a regional authorities participation eg. operate of regional transport system

	Private sector entities	Dispose of private funds	***Public-private projects*** eg. construction and operation of railway for agglomeration	***Private (commercial) projects*** planned and implemented by economic entities and residents functioning in a region eg. project to build a new warehouse that supports regional companies

Source: author's compilation.

3 The implementation conditions of regional logistics projects

Obtaining particular results of regional logistics projects requires meeting several specific conditions from the entities involved for the purposes of effective implementation. In general terms, they can be analysed from the perspective of two levels:

- research and conceptual,
- analytical and practical (figure 1).

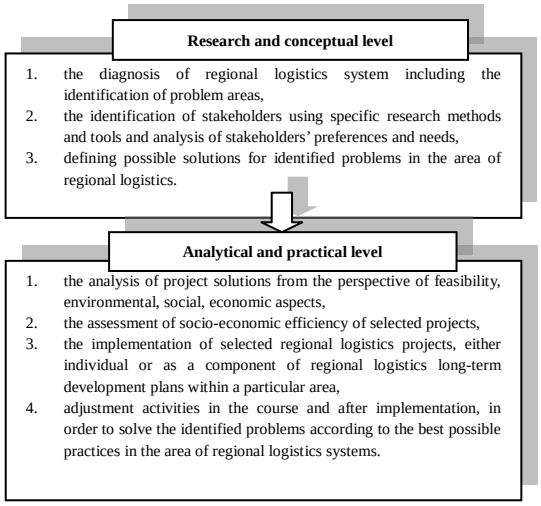

Figure 1. The levels of project solutions implementation in terms of regional logistics systems.
Source: author's compilation

Within the framework of research and conceptual level several phases of activities implementation can be identified. The first consists in the selection of adequate methods and research tools allowing to diagnose, in reliable way, the existing regional logistics system in a given area and also to identify problem areas. These activities result in defining potential stakeholders and their needs related to the improvement of logistics systems covering a region area. This stage should be initiated and coordinated by regional and local authorities along with the simultaneous specification of the remaining stakeholders' roles in the subsequent part of the process.

The next phase, at the discussed level, is the selection of potential solutions in terms of regional logistics, the implementation of which would allow for solving the identified problems. The following components may prove helpful at this stage: adequate classification of the analysed project solutions and the best practices (projects), which were used in the improvement of logistics systems in other regions. At this stage regional and local authorities, in cooperation with manufacturing enterprises, trade businesses, freight carriers, companies providing services in the area of collective transport, etc., perform a joint review of the solutions possible to implement. The conducted social consultations in the form of workshops or panel meetings, their scope and frequency, constitute the manifestation of social responsibility by regional authorities in terms of regional public management.

The second level consists in both, analytical and implementing activities. The selected solutions should be subject to analysis of their environmental, social and economic impacts. This stage also covers the assessment of the analysed project solutions regarding the synergy and conflicts which can occur between stakeholders after their implementation. If the risk of possible conflicts occurrence is identified, the preventing measures should be defined or, at least, the ones which are capable of alleviating their effects. The selection of an ultimate solution, in the form of a substantive project, should be made by the group of stakeholders having direct influence on its implementation. One should, however, remember that if practical implementation of a project solution is supposed to be successful, all stakeholders should be included in tasks implementation at the particular levels of its implementation process, whereas the solution itself should be reflected in the content of the regional strategic documents. The need to make adjustments or changes, to reorganize the adopted processes or to implement more advanced technologies than it was initially assumed, may occur in the course of the adopted strategic project solution implementation. In case of such ventures, frequently quite complex ones, the need for making adjustments can occur at every implementation stage [cf. OECD, 2010, p. 8].

It should be emphasized that the analysis, assessment and implementation of individual actions require the use of appropriate instruments in terms of their analysis and appraisal. Table 2 shows the levels and activities that determine the efficient and effective implementation project solutions in the field of logistics at the regional level, indicating possible to use the methods and tools of analysis at each stage of the proposed path of action.

Table 2. Levels and actions that determine the efficient and effective implementation project solutions in the field of regional logistics systems.

Level	Action	Methods, analysis, techniques, tools suggested for use
Research and conceptual level	1. the diagnosis of regional logistics system including the identification of problem areas	Brainstorming, **cause and effect diagram** (Ishikawa, fishbone), **Problem tree** analysis, SWOT/TOWS analysis
	2. the identification of stakeholders using specific research methods and tools and analysis of stakeholders' preferences and needs	Stakeholder analysis (primary, secondary and other). Identification of people, groups of people, institutions and companies that have or may have a relationship with the project, from the point of view: - Socio-economic aspects, - Interests, objectives, expectations, etc., - Sensitivity to the connection with the implementation and functioning of the project. - capacities, knowledge, experience - for the project. - Implications and conclusions for the project
	3. defining possible solutions for identified problems in the area of regional logistics	The classification of project solutions considered by criteria: size, range of impact, way of financing, the period of implementation, etc. Use of the information contained in the good practice databases - searching for best practices (projects) that were used in the improvement of logistics systems in other regions. The use of methods: benchmarking, benefits transfer methods.
Analytical and practical level	1. The analysis of project solutions from the perspective of feasibility, environmental, social, economic aspects	Variants and options analysis: DGC analysis, project impact analysis, ie.: ECIA, SIA, FIA, EIA, etc., multi-criteria analysis (MCA).
	2. the assessment of socio-economic efficiency of selected projects,	Estimation of efficiency and profitability of the project using indicators: ROI, PP, NPV, IRR, BCR, CEA, etc.; Cost-benefit analysis (CBA); Sensitivity analysis of the project; Risk identification (brainstorming, risk sharing by PESTLE) and estimation and evaluation of risk (decision trees, Expected Monetary Value - EMV, probability/impact matrix, Monte Carlo analysis)
	3. the implementation of selected regional logistics projects, either individual or as a component of regional logistics long-term development plans within a particular area,	Implementation of the project using standard project management methodologies such: PRINCE 2, PMBoK, PCM, etc. The use of tools: product breakdown structure, work breakdown structure (WBS), project scheduling (Gantt chart, Precedence Diagram Method, Critical Path Method, PERT method), schedule of works and expenditures, etc.
	4. adjustment activities in the course and after implementation, in order to solve the identified problems according to the best possible practices in the area of regional logistics systems	In the implementation of the projects solution may be necessary to conduct revisions and changes. Analysis of the changes, for example: the rule of "MoSCoW" - must, should, could, will not. Techniques for assessing the progress: milestones diagram, S-curve analysis, earned value method – EVM, etc.

Source: author's compilation

At this point a very important aspect underlying regional logistics projects implementation should be emphasized. The regional logistics projects planned for implementation by regional authorities and also other interested entities are usually quite expensive which, from the financial standpoint, makes them unprofitable. Such projects frequently have the nature of ventures not generating any revenues, since their products are provided free of charge. Therefore, potential investors, including regional and local authorities in particular, very often resign from carrying out the discussed activities giving low or no efficiency as the underlying reason. As a result the identified problems in communication and transport covering regional areas deepen, which may result e.g. in the increase of disproportions between particular areas of region.

Performing an economic analysis of a project may turn out helpful in eliminating such situations to a certain extent. An economic analysis of a project covers economic values which reflect the social willingness to pay for a particular good or service, and therefore the valuation is performed in accordance with their value in use or an alternative cost for the community [European Commission, 2014, p. 43 and next]. As a result it can turn out that the implementation of the above mentioned projects confers numerous additional socio-economic advantages. An investor, and especially regional authorities, while assessing efficiency, should take into account, apart from the direct revenues earned by a project, also its external effects, which frequently cannot be estimated directly and which also present an economic value. It refers to considering not only the value resulting from direct usage, but is also related to an indirect one, however, included in the overall project assessment. It can be quite large and result from social, environmental, historical, aesthetic, cultural, or other aspects.

Small projects, limited to a single entity and a small area (e.g. city), are relatively easy to define and to assess their efficiency. The problem can occur at the moment of specifying the entire project efficiency with a few entities participating and the crucial element of such assessment remains the analysis of costs and benefits distribution between the project participants. It is most difficult to define and therefore assess, as well as plan the projects having impact of a wider environment (mezzo- and macroeconomic ones), i.e. entities which do not participate directly in implementing these projects, but are influenced by their impact. [Kurowski, 2004, p. 199 and next].

In case of economic analysis as a result of conducting it an answer to a question should be found: whether and to what extent a particular project is worth implementing from a public (social) perspective, even if from a financial one it generates net costs? For this reason economic analysis differs from a financial one in two key areas:

- at the level of both identification and valuation of input and output project components (i.e. expenditures and products),
- methods for project benefits and costs measurement and valuation [ADB, 1997, p. 8].

W. Frenkiel and A. Drobniak [2005, p. 120] indicate that currently the assessment of investment projects should cover any project impact on three basic areas: economic, social and environmental, since as a result of direct economic impacts, exerted by investment projects, external social and environmental effects (costs and advantages) can occur quite often.

In case of regional logistics projects taking into account these components (making adjustments for externalities) is of particular importance while conducting economic analyses. Such projects, on the one hand, enhance, among others, the improvement of logistics systems in a area of region and influence directly a given area investment attractiveness and, on the other, exert impact on the level of life quality and functioning in a region.

The final project efficiency assessment is an important stage in the basic economic analysis procedure. In this case the popular profitability indicators can be applied for efficiency assessment, e.g. NPV, IRR or BCR [Friedlob G.T., Schleifer L.L.F., 2003, p. 123 and next]. The scope of input data will cover additional, compare to the financial analysis, benefits and external costs. Moreover, a defined economic (social) discount rate (s) is applied. The formulas and descriptions of the above listed indicators are shown in table 3.

Table 3. Selected indicators of project efficiency assessment in economic analysis procedure.

Indicators	Formulas	Interpretation and conclusions	
		The choice in the situation when one project is carried out	The choice of one most effective project out of all available variants of mutually excluding projects
Economic net present value of a project (ENPV)	$ENPV = \sum_{t=0}^{n} \frac{ENCF_t}{(1+s)^t}$	$ENPV \geq 0$	$ENPV \rightarrow \max$
Economic internal return rate (EIRR)	$\sum_{t=0}^{n} \frac{ENCF_t}{(1+EIRR)^t} = 0$	$EIRR \geq s$	$EIRR \rightarrow \max$
Benefit-cost ratio (BCR)	$BCR = \frac{\sum_{t=0}^{n} \frac{EB_t}{(1+s)^t}}{\sum_{t=0}^{n} \frac{EC_t}{(1+s)^t}}$	$BCR \geq 1$	$BCR \rightarrow \max$

Where: t – period; s – economic discount rate; ENCFt – economic net calculation flows; EBt – economic benefits in t period; ECt – economic costs in t period.

Source: author's compilation based on [Fugutti D., Wilcox S.J., 1999, p. 81; Friedlob G.T., Plewa F.J. Jr., 1996, pp. 211-212; Fabozzi F. J., Peterson P.P., 2003, p.400].

In the third case the decision may come down to making it in the situation of dependent and independent projects, with and without budget limitations. In case of dependent projects, i.e. the ones the results of which depend on the implementation of other projects, with no budget limitations, this project variant should be chosen (or its combination with other projects) which can maximize ENPV.

However, in case of independent projects, i.e. when the selection of one of them does not limit the possibilities of another project implementation and when budget limitation are absent, the decisive criterion refers to the choice of projects where ENPV > 0. In the situation of budget limitations these projects should be chosen in case of which ENPV is the largest. BCR should be considered here as a supplementary indicator in accordance with which these subsequent projects should be carried out which area characterized by the highest ratio of economic benefits and costs (having assumed that they all satisfy the acceptance condition, i.e. BCR>=1) [Drobniak, 2008, pp. 154-155].

4 The socio-economic approach in the assessment of regional logistics projects

Proper categorization of a given venture acts as an element enhancing effective and socially acceptable decisions regarding the choice of project solutions. In such form it is later presented to a wider regional community as a most realistic one to implement in particular financial, time, legal, administrative or environmental conditions. In the discussed dimension it also takes the form of a dialogue between regional authorities and a regional community and also constitutes the manifestation of social responsibility in its management processes. The information collected in the course of the study allows regional authorities to perceive the residents' needs and expectations much better. In consequence, the data obtained as a result of the conducted research represent an important factor facilitating higher effectiveness and efficiency of the activities performed by regional authorities. It my turn out of particular significance while categorizing it in a certain group of projects specified based on two criteria which can have impact on the venture planning and organization in the subsequent stages of its implementation, i.e.:

- the scope of indispensable activities and legal-administrative regulations necessary to implement the planned venture, etc.) – legal-administrative complexity of the project,
- the value of investments necessary to cover at the start-up of the project (also covering the pre-investment expenditure) and the number of financing sources – project financial complexity.

Adopting the above listed criteria, as the dimensions for projects division, analysed by the decision makers, allows for defining four basic groups of ventures, i.e. characterized by:

1. low level of legal-administrative and financial complexity,
2. low level of legal-administrative complexity and high financial complexity level,
3. high level of legal-administrative complexity and low financial complexity level,
4. high level of legal-administrative and high financial complexity level.

The review of potential solutions in this matter[1], presented by the author, allows for distinguishing four thematic groups of ventures covering the most popular solutions and projects in the area of broadly understood regional logistics, i.e.:

- in the area of quality improvement and higher efficiency of mobility by means of collective regional transport,
- in the area of limiting vehicle traffic in a selected field of region, including also the organization of goods deliveries to regional logistic centres and hubs,
- in the area of alternative means of mobility in a region area, as opposed to the existing transport, of both people and goods,
- in the area of disseminating behaviours, among regional residents, facilitating the implementation of new solutions related to regional logistics systems (e.g. pro-ecological ones – selective waste collection, using collective means of transport, using vehicles and equipment propelled by the power of muscles, intermodal transport, etc.) [Kołakowski, 2014, pp. 108-117].

Each of the above-mentioned groups is characterized by a diversified scope of financing and legal-administrative complexity. Combining the listed thematic groups of projects with the above described division criteria facilitates defining a four-field matrix. Each field of such matrix covers group of projects featuring a relatively homogenous nature and scope of activities necessary for their implementation. The details are presented in table 1.

1 The review based on solutions suggested or implemented within the framework of the European initiatives in the area of city logistics, e.g.: Bestufs (http://www.bestufs.net), Civitas (http://www.civitas.eu/), Polite (http://www.polite-project.eu/), Sugar (http://www.sugarlogistics.eu/), C-liege (http://www.c-liege.eu/), Enclose (http://www.enclose.eu/content.php?p=1), Trailblazer (http://www.trailblazer.eu/content.php). In the author's opinion, a similar approach can be applied in the case of regional logistics projects.

Table 4. Matrix presenting legal-administrative complexity / financial complexity of regional logistics projects – the main groups and their aims

Financial complexity of a project	Legal-administrative complexity of a project: low	Legal-administrative complexity of a project: high
high	***Technical and adaptive projects*** Aim: Adaptation of the region, to develop on its area, projects which are related to alternative, against the existing means of communication and transport, ways of mobility and transportation both people and goods in a region's area	***Infrastructural projects*** Aim: improvement and development of traditional communication and transportation systems (and/or infrastructure) in the framework of regional logistics system
low	***Information and promotional projects*** Aim: communication with society, development of new types of behavior in the field of transport and communications in the area of the region	***Organizational and legislative projects*** Aim: development of organizational governance in the field of communication and transport: the whole region, selected areas of the region, etc.

Source: author's compilation

The presented matrix is of demonstrative nature only and the adopted division was provided based on the standard projects referring to a particular group and identified in the course of literature review and the European initiatives in the discussed subject matter. Combining a given group of projects with a particular matrix field is, therefore, just conventional since, obviously, within the framework of every field (area) one can identify projects characterized by different budgets or the required legal regulations. Moreover, the scale for qualifying to a group, i.e. low or high dependence level in both categories, should be adjusted every single time to individual possibilities of entities undertaking investment decisions.

The suggested matrix, in the system of legal-administrative complexity / financial complexity can constitute, for the decision making entities, a preliminary tool useful in analyzing all possible activities related to regional logistics systems in a given area. Owing to it, already at the planning stage, the entities while making decisions are capable of specifying the real areas for conducting project activities in a given time and place considering, simultaneously, the underlying financial, as well as legal and formal aspects. Additionally, such results can become the basis for social consultations regarding the suggested solutions in the discussed area.

5 Final remarks

The correct realization and implementation of project solutions focused on regional development, also in terms of regional logistics projects, requires adequate strategic, planning, legal and organizational framework created by regional authorities. Adopting a particular development model and covering ventures in the key regional documents, such as: development strategy, long-term investment plan, etc., has crucial impact on practical implementation of the strategic regional objectives and facilitates the realization of social responsibility concept in the area of region management.

In the course of the discussion the important role of proper planning, the analysis and assessment of project solutions in the implementation of actions to improve regional logistics systems, was emphasized. The methods, analysis, techniques and tools presented in the study can serve this purpose. The crucial role is also played by the correct diagnosis of stakeholders involved in the discussed projects. Assigning proper functions and activities to particular stakeholders at each stage of an implementation process can speed up and improve the realization of solutions in terms of regional logistics systems. The most important role is, however, played in this area by regional authorities. Owing to adequate legal regulations they can develop regional logistics systems and reduce the external cost of them. Regional authorities also have a certain budget at their disposal and thus they represent the key stakeholder of activities in terms of regional logistics systems and in most cases it is them who should initiate project solutions.

In conclusions, it should be note that:

- creating the set of preferred solutions and projects,
- applying proper methods, techniques and tools of their analysis and assessment,
- consulting the obtained results with the other stakeholders,

constitutes the manifestation of carrying out the assumptions underlying the socially responsible management of region. Such approach is definitely a strong incentive for the improvement of an overall life quality in the area of any particular regions.

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Primary Paper Section: A

Secondary Paper Section: AE, AH, AP