

*Transport and Telecommunication, 2010, Volume 11, No 2, 30–43
Transport and Telecommunication Institute, Lomonosova 1, Riga, LV-1019, Latvia*

METHODOLOGICAL FEATURES REGARDING THE PROGNOSTICATION OF LITHUANIAN RAILWAY FREIGHT TRANSPORT VOLUMES FROM A LONG-TERM PERSPECTIVE

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The prognostication of Lithuanian Railway freight transport volumes from a long-term perspective is difficult methodological process even during a period of positive economic development. All sectors of National Economy have serious consequences of international crises and still are not recovered (did not climb out of economic recession). Therefore it is not a time to predict further optimistic development. Social sector having influence on a usage and a growth of its demand is still in more complicated situation. Despite of this unpleasant economic situation the processes of projection, strategic planning, and preparation of priority projects, investment planning and implementation continue to proceed.

That determines urgent modelling of separate economic sectors, forecasting of specific activities and preparation of tactical plans. This attitude was a basis for the methodology regarding prognostication of railway freight and passenger transport volumes from a long-term perspective. Necessity of preparation of priority infrastructure projects and substantiation of their decision determines the period of perspective.

Keywords: railway freights volume, transport flows, DGP projections, providences of the economic development, influence of internal and external factors, forecast of macroeconomic indicators

1. Introduction

Methodologically it is difficult to forecast railway transport volumes from a long-term perspective even during a period of positive economic development. All sectors of National Economy have serious consequences of international crises and still are not recovered and have not yet climbed out of economic recession. Therefore it is not a time to predict further optimistic development. Social sector having influence on a usage and a growth of its demand is still in more complicated situation. Despite of this unpleasant economic situation the processes of projection, strategic planning, and preparation of priority projects, investment planning and implementation continue to proceed.

That determines urgent modelling of separate economic sectors, forecasting of specific activities and preparation of tactical plans. This attitude has being a basis for the methodology regarding prognostication of railway passenger transport volumes from a long-term perspective. Necessity of preparation of priority infrastructure projects and substantiation of their decisions determines the period of perspective.

It is necessary to carry out an analysis of transportation activity development and to formulate the projections of internal market perspectives and influences of external factors, seeking to accomplish prognostications of railway transport volumes from a long-term perspective. Since national economy has not yet overcome the consequences of economic crisis, the strategy of development of national economy and providences of perspective development of social sphere are not prepared. Our economic analysis is based on official macroeconomic indexes and projections of this year. One of the most important macroeconomic indexes, which indicate the level of development of national economy, is gross domestic product (further – GDP). GDP is a final market value of goods and services, which were created in a country per year. This index was used in forecasting of Lithuanian railway transportation volumes.

Basic presumptions for the recovery of economies of Lithuanian and other Baltic States are associative with global and international economical appearances. Economic recovery is possible only with global economic boom, also with the rise of our main export/import partners – European Union

countries, Russia, Belarus, Ukraine, Kazakhstan and remote countries, international trade partners. Other presumption, necessary for economic development, is a recreation of the competitiveness of Lithuanian economy. For this purpose the decrease in production and products price is necessary. Unfortunately it is involved with a decrease in payments and real income per one household member. Those means can stimulate the deflation.

Since GDP includes consumption, investments, state expenditures, and export/import, both changes in economy, changes in social economic, attractiveness of business environment, investment guaranties and also implementation of decrease of state expenditure are important. Consequences of the recession of national economy firstly have influence on labour market, wages, and also the decrease of purchasing power and consumption.

Obvious marks of recovery of storage, transport, industrial production, retail sales allows looking to a perspective growth of national economy optimistically. Actually positive annual increment of GDP is affected by indexes of industry and transport sectors.

Accomplished analysis of projections and presumptions of basic macroeconomic indexes by official institutions and their analytics allows expecting a possible recovery of national economy during years 2010–2011 and climbing out of crisis situation. But the positive changes of social-economic indexes are expected to be slower and obtaining results later. Factual indexes of Statistics Department and the Ministry of Finance were taken as a base for the forecasting transport indexes.

Main Lithuanian railway transportations are connected to the cargo load of Klaipeda State Sea Port and Kaliningrad ports. Kaliningrad Sea Port is often used by local Lithuanian industrial companies for export of regular production and import of raw materials. Therefore the input of local manufacturers is getting more and more important, while they export bigger quantities of production.

Basic presumptions and conditions for increment of freight flows depending on local transportation, export and import, freight transit and composite transportation through the territory of Lithuania and other countries, were determined using an analysis of inside and outside factors influence.

Lithuanian Railway Company has a sufficient potential to transport increasing freight flows by the main European Transport corridors through the territory of Lithuania.

2. Singularities of Method Application

Determining problems of method application it is necessary to appeal whole complex of factors, which defines possibilities of simulated situation. Since substantiation of perspective projections is features of a current state and retro perspective development, full analysis of object activity and its changes is carried out. On the one hand, this is an analysis of quantitative change of main indexes, from the other hand – it is a qualitative analysis of their causality and consequences. Applying this principle of quantitative and qualitative development, in this case, for railway transport services, it is obvious, that quantitative changes of transportation activity indexes are analysed by adding qualitative analysis.

In order to research the perspectives of railway freight transportation, the analysis of retro perspective transport development was carried out. The duration of this analysis was defined by the period of convention of market economic relations, realization of strategic programs, introduction and convention of general EU market regulations.

It is recommended to divide the period of economic development of Lithuanian transport system and railway transport sector after the recovery of Independence as follows:

1991–1993. The economical and political reform in a country, economic transformation into market economy relations;

1994–2004. Market economic development before integration into the EU;

2004–2007. Positive development of Lithuanian social and economic sectors during the integration;

2007 (the 4-th quarter)-2010. Global economic depression, economic crisis in Lithuania.

In order to study a problem we recommend use coherent periods: 2004–2006 period of positive development and 2007–2010 period of crisis situation in a country.

Since the period of solid constant development should be longer than 3 years for the calculations of perspective projections, therefore we apply longer period for the analysis of economic development adding the period of preparations for the EU membership. Then recommended analysing period of positive development should be 2000–2006.

Although 2007–2010 economic recessions are considered to be a result of global crisis, each country has its own experience. Lithuanian economic endurance and preparation for such crisis appeared to be too small. Crisis consequences are still too heavy and must be restored into the pre-crisis state.

In order to repress crisis situation and to climb out of it applied economic and financial means helped to stabilize economic and social situation in 2010. Those means were common efforts of government, business and society to stop economic recession and stabilize the development of economic and social sectors.

From the methodological point of view therefore economic activity results of transport sector and railway transport of 2010 (the 1-st and 2-nd quarter), also changes in macroeconomic indexes were included into the research. Stabilization and transition into the positive development of them are very important factors for the perspective projections. Only in the first quarter of 2010 the break in country economy noticed and defined also in transport service sector allowed to start perspective modelling of the activity. This modelling needs a new methodological attitude for the approval. This is a review of evaluation scale and a formation of new attitude.

From methodological point of view the activity of railway transport is analysed in the context of general transport sector and also separately examining certain activity of railway freight transportation, its results and dependency on inside and outside factors. In this way the recourse situation and the development of activity are evaluated [2, 3].

3. An Audit of Basic National Strategies

First of all it is necessary to conduct an audit of basic official strategies of analysed and perspective period. The aim of this audit is using new approach qualitatively evaluate main principals of development of National Economy, social sector and transport system, also railway transport, presented in basic strategies.

In this attitude it is necessary to formulate strategic aims and principals prolonging the operation of strategic documents into the post-crisis period, evaluating real situation and opportunities to implement determined important projects and programs.

This methodological move is necessary to be done because the period of recovery of National Economy takes 3–7 years for the negotiation of backwardness due to the complication of crisis consequences and also to the duration of social recovery which is longer than business recovery. Moreover, inertia is bigger in social economy. On the one hand, human resources as industrial factor has to negotiate economic challenges and recover their welfare, on another hand, inhabitants as goods and services users have to retrieve their purchasing power. Therefore the task of audit is very complicated and responsible.

Since perspective of development of National Economy is not accomplished, it is necessary to inventory strategic principals for this period.

Seeking to assess railway strategy and development trends, a review and analysis of existing long-term strategies was performed in the study. With the help of an audit, the most important strategies with relevant and realistically applicable propositions were selected. For this purpose basic long-term economic, transport and railway strategies, including important proposals and projections, are presented in this chapter.

A Complex Assessment of the Economic Situation of the Republic of Lithuania. The strengths of the national economy are related to: 1) successfully accomplished processes of economic transformation; 2) Lithuanian membership of the EU; 3) the process of economic internationalisation; 4) the geographical location of Lithuania; 5) the potential for technological progress; 6) developed physical infrastructure which is continually being modernized; 7) developed financial infrastructure which is continually being modernized; 8) restructured industrial sector which is continually being modernized; 9) favourable conditions for the development of agriculture; 10) geographically balanced distribution of large cities and smaller towns; 11) attractive environment and landscape, rich cultural heritage and abundant recreational resources; 12) large potential for development of higher education.

The weaknesses of the national economy are influenced by as follows: 1) the economic situations of western EU countries; 2) limitations on the main factors of economic growth and competitiveness; 3) not exploiting fully opportunities for foreign economic relations; 4) the shortage of physical infrastructure limiting economic growth and competitiveness; 5) the shortage of financial infrastructure limiting economic growth and competitiveness; 6) factors limiting industrial growth and competitiveness; 7) factors limiting agriculture growth and competitiveness; 8) factors limiting regional economic growth and competitiveness; 9) the lack of experience of economic development strategic management.

The opportunities of further development of national economy are related to: 1) wider opportunities for Lithuanian economic growth and competitiveness decided by the integration to the EU; 2) opportunities for Lithuanian economic growth and competitiveness decided by globalisation; 3) opportunities for Lithuanian economic growth and competitiveness decided by the science and technical progress;

4) opportunities for the development of physical infrastructure; 5) opportunities for the development of financial infrastructure; 6) opportunities for the increase of industrial development and competitiveness; 7) opportunities for the increase of agriculture and food industry development and competitiveness; 8) opportunities for regional economic growth; 9) opportunities for sustainable development assurance.

The threats to the national economy can include: 1) threats to Lithuanian economic growth and competitiveness decided by globalisation; 2) threats to Lithuanian economic growth and competitiveness decided by demographic situation; 3) threats to Lithuanian economic growth and competitiveness decided by the science and technical progress; 4) threats to the development of physical infrastructure; 5) threats to the development of financial infrastructure; 6) threats to industrial development and competitiveness; 7) threats to agriculture and food industry development and competitiveness; 8) threats to regional economic growth; 9) threats to sustainable development assurance [8, 10].

Key trends and measures of strategies used for the development of the national economy and transport directly depend on general national economic forecasts predicated on such important factors as the geopolitical and demographical situation of a country; social progress, environmental protection; the knowledge society; the level of economic development; the key factors of economic growth; the most important factors of economic competitiveness; singularities of the economic structure and regional economic development.

Conducting an audit of basic strategies allows the development of a plan for national economic development: 1) organize strategic processes of economic development; 2) pursue employment and social policy to stimulate national progress; 3) ensure further national integration and convergence with the EU; 4) stimulate competitiveness and improve other market mechanisms; 5) guarantee the stability of the national macroeconomic situation; 6) guarantee the development of human capital; 7) support scientific research, technological development and innovation; 8) improve the physical infrastructure; 9) create a business friendly environment; 10) create favourable conditions for foreign economic relations; 11) improve the national administrative capability.

The strategic objectives of Lithuanian economic development are as follows:

1. Develop and effectively exploit factors which would ensure fast and steady growth of economic and national competitiveness. This would help to create a knowledge economy in the country;
2. Promote the development of the national economy and its separate sectors. Structural economic reforms and national economic policy could allow faster improvements which could provide the necessary and sufficient economic conditions for social development, higher employment and environmental protection.

Key assumptions, strategic trends and suggested means for the development of transport sector.

The role of Lithuanian transport systems is to ensure sustained mobility in society and the movement of goods, supporting the dynamic development of the national economy and to increasing the competitive potential of Lithuania and the expanded EU in international markets.

Existing economic analysis of the transport sector allows the following important objectives of the long-term development of the Lithuanian transport system to be defined

- achieve the transport service quality and technical parameter level of the old EU member countries;
- interact effectively with transport systems of neighbouring countries; become part of an integrated and important transport system link the Baltic Sea region (west-east);
- enable Lithuanian inhabitants to reach important cultural, tourist and commercial centres in Europe comfortably and fast;
- effectively to meet the interests of Lithuania and the expanded EU, increase its competitive potential in international markets.

From a long-term perspective, the Lithuanian transport system has to be developed considering national interests and the general tendencies of European transport development, and the needs of expanding markets. The conversion from modal (one transport mode) to intermodal (effective interaction of separate transport modes) transportation of both freight and passengers is one of the most modern trends in European transport development. The concept of intermodal freight transport can be practically realized by the development of transport nodes such as sea and river ports and inland logistic centres [10].

The key objectives of long-term development of railway and intermodal transport are as follows:

- modernize infrastructure, allowing effective integration into the EU transport system;
- create a substantial and effective traffic safety control system;
- accomplish reforms of the railway sector;
- resolve issues of community service obligation performance;
- create a common environmental protection system, covering all possible pollution sources (air, water, soil).

In order to successfully integrate into the structures of the European and Trans-European railway network, to realize high traffic speeds, to achieve maximum traffic safety, to meet EU requirements on environmental pollution, to ensure effective freight and passenger rail transport links between West and East, it is necessary to implement plans.

The Lithuanian Railway Strategic Trends and Methods up to the year 2030 is a realistic strategy which has already begun to be implemented. The adoption and realisation of this strategy was interrupted by the economic crisis. Specific factors must be reviewed and adjusted on the basis of forecasts up to the year 2040. The objective of the adjusted strategy is to ensure the competitiveness of Lithuanian Railways as the administrator of public railway infrastructure and logistic centres, and as the national rail transporter in the freight and passenger markets, and to ensure the financial stability of the company while maintaining high levels of traffic safety and environmental protection. For this purpose tasks are defined as follows:

- external factors and their influence on activity and development of the company;
- tasks and means to develop the company, relating to long-term investment programmes, funding requirements and obtaining financial resources;
- restructuring of the company, reforming the personnel policy, improving personnel capabilities, labour productively and efficiency.

Lithuanian Railways is the most important participant in the Lithuanian rail transport sector. It administers the public infrastructure: the existing rail network infrastructure, the new Rail Baltic infrastructure and the public logistics centres which are planned for construction in Vilnius and Kaunas railway stations. Lithuania Railways also manages freight and passenger transportation on railways and related economic-commercial activity [4,6,7]. It is predicted that Lithuanian Railways will be responsible for integrated national rail company activity and development as the administrator of public infrastructure and the rail freight and passenger operator during the prospective period up to the year of 2030.

4. Evaluation of Opportunities of Macroeconomic Growth

Conditions for economic development. The forecast for Lithuanian economic development is informed by current trends and assumptions regarding positive economic development: a sustainable fiscal policy, a stable monetary policy, an active labour market policy, and an investment and business motivation policy. After integration into the EU, Lithuanian economic progress was mostly linked with financial and other support from EU funds. The consolidation and acceptance of market relations accelerated the growth of economic development and also allowed improvements in social living conditions and the strengthening of the activities of key structures. The period of positive economic development up to the year 2008 can be characterized by new expectations of a higher quality of life for the country and for its inhabitants.

Key macroeconomic indicators, including GDP, were characterized by positive trends during the period of Lithuanian economic growth. The annual growth of GDP was positive also during the crisis period (Table 1).

Table 1. Key macroeconomic indicators of the Republic of Lithuania during the period of 2003–2009*

Indicators	2003	2004	2005	2006	2007	2008	2009
Real GDP growth, %	10,2	7,4	7,8	7,8	8,9	3,0	-14,8
Inflation (average annual), %	-1,1	1,2	2,7	3,8	5,8	11,1	4,2
Inflation (annual), %	-1,3	2,9	3,0	4,5	8,2	8,5	1,0
Balance of current account, % share of GDP	-6,8	-7,7	-7,1	-10,6	-14,6	-11,6	3,8
Unemployment rate, %	12,4	11,4	8,3	5,6	4,3	5,8	13,7
Growth of export of goods, %	11,2	21,4	26,9	18,7	11,1	28,4	26,6
Growth of import of goods, %	7,1	16,8	25,5	23,5	15,4	18,0	38,2

*Source: Lithuanian Statistics Department

Tendencies and forecasts of prospective development. Further tendencies of social-economic development are related primarily to negotiating the next period of crisis (2010–2013). The projections made by the Ministry of Finance are progressively related to the recovery of economic activity related aspects of social life. This should require a longer period (Table 2).

Table 2. Key macroeconomic indicators*

Indicators	Projections (2010-05-07)				
	2009	2010	2011	2012	2013
GDP growth/chain-linked volume growth, %	-14,8	1,6	2,8	1,2	2,4
HCPI (average annual)/ Consumer price index,%	4,2	-0,1	1,5	2,0	2,5
HCPI (monthly annual inflation)/ Consumer price index, %	1,2	0,6	1,7	2,5	3,0
Growth of average monthly gross earnings, previous period = 100	95,4	94,7	100,6	100,9	101,9
Average monthly gross earnings, LTL	2052,4	1944,6	1957,1	1974,8	2011,5
Unemployment rate, % (according to labour force survey)	13,7	16,7	15,5	13,9	12,3
Balance of goods and services, % share of GDP	-1,1	2,8	1,7	0,2	-1,7
Growth of consumption / chain-linked volume growth, %	-13,3	-5,3	1,0	2,4	3,7
Growth of gross fixed capital formation / chain-linked volume growth, %	-39,1	15,1	14,1	2,0	5,0
GDP at current prices growth, %	-17,2	1,9	3,7	2,9	5,7

*Source: Statistics Lithuania

Three prospective scenarios are prepared: optimistic, basic (realistic) and pessimistic. The optimistic scenario – *fast economic growth till the year 2040* – forecasts fast and balanced growth of the Lithuanian economy, anticipating that the Lithuanian business, industry, agriculture and service sectors will climb out of economic stagnation, develop their activities without reducing production and produce better results in the international market. The general economic environment will eventually recover and it will be possible to produce an active development policy, whose implementation will result in hoped-for investment in the modernization of the economy, the application of new technologies and the development of manpower productivity. Economic growth will happen in a more balanced way, as a result of existing experience. Therefore economic overheat will be avoided and the business environment and social activity will be harmonized in the country and general market. More effective financial and market protectors are likely to be introduced.

The pessimistic scenario – *slow economic growth till the year 2040* – forecasts slower, but balanced growth of the Lithuanian economy, anticipating that a low average annual increase in GDP will be determined by low internal and foreign investment, extensive economic restructuring, and insufficient economic and political conditions for business development in the country. It is probable that a new economic crisis could have a critical effect on socio-economic development in this period. The experience of global economic development shows that the economic problems of separate countries or the groups of countries, international market stagnation, and problems with financial settlements can re-occur every 12–20 years even in periods of an active global economic market [11].

It is expected that an improved geopolitical situation, favourable financial conditions, flexible macroeconomic policy and the implementation of structural reforms will allow faster economic development of both Lithuania and the EU.

The realistic – basic GDP – scenario forecasts that GDP development should vary between the optimistic and pessimistic scenarios of economic development (Table 3).

Table 3. Basic GDP forecast, bill. LTL

Growth of Gross Domestic Product of Lithuania, billion LTL										
2010	2011	2012	2013	2014	2015	2020	2025	2030	2035	2040
92.37	94.77	96.48	98.89	101.57	104.67	124.00	153.09	186.14	224.,94	264.15

5. The Analysis of the Development of Railway Freight Transportation

5.1. The Analysis of Freight Transportation Activity

Main freight surface transportations are made by road and railway transport in Lithuania. Freight volumes transported by both transport modes are similar. Still railway transport having purpose to transport large amounts of freight for a long distance mostly maintains ports. Therefore Lithuanian railway freight volumes and their structure mostly are connected to cargo loads of Klaipeda State Sea Port and Kaliningrad ports. Also Lithuanian railways are often used by local industrial companies for export of regular production and import of raw materials. Therefore the input of local manufacturers is getting more and more important, while they export bigger amounts of production.

Basic economic activity – freight transportation – of JC “Lithuanian Railway” has met a crisis situation and recession in 2008. These changes are bigger than in load volumes of sea port.

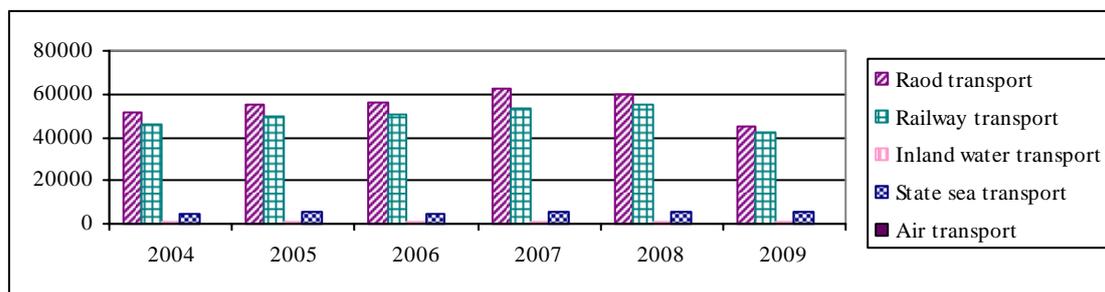


Figure 1. Freight transportations by various transport modes in Lithuania. 2004–2009

Table 4. Freight transportations by various transport modes, loads in ports, 2009

Transport mode	Index	Measure unit	Jan.-Dec.	December	Decrease, %, 2009. 01–12, compare to 2008.01–12	Increase, decrease %, 2009.12, compare to 2008.12	
			Thousand			2008.12	2009.11
<i>Railway transport</i>	Freight transported	t	42 668,6	4 220,4	-22,4	3,3	6,0
	Freight turnover	t- km	11 887 811	1 192 885	-19,4	7,9	6,4
<i>Klaipeda State Sea Port and Butinge terminal</i>	Freight overload	t	36 173,0	3 304,0	-7,1	10,9	-1,1
	Overloaded	t	21 508,8	2 114,4	-3,2	25,7	8,8
	Unloaded	t	14 664,3	1 189,6	-12,4	-8,4	-14,9
<i>Air ports</i>	Freight overloaded and unloaded	t	7,2	0,7	-34,0	-29,0	-23,2
<i>Lithuanian Air Company</i>	Freight transported	t	2,9	0,3	-30,4	0,5	-9,6
	Freight turnover	t-km	1 632	196	-63,4	-43,7	4,9
<i>Inland water transport</i>	Freight transported	t	908,5	33,1	-8,1	-6,5	1,6

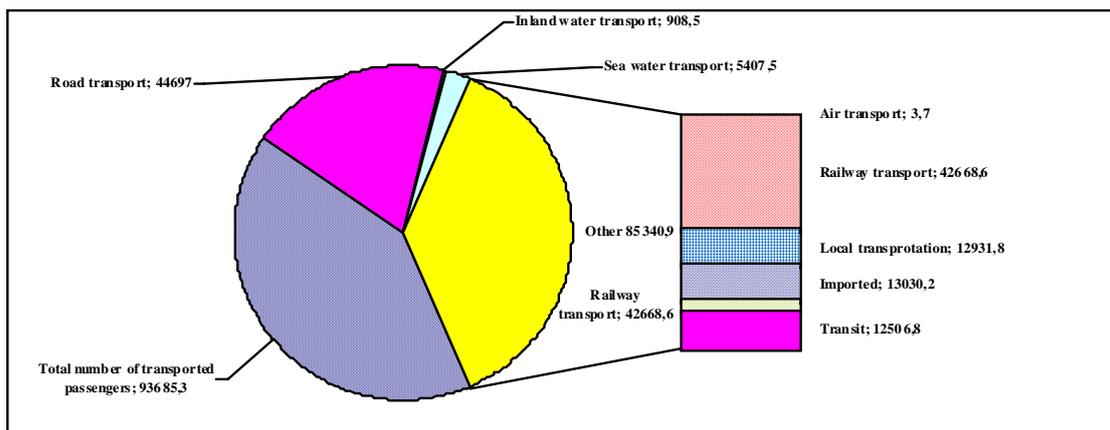
*Source: Lithuanian Statistics Department

JC “Lithuanian Railways” performs the basic passenger and freight transportations through the territory of the Republic of Lithuania. This company performs such activities as freight and passenger transportations, maintenance and development of technical infrastructure, traffic regulation, technical supervision and repair of rolling-stock and railway fleet and other related activities. This is one of the biggest company creating products, which can produce 1.4% of GDP during the period of economic boom.

Even in 2008, the beginning of crisis, this company earned about 1.6 bill. LTL, it was 14% more than in 2007, and the labour productivity increased about 11%. Freight transportations created about 86.1 % of total income. During 2009 transportation volumes decreased widely: freight transportation earned about 26.6% less than in 2008 though tariffs were not forced up. Passenger transportations created about 5.5% of total income. Since passenger volumes on local and international routes decreased, this activity created 3.9% less than in 2008. In order to compensate the lost income of transportation of preferential passengers and to indemnify the damages of passenger transportation on local routes governmental support about 5.0 millions LTL in 2009.

Basic activity earned the biggest part of income – 11,594 millions LTL in 2008 and 1,184 millions LTL in 2009. Financial, investment activities collected only small share of income. Other income collected from such activities as repair and technical supervision of rolling-stock, operations of locomotives and their crew in foreign countries, cleaning and storage of trains, other transportation services. These activities earned about 6.6% of total income in 2009 and it was 28,4% less than in 2008.

During 2009 about 42.7 millions tons of freight were transported by Lithuanian Railways and it was 22.4% less than in 2008 (about 55.0 millions tons). International freight transportations created about 29.7 millions tons and it was about 24.9% less than in 2008. Local freight transportations created about 12.9 millions tons and it was about 15.9% less than in 2008.



*Source: Lithuanian Statistics Department

Figure 2. Freight transportation by Lithuanian railway transport comparing with other transport modes. 2008–2009

The recovery of transport and storage sector connected to export-import activity observed at the beginning of 2010 as it was expected in providences of economic development. During January–April 2010 about 15.8 millions tons of freight were transported by Lithuanian railways, it was 21.5% more than during the same period 2009. During this period international freight transportations increased about 33.4% and it totally created about 12.1 millions tons. Local freight transportations decreased about 7.5% and it totally created about 3.7 millions tons.

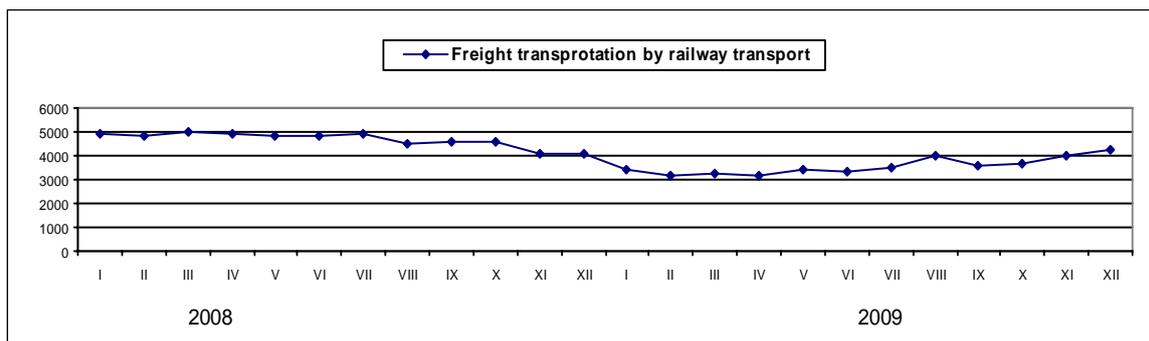


Figure 3. Freight transportation by railway transport in Lithuania. Distribution by months, 2008–2009

Freight transportation volumes and freight turnover depend on various factors such as volumes and structure of industrial and agricultural production, distribution of industrial forces and interregional connections, production supply, realization, organization and specification, quality of transportation planning, development of road infrastructure and freight distribution between various transport modes.

The structure of freight turnover has important influence on railway transport regarding configuration and truck load of rolling-stock fleet, average train weight, mechanization means of freight load, etc. Freight structure and transportation conditions have influence on cost and income calculation.

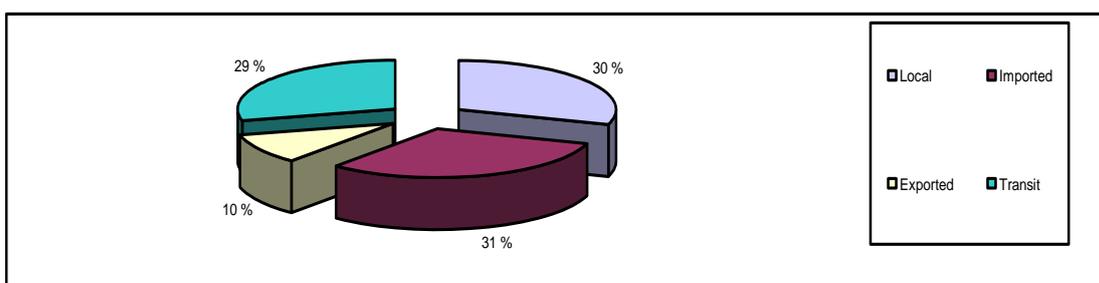


Figure 4. The structure of freight flows during 2009

During 2009 about 42.7 millions tons of freight were transported by Lithuanian Railways and it was 22.4% less than in 2008 (about 55,0 millions tons). The smallest share of total freight transportations was created by exported freights – 10% (about 4.2 millions tons), the biggest share – by imported freights – 31% (about 12.9 millions tons) and transit freights – 29% (about 12.5 millions tons).

5.2. The Trends of Lithuanian Railway Freight Transportation Activity

Basic freight volumes components and influencing factors can be determined as follows:

- **Local freight transportation.** Local freight market is formed by:
 - the largest local companies – basic costumers;
 - changing structure of production and goods;
 - distribution of freight transportations between various transport modes depending on convenient access to railway lines and terminals, price of services and transportation distance.

During 2009 local routes transported about 12.9 millions tons of freight and it was 15.9% less than in 2008 (about 15,4 millions tons). Freights transported by local routes created about 30% of total amount of freights transported by Lithuanian Railways and it was 2% more than in 2008. Mostly petroleum and its products were transported by local routes – about 44.2% (in 2008 – about 40%) of total freights. Mineral products, ore, cinders transportations decreased about 57.4%.

- **Freight export.** Freight export depends on:
 - potential and competitiveness of national industry;
 - a demand of exported production in foreign countries.

During 2009 about 4,2 mill tons of freight were exported and it was 29.3% less than in 2008 (5.9 millions tons). The biggest part of exported production (about 38.4%) consisted of petroleum and its products. The export of petroleum decreased about 0.7 million tons per year and it was 30% less than in 2008. The export of chemical and mineral fertilizers decreased about 53.4%; the export of wood, cork and their production decreased about 32.5%.

- **Freight import.** Freight import depends on:
 - local demand of imported goods;
 - purchasing power of consumers.

During 2009 about 13.0 millions tons of freight were imported and it was about 16.2% less than in 2008 (15.5 millions tons). Imported freights created the biggest share (about 31.0%) of total freights transported by Lithuanian railways and it was 3.0% more than in 2008. The biggest share of imported freights consists of chemical and mineral fertilizers and petroleum and its products (about 32.5%). Petroleum products were imported 17.0%, ferrous metals – 60.3 % and mineral products – 42.9% less than in 2008.

- **Freight transit.** Main freight transit directions are the following:
 - East-West link;
 - North-South link;
 - Economic dependence, geographical possibilities and political regulations of neighbouring countries to use Lithuanian transport infrastructure and services of logistics and transportation.

During 2009 about 12.5 millions tons of freight were transited and it was about 30.9% less than in 2008 (18.1 millions tons). Petroleum products composed more than a half of total transited freight (61.9%). Therefore transit or petroleum decreased about 14.9% (1.4 millions tons) and it was the base of decrease of total volumes of transited freights. About 6.2 millions tons of petroleum were transported to Kaliningrad and it was 19.5% less than in 2008 (about 7.7 millions tons).

- **Multimodal transportations.**

Increasing popularity of container and composite transportations all over the world has influence on increase of container volumes in Lithuania especially in Klaipeda State Sea port. For this reason railways, sea ports and load companies of Lithuania, Belarus and Ukraine implemented project of composite transportation train “Viking” in 2003. Train “Viking” run on the route Klaipeda–Odesa–Klaipeda, but freights can be transported from West and North Europe to Belarus, Ukraine and also Turkey, Georgia and other remote countries of Caucasus. During 2008 about 34.0 thousand TEU containers were transported by this train. In 2009 volumes of containers increased about 16.2% up to 39.5 thousand TEU despite of general economic recession.

- **Logistics centres.**

Developing intermodal transport in Vilnius (near marshalling-yard station in Vaidotai) and Kaunas, public logistics centres are being established. In order to use financial support of the EU Cohesion Fund necessary infrastructure will be created for these centres: modern intermodal surface

terminal unique in Baltic States and East Europe will be constructed, good conditions for the flotation of companies operating in spheres of transport, logistics and other activity related to freight transportations will be created. It is expected that this conception will stimulate commercial cooperation between various transport modes and therefore bigger volumes of freights will be transported by railway transport – more economic and ecologic transport mode.

5.3. Evaluation of Influence of Internal and External Factors

Internal Factors depends on initiatives and competence of JC “Lithuanian Railways” and can be defined as follows:

- 1) Development of the potential necessary to ensure freight transportation activity – sufficient rolling-stock fleet, capacity of railway infrastructure (lines, stations), enlargement of potentials of freight terminals.
- 2) Enlargement of efficiency of freight transportation activity (to minimize freight transportation costs, ensuring high quality of services in order to apply competitive tariffs).
- 3) Assurance of service quality meeting needs of customers, development of the scope of related services, enlargement of service availability (this will succeed constantly improving costumers’ satisfaction with service quality and price, developing the scope of necessary additional services, improving service availability).
- 4) Assurance of effective partnership with Klaipeda State Sea Port and load companies.

External factors have influence on intercourse and cooperation with foreign railways and other economic subjects participating in common logistics network ensuring permanent business intercourse and benevolent relations. The great role falls on effective cooperation of the Company with:

- Belarusian railways, which mostly are intermediate, link for freight transportations from CIS and Asian countries to Lithuania and also for local production transportations to CIS and Asia countries.
- Polish railways, which are intermediate, link for freight transportations on I Transport Corridor (Rail Baltica line).
- Kaliningrad railways, which work efficiency has influence on the efficiency of basic segment of freight transportations by Lithuanian Railways – freight transit to Kaliningrad direction.
- Latvian railways, which are important for the development of freight transportations on I Transport Corridor (Rail Baltica line).
- Expeditionary companies, which decisions usually have influence on freight transportation ways and directions.

6. Assumptions for the Growth of Freight Transportation by Railways

Assumptions for the growth of railway potential are as follows:

1. Technical improvement and modernization of railway infrastructure meeting AGC and AGTC requirements in regard to assuring occupational safety and environmental protection.
2. Integration into the Trans-European networks; implementing necessary junctions and avoiding narrow sites on the main I and IX railway corridors through the territory of Lithuania.
3. Renovation, modernization and development of rolling-stock and vehicle fleet; increasing their capacity and competitiveness.
4. Implementation of railway sector restructuring and personnel training to enable new activities of the company.
5. Implementation of the EU directives on railway activity and other legislation seeking to liberalize railways and enter into the European transport sector market.

Factors enabling the growth of rail freight flows are as follows:

1. The progress, potential and competitiveness of the Lithuanian economy, its ability to climb out of the current economic crisis and its continuing development.
2. The capability of separate economic sectors and big organisations to perform in market economic conditions despite the economic reforms, company restructuring, changes in the lifestyle and variations in the international market affecting results.
3. Consolidation of human capital in the context of socio-economic challenges.

4. Liberalization of the business, industrial and service sectors, consolidation of social structures, harmonization of business activity and social indicators, implementing the Lisbon Strategy and policy objectives.
5. Opening of industrial and consumer markets, opportunities for qualitative and quantitative development in the EU countries, opportunities to develop international trade and to integrate into the global economy.
6. Implementation of new lifestyle models and new conceptions of social values, promoting good practice in the social sphere while meeting the new demands and expectations of the modern population, which are the result of integration into the western market economic system.
7. Promote new economic relations with redeveloping countries (Russia, Ukraine, Moldavia, Kazakhstan, Uzbekistan, and other Caucasus and CIS countries), whose goods and freight flows are often transported through the territory of Lithuania. This could be the basis for further development.
8. Integration of eastern neighbouring countries into the World Trade Organization must be the starting point for international cooperation in the railway sector. This will include agreements about tariffs. A recovery in consumer demand and purchasing power is likely to stimulate Lithuanian exports.
9. Governmental targets and efforts to initiate economic cooperation, participate in joint projects with remote Asian countries and unite markets create the economic situation in which the prospects for international trade and transportation can be viewed.

Since potential of JC “Lithuanian Railways” to transport freight volumes was sufficient during pre-crisis economic development, it is predicted further gradually modernize and develop this potential according to increasing demand. *Perspective development of freight volumes* is motivated by 4 basic providences:

- 1) Quantitative increase of freight flows in volumes of positive pre-crisis development and further quantitative increase due to economic growth of Lithuania and neighbouring countries are possible and expected.
- 2) Due to active international marketing of the Company and qualitative changes in economies of countries and freight formations the increase of freight volumes on railways is expected together with redistribution of sphere of influence in the market and activation of transportation development increasing competitiveness of separate economic blocks.
- 3) The increase of freight volumes for railway transport due to faster result of their transportations comparing to transportations by marine transport.
- 4) Retrieval of a share of freights transported by road transport due to faster border crossing transporting freights through the territories of several countries and also due to overloaded road transport highways and difficult traffic conditions including seasonal and climatic disturbances on long-distance trips.

In any case the success of implementation of Companies’ strategy mostly will depend on marketing and organizational efforts. The potential will depend on investment programmes and projects for the modernization of railway transport and the support of its’ competitiveness.

7. Prognostication and Projections of Freight Transportation Volume

The analysis of markets of interest spheres is carried out methodologically details:

- from one hand, the analysis of main markets of countries situated on basic directions of Trans-European corridors and international trade opportunities, transport relations realizing by railway transport;
- from other hand, the analysis of traditional and new interests of other countries to use Lithuanian railways, new transport projects usually depend on political decisions of countries belonging to different economic blocks, quickness of market development, participation in international organizations, stability of local political powers and other members of macro-economy.

Therefore detailed analysis of opportunities of post-crisis recovery of markets of neighbouring and remote countries and economic growth was carried out. Also the evaluation of increase of interest of remote countries and opportunities of their geographic development and also influence on global and international transport development was carried out.

Analysed potential of economic markets on I and IX railway Trans-European corridors is sufficient base for prognostication of existing freight flows through the territory of Lithuania to and from countries participating in transportations:

- **from a short and middle –term perspective** – quantitative increase of freight flows due to better conditions of the markets and their development influenced by recovered and increasing international trade;
- **from a middle and long-term perspective** –
 - qualitative changes of freight structure due to the restructurization of economics of neighbouring and remote countries or new production in primary industry, agriculture and services.
 - qualitative or technologic changes of freight structure due to the implementation of modernization projects of neighbouring and remote countries and the development of potentials of railway operators, the implementation of multimodal technologies.
- **from whole perspective** –
 - the development of possibilities of changing structure and transportation of increasing freight volumes due to the development of load capacity in Klaipeda and other possible sea ports of Lithuania;
 - the development of possibilities of transportation of increasing freight volumes due to the development of infrastructure and capacity in logistics centres of Kaunas, Klaipeda and Vilnius (change of transport mode and technologies).

Three scenarios of perspective projections were defined after the evaluation of analysed assumptions and providences, internal and external factors and their possible influence. Basic scenario can be characterized by features of moderate development and results of activity of Railway Company:

1. Infrastructure projects supported by the EU financial funds are implemented progressively;
2. Railway transport will strengthen its positions in local transportations due to the implementation of marketing means;
3. The rolling-stock will be modernized progressively;
4. Investment for the increase of traffic speed and safety will be moderate and progressive;
5. Rail Baltica project will be implemented without expected high speed;
6. New and larger freight volumes will be formed implementing Rail Baltica project only to Kaunas terminal;
7. The importance of railway transport and its' share in general freight transportations and not only on Trans-European corridors will increase due to the lack of capacity of road transport highways;
8. Development and modernization of Klaipeda State Sea port will have moderate influence on increase of railway freight transportations, improvement of transportation technologies, modernization of its' potential;
9. Due to the electrification of main railway lines, traffic speed will be higher (but will not reach strategic speed) and will improve links with railway networks of other countries increasing the attraction of Lithuanian railway services;
10. Freight flows formed by other countries increasing freight transit and import and accepting export from Lithuania will have positive development. Their influence will depend on specific opportunities of market development and acceleration.

The prognostications of main freight flows transported through the territory of Lithuania calculated according definite methodology are optimistic and present recovery and development of economies of Lithuania and neighbouring countries.

The scale of production will expand due to new wider markets and the influence global processes and international transportation. Table 4 shows the forecast for common freight flows on Trans-European railway corridors up to the year 2040 [11].

Table 4. Forecast of common freight flows on Trans-European railway corridors till the year 2040, mill LTL

Forecast of freight flows	2010	2015	2020	2025	2030	2035	2040
IX railway corridor	28,2	35,0	42,4	48,0	55,4	62,7	66,7
I railway corridor	2,3	3,1	5,6	7,1	9,0	11,5	13,4
Inland transportation	12,3	15,8	20,6	26,8	34,5	47,7	12,3

Conclusions

1. The analysis of the development of Lithuanian Railway freight and passenger transportation activities, the development and management of its infrastructure and other aspects shows that the company is in a position to develop its potential during the period of restructuring.
2. Proceeding with the key modernization programmes and investment projects of the Company there are priorities of national significance, and form a part of the development of the EU transport system. The implementation and modernization of infrastructure, the renovation and modernization of the traction and rolling-stock fleet, improvements in traffic control and assurances of traffic safety, and the installation of new technologies in the area of property and management are important steps which receive strategic investment.
3. In order to analyse long-term development strategies for the national economy and in the social sphere, long-term development strategies for the transport sector, strategies and forecasts of railway transport development including strategic objectives and providences are applied. However, forecasts must be adjusted due to the economic crisis and its effects, which must be considered in new projections of macroeconomic indicators.
4. Since the economic crisis is global, embracing neighbouring and remote countries, and its effects on transporting freight and passengers within the territory of Lithuania are not known, it is necessary to adjust existing forecasts of railway transport activity for the prospective period after 5 years.
5. The usual EU methodology was used to forecast macroeconomic indicators and rail freight and passenger volumes up to the year 2040. Optimistic (successful), basic (realistic) and pessimistic (minimalistic due to failures in the progress) scenarios were presented. The realistic scenario is expected to show variations between the extremes of the optimistic and pessimistic scenarios of economic development.
6. Assumptions of key internal factors are as follows: 1) the readiness of the company to develop its activity potential; 2) positive and developing activity of local consumer market, increases in exports; 3) increases in international freight volumes during the period of economic growth; 4) the recovery of economic relations with foreign countries; 5) focusing on recovery and the stimulation of passenger transportation activity.
7. Assumptions of key external factors are as follows: 1) global climb out of the economic crisis; 2) recovery of former routes and volumes of freight transportation; 3) qualitative changes in separate countries' economies and in the economies of groups of countries, changes in the structure of goods and freight; 4) reforms of influence zones, penetration into new markets on a regional, continental and global scale; 5) increase in the competitiveness of Asian, European and American countries and groups of countries; 6) a positive balance in the development of the global business environment (information technologies, financial systems, business relations and organization) and coordination opportunities with countries that are members of separate economic unions.
8. Forecasts of freight transportation on Lithuanian railways up to the year 2040 have been made for lines of 1 and 9 corridors, including freight volumes for separate countries and groups of countries, which transport export and import freight and transit freight on the territory of Lithuania. These forecasts have been made in relation to local market, international and regional rail freight transportation, and detailed for separate sectors (hubs) and opposite directions of movement.

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