

# ANALYSIS OF TRANSPORT TERMINALS NETWORK STRATEGIC PLANNING

*Ramunas Palsaitis, Gintautas Labanauskas*

*Vilnius Gediminas Technical University  
Department of Transport Management  
Plytines str. 27, Vilnius-16, LT-10105, Lithuania  
Ph: +370 852744776. Fax: +370 852745059. E-mail: trvadyba@ti.vgtu.lt*

Creation of the network of transport terminals in Lithuania will have a positive impact on the economical development of the country. Transport terminals located in the strategic dominant state points and established under the contemporary requirements will provide the needed co-operation with big trading companies and other terminals in the EU, Europe and outside Europe. The existing TEN-T corridors will play significant role in interlinking separate terminals into the international network. An increase of international transit cargo flows will be also related to the complementary and boosting activities of logistic services associated with the development of transport terminals network as in Lithuania as in the whole region.

*Keywords: terminals, logistics, transport, economics, development, cargo*

## 1. Planning Development of Transport Terminals

Long-term planning of transport terminals (TT) development is analysed as the task of national importance, which requires working out strategic decisions for the development of transport system infrastructure and drafting systematic developmental plans.

Process of strategic development of transport terminals as the components of transport complex system includes the following steps of strategic planning:

- monitoring, analysis and prognosis of TT development;
- determining key aspects of TT development depending on the economical and political situation in the EU and Lithuania;
- drafting a long-term TT planning;
- safeguarding TT development and preparation of a program with the view to substantive budget and financing from the EU funds;
- managing development of TT planning and scheduling.

General requirements for the strategic planning of TT development can be applied as follows [1]:

- projecting a long-term (till 2025) perspective;
- orientating not only on fiscal or corporative goals but on socio-economic ones too;
- given developmental strategy, having fully assessed possibilities of attracting tangible finance, shall meet the required material and financial resources;
- given strategy shall be technically feasible to implement;
- the strategy shall be of an adaptive nature, the one that could be well applied in case of possible changes of socio-economic environment.

Therefore, in the process of strategic planning, it is very important to rationally aggregate both, the objects under analysis and the information about them. This applies not only to the internal characteristics of the system but also to the external environmental factors.

Majority of scientists [2, 3, 4, 5, and 6] refer to TT infrastructure as the entirety of terminal objects of different capacities.

Network of roads of some modes of transport, the development of which is predetermined by some more specific factors than carriage of units of cargo, commonly is not associated with the concept of TT infrastructure.

Systems of transport terminals, cargo unit servicing and their traffic together with the information technologies needed to handle the process is based on the universal national and the EU networks of data transfer and is a part of management of different types of transport complex.

Based on the modern tendencies of transport infrastructure development, transport systems can be divided into the following types:

Type I: *ports with container terminals (Seaports of Klaipeda, Riga, Tallinn, St. Petersburg).*

These are the multimodal objects that ensure transportation of export-import and transit containers as well as their reloading from one shipping line onto the other or from water transport on the railroad and motorway transport (Figure 1).

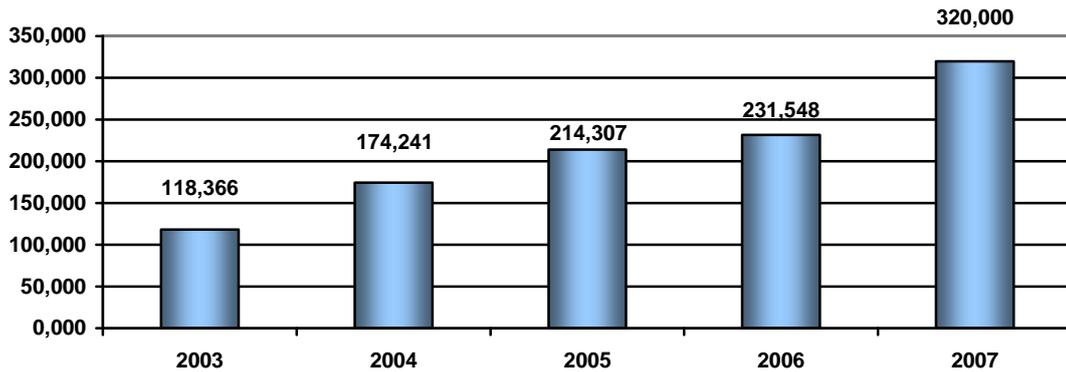


Figure 1. Container handling at Klaipeda State Seaport

In seaport terminals the works are performed by two technological variants:

I – container terminals integrated in the port’s infrastructure.

II – container terminals located outside the port’s territory.

Type II: **international distribution centre (IDS) (Logistics centre in Klaipeda “Ad Rem Group”)**. It is a large object of combined transport located inside the motorway network and designed to service both, international and local businesses. IDS operates as a part of public logistics centre.

Type III: **national distribution centre (NDC)**. This is the key object of combined transport to ensure service for the local business. NDC is located on the main junctions of national or international roads, in the places of massive accumulation and storage of cargoes as well as on the nodes of combined transport.

Type IV: **terminals equipped to service one particular mode of transport** (cargo terminals in Aukstieji Paneriai and Palemonas Railway Stations). Such a terminal is the object of unimodal transport system maintained by one particular type of an operator.

Type V: **Departmental terminal**. These objects are established by freight owners to serve their own needs in the case of receiving considerable cargo flows in containers or semitrailers (or in the case when public structures of logistic systems have no convenient access).

Objects of type IV and V are „the terminals of the logistic infrastructure of different transport modes – the elements of individual operators or cargo owners (Figure 2). Planning creation of such objects should be the concern of the heads or owners of large-scale manufacture and trade undertakings. The objects of the type are established subject to business needs and local conditions, and adequate decisions are carried by individual companies or their groups subject to their mid-term business plans.

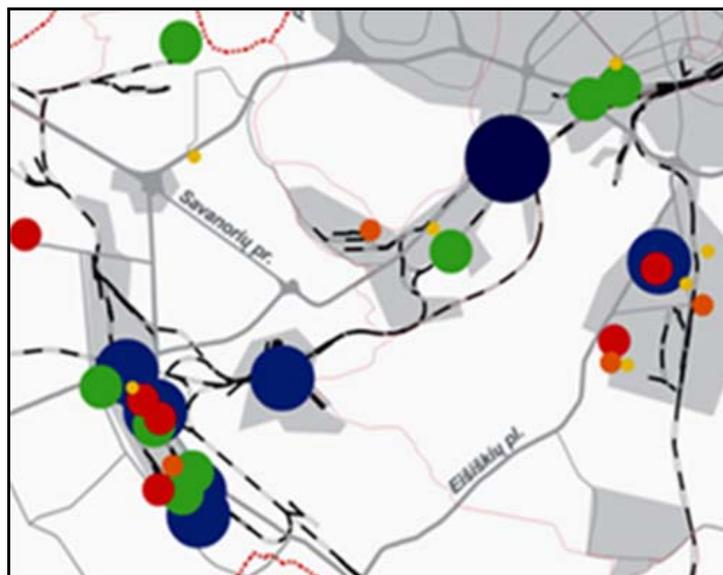


Figure 2. Existing cargo terminals in Vilnius region

Meanwhile, the terminals of type I, II, III now are the components of the main macro-logistic chains that to a large extent influence development of the systems of international trade and production: have impact on the

increase of cargo flows, formation of international and national transport corridors, stimulate interaction between different modes of transport and its effectiveness, result in the increase of variety of services and transportation volumes rendered by cargo owners and transport operators.

Transport terminals inside the territory of ports that are within international and national distribution networks, in the process of creating combined transport infrastructure must be referred to as the objects of strategic planning.

The main characteristics of the combined transport infrastructure must be in compliance with the level of aggregation which is prospected in macroeconomic forecasts and programs for Lithuanian and EU economy development and is in conformity with the provisions of strategic development of transport system infrastructure.

## 2. Process of Transport Terminals Development

So far the program for the development of logistics centres and transport terminals introducing the whole spectrum of logistic services to be rendered for cargo owners in Lithuania has not been prepared. The program should define dislocation of transport terminals and logistics centres in a given territory denote their capacities as well as substantiate the order of priority for their foundation.

The program should be drafted with the view to the forecast of Lithuania's socio-economic development, based on the priorities for a faster foundation of any particular transport objects and associated with the objective economy and transport programs under implementation as well as developmental programs of economy and transport infrastructure for separate Lithuanian regions.

For dislocation of transport terminals and logistics within transport network the essential criterion is maximum economic efficiency and minimum foundation costs, associated with transport and logistic handling, stepped up movement of cargoes, improvement of interaction and performance efficiency of operators, servicing different modes of transport and creating additional value by providing logistic services for cargo owners.

Dislocation of logistics centres and transport terminals within transport network must be determined following the model of logistics centre or „distribution centre“ according which in a given territory government's support is expected for acquisition of land and infrastructure financing. Terminals must be created in the places of the biggest volumes of freight accumulation where transport and expeditionary enterprises are in the process of their foundation and the place does not lack logistics and subsidiary service suppliers.

The program being drafted and approved by the government must be referred to as a general document for the institutions involved in management of transport and transport-related activities and for regional authorities responsible for drafting local plans and programs.

The role of public institutions in modelling and developing the network of logistics centres and terminals include:

- *at the stage of planning* – drafting a developmental program, its coordination and adoption, revision in accordance with the statements of other program documents (i.e. coordination and revision of transport and customs infrastructure programs), developing a mechanism for program implementation;
- *at the stage of implementation* – securing linkage of logistics centres and terminals with networks of motorways and railroads (if necessary, building railroad and motorway links to the terminals, controlling activities of an operator). Operators of terminals and centres must participate in solving tasks related to: land-owners and leaseholders, clients for planning works, general contractors, private owners who are constructing infrastructure objects in the centre, owners of private roads and railroads;
- *at the stage of system maintenance and development* – monitoring functioning of systems, generalization, analysis and spreading of experience, correction of the developmental program.

Successful implementation of the program is impossible if it misses some of preparative components listed below:

- forecast on changes in common economic indices of Lithuania and its regions;
- established proportion between production of logistics potential and consumption needs of the country and its regions;
- layouts of interface between railroad and motorway transport;
- definition of capacities and dislocation of transport and logistics terminals already in operation;
- defined proportion between the costs of freight carriage and logistics handling which depends on the nomenclature of services rendered in terminals and centres as well as on transport links, their characteristics and their potential customers.

## Conclusions and Recommendations

1. Long-term servicing of transport terminals (TT) is analysed as a task of national importance which requires making strategic decisions on the development of national transport system infrastructure and drafting of systemic developmental plans. It is necessary to foresee places for dislocation of terminals, their productive

capacities and sequence of priority in which different types of terminal systems are developed. Important criterion in modelling network of transport terminals is lowering of the total costs.

2. In order to apply algorithm of the total cost lowering as a scientific method it is necessary to solve two major tasks:

- to evaluate efficiency of integration of terminals and logistics centres into the transport system;
- to adequately select places for dislocation of terminals and logistics centres and to establish sequential priority for their foundation.

3. The program being drafted and approved by the government must be referred to as a general document for the institutions involved in management of transport and transport-related activities and for regional authorities responsible for drafting local plans and programs.

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