

Reflections on the Construction of a New Railway in the Baltic States

Lembo Tanning

Lembo Tanning, PhD Tallinn, Estonia

**Corresponding Author: Lembo Tanning, PhD Tallinn, Estonia*

ABSTRACT

Will there be production capacity, the necessary workforce, experience and knowledge to build a new railway along with money? Which mode of transport is more efficient for freight? When the cars are so easy to measure, then rail transport is much more complicated. Here is the deciding distance and also time, must be taken into account also the weight and dimensions of the goods, the location of the sender and the receiver. The decisive factor, however, is still money, the total expenditure. How is it better to transport goods from the Baltics to Western Europe, either by car or by train? Regarding the European Union's (EU) major financing opportunities, there is a chance to build a railway motorway. Next, we're doing SWOT analysis for construction capacity and railway key indicators, while also taking into account subjective factors. The goal of the publication is to analyse the Baltic countries construction capacity and rail freight transport key indicators, but also the contradictions of the Rail Baltica (RB) project. We do a SWOT analysis of the RB. In recent years, volumes of rail freight traffic have shrunk considerably, especially in Latvia and Estonia. The trend in Europe is that rail freight is reduced almost everywhere. It should also, in the context of the UK leaving from the EU its budget is significantly reduced, which was to be the majority of the RB construction expenses. The problem is therefore whether it is a large, economically viable project, not to mention the environmental damage and social sphere. The RB is not an economically and financially reasonable project, but only a political decision.

Keywords: *Construction of a new railway, SWOT analysis for construction capacity and railway goods transport, Baltic States, Economy, Rail Baltica*

INTRODUCTION

The infrastructure is a basic facilities and systems serving country, city or region, including services and facilities necessary for its economy to function.

Construction is process of creation and construction building infrastructure or facility. Distribution of construction (F) divided by section: construction of buildings (F41), civil engineering (F42) and specialised construction activities (F43). In civil engineering (F42) belongs construction of roads and railways (F421), more specifically construction of railways and underground railways (F4212).[1;0]

The transport sector plays a central role in a modern economy. Transport is the movement of people, animals and goods from one place to another. The industry that the business of providing transport equipment, transport services or transport are important in most national economies and called the transport industries. Transport is important since it enables trade between people, which in turn establishes civilizations.

An efficient and well-functioning passenger and freight transport system is vital for the EU

enterprises and inhabitants. The EU's transport policy aims to foster clean, safe and efficient travel throughout Europe, underpinning the internal market for goods and the right of citizens to travel freely throughout the EU. [1 - 2]

Transport economic sector has a major impact on almost all of the rest of the industry and service sectors, and at the same time, these activities can severely affect transport. State transportation sector, thereby affecting both the local as well as other countries in the economic situation. Good level of transport system to the needs of today's life and an important part of the business environment. The existence of a proper transport promotes local entrepreneurship, as well as the increase of competitiveness of the national economy in general. Modes of transport include air, rail, road, water, cable, pipeline and space. Separate deal for freight. Are analyses the international, domestic and transit transports

METHODOLOGY

Here's an assessment, we will analyse country comparison on the basis of construction, GDP,

foreign trade and others indicators of economy. These data cover the *railway transport of goods* which relate in the Member States on its national territory. They may exclude railway undertakings which operate entirely or mainly within industrial and similar installations, including harbours. They are not covered in these statistics. [1 - 2]. The collection is based on the Regulation (EC) 91/2003 of the European Parliament and of the Council of 16 December 2002 on Rail transport statistics. [3]

The methodology is based on international organizations (Eurostat [3 - 4], CIA [5], and the author books [1; 6 - 7]), but also partly the authors of the methodology used in previous publications [8 - 18]. The techniques definitions used by the authors have been specified in Eurostat [3 - 4]. Freight saw both in tonnes and tonne-kilometres (tkm). All figures are the author illustrations.

THEORETICAL BASES

The theoretical bases have been brought on international organizations [3 - 5], in more detail of the author books [1; 6 - 7] and earlier publications [8 - 18].

First, look at the major EU and also the Baltic States **gross domestic product (GDP)**, whose economies depend on the economy of many small countries and the transport of goods by rail. Their analysis is in other publications [8 - 10]. In global economy the EU's major powers states have lost their leading position no longer to the United States and Japan, but also to India, Russia, Brazil and Indonesia. Think about, whether a fragmented Europe can stand alone against the new global economic powers? Presently the UK economy (GDP) is on the ninth place in the world. Spain was in 2017 17th. [8 - 9, 20 - 21] Largest GDP by current and by PPS prices was Germany. [21] Germany is by GDP (PPS) 1.5 times stronger than the UK. The UK percentage of EU28 total was 13.8%. In 2006 was GDP of Finland 149,791 and of Poland 478,054 billion PPS, but in 2017 respectively 180,113 and 804,378 billion. In 2017 were GDP by PPS in Estonia 31,181, in Latvia 39,214 and in Lithuania 66,534 billion PPS. Baltic States GDP by PPS in the 10 years increased respectively 1.34; 1.28 and 1.41 times, which means that there is a need for freight in this regard. Poland, the increase was as high as 1.60 and of high economic level of Finland 1.17 times.

Level of GDP Per Capita

In the case of the EU's big powers, UK **GDP per capita** was the largest in the years 2005 -

2008 and in 2015. In other years, Germany was superior to the great powers. In 2016 GDP per capita of UK (36,500) was larger than France, Italy and Spain, but less than Germany, other Central European and Nordic countries; 1.6 times smaller than Ireland. The average of the new EU member states is lower than the EU-28. In 2017 UK GDP per capita was barely larger than France. GDP per capita of the UK decreased compared to 2015 by 4800 euros or 12%. [19; 21]

If 2008 was the *current prices* euro per capita of Estonia 40.5% in the EU-28, then in 2017 it was already 58.5% and in the euro area (19) 53.5%. In 2017 were its shares in Latvia 46.5%, in Lithuania 49.5% and in Poland 40.5%. [21]

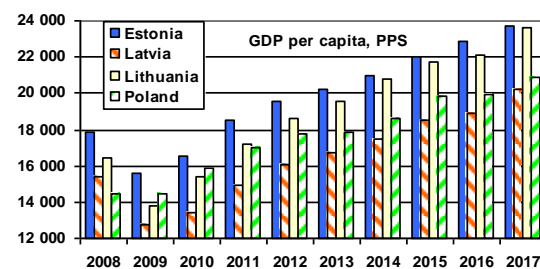


Fig1. GDP PPS per capita [23]

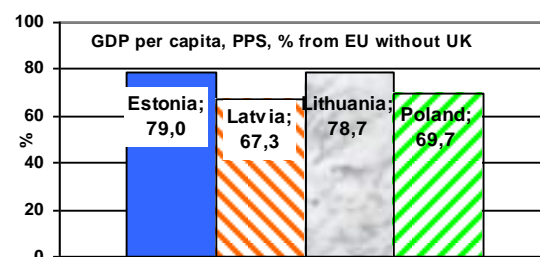


Fig2. Percentage of EU, 2017 [23]

From the EU in 2016 by PPS were biggest in Luxembourg (75,100) and Ireland (53,300), Germany was 36,000 PPS.

From Estonia (21,900) and Lithuania (22,000) are still poorer: Poland (19,900); Hungary (19,700); Croatia (17,500); Romania (17,000); Bulgaria (14,200) and of EU (15) Greece (19,700).

If in 2008 was the per capita (PPS) of Estonia 69.4% in the EU (without UK), then in 2016 it was already 76.0% and in the euro area (19) 70.6%. The shares by PPS of Latvia were 65.3%, of Lithuania 76.4% and of Poland 69.1% in the EU (without UK). In 2017, this share increased further, respectively to 79.0%, to 67.3%, to 78.7% and to 69.7%. [22] This level also depends of the EU subsidies. As the level of Estonia and Lithuania is already above 75%

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of the EU average, allocations to the new EU Budget will come with larger cuts than Latvia and Poland.

Next look big EU countries construction, whose economies depend on the economy of many small countries and construction of railways.

Construction of Countries

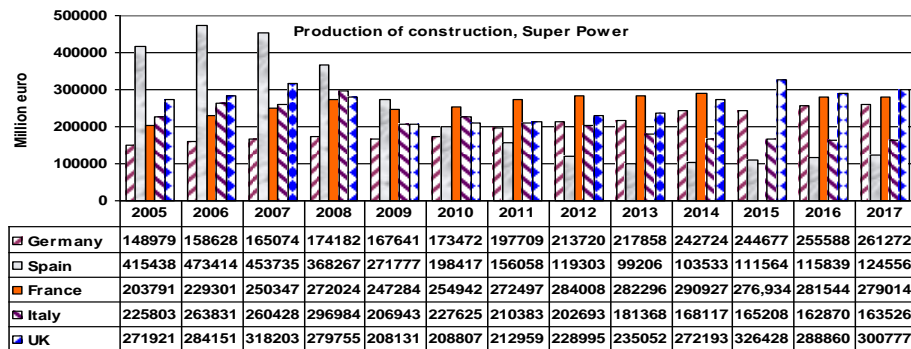


Fig3a. Production value, million euro. Construction

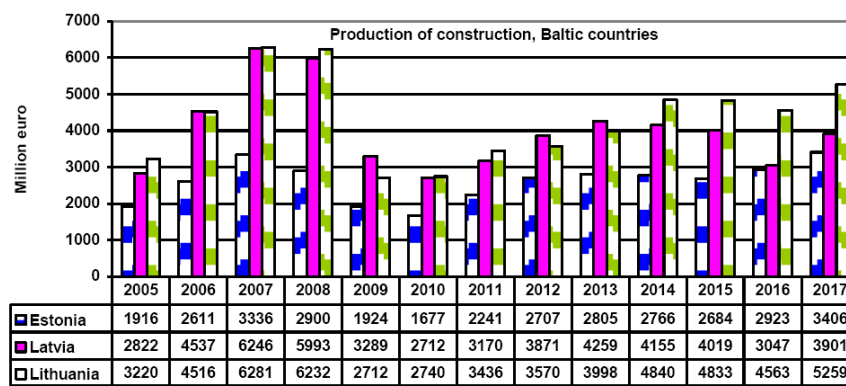


Fig3b. Production value, million euro. Construction

Total production of construction the EU was in 2008 1,947 and in 2016 1,572 billion euro, hereof were in UK 17.6%, France 17.2% and Germany 15.6% or more than half. The share of Baltic countries was 0.64% and of Finland 2.0%. In 2017 Estonia exceeded the 2007 level, but in Latvia of this was 62.5% and in Lithuania 83.7%. Total gross operating surplus of construction the EU was in 2007 257 and in 2016 157 billion euro, hereof were in UK 33.4%, Germany 16.4% and Italy 10.2% or

more than half. The share of Baltic countries was 0.49% and of Finland 1.6%. Total value added at factor cost of construction the EU was in 2007 625 and in 2016 540 billion euro, hereof were in UK 20.7%, Germany 18.8% and France 10.2% or more than half. The share of Baltic countries was 0.94% and of Finland 2.0%. These were the key indicators of the entire construction, but let's look at the *construction of railways and underground railways* indicators.

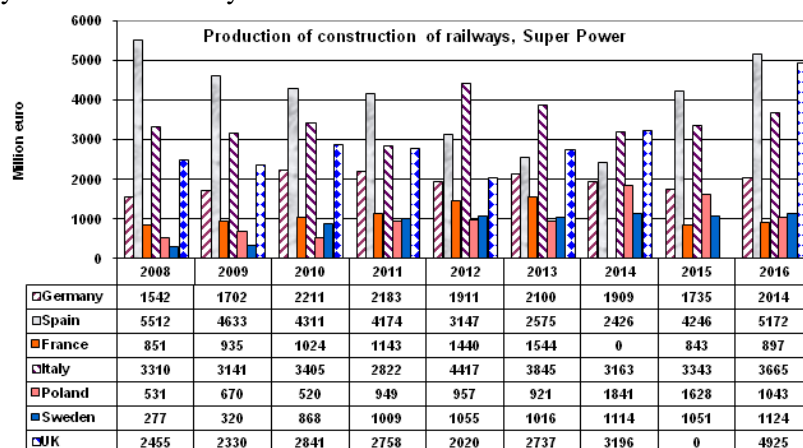


Fig4a. Production value of railways and underground railways, million euro. Construction

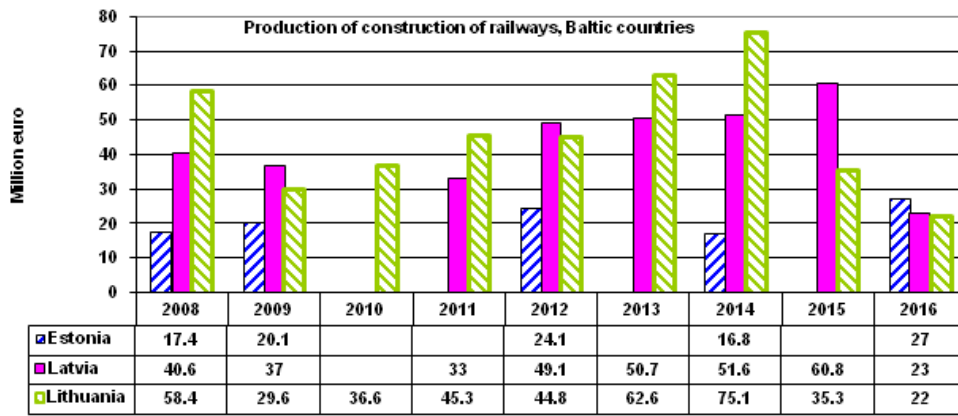


Fig4b. Production value of railways and underground railways, million euro. Construction

Total production value of construction of railways and underground railways EU was in 2015 25,213 and in 2016 25,032 million euro, hereof were in Spain 20.7%, UK 19.7%, Germany 14.6%, Sweden 4.5% and Poland 4.2%. Over a billion euros, it was six countries. The share of Baltic countries was 0.29% and of Finland 1.3%.

Total enterprises number of construction of railways and underground railways EU was in 2016 4,691, hereof were in UK 2,504, Poland 430, Spain 230, Germany 219, Italy 182 and Hungary 154. The share of In Baltic countries were 40 and of Finland 45. Total value added at factor cost of EU was in 2007 625 and in 2016 540 billion euro, hereof was in UK 20.7%, Germany 18.8%, Italy 14.6% and France 10.2% or more than half. The share of Baltic countries was 0.94% and of Finland 2.0%.

Labor Productivity of Construction Companies

Pre-crisis level exceeded in 2012 only Belgium, Estonia, Luxembourg, Greece, Finland, Sweden, Norway and Switzerland. Germany although exceeded level of 2008, but in 2012 fall on the same level.

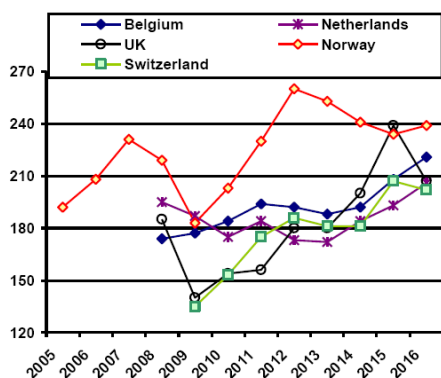


Fig5a. Turnover per person employed of European countries, thousand euros. Construction [20]

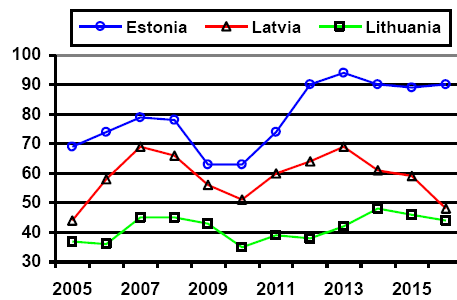


Fig5b. Turnover per person employed of Baltic States, thousand euros. Construction [20]

Turnover per person employed was the highest in EFTA countries Norway (239.2 thousand euros) and Switzerland (202.0).

From EU countries were greater in 2016 of United Kingdom (207.3), Netherlands (206.0), Denmark (196.3), Sweden (183.8), Luxembourg (174.5), Finland (170.4), Ireland (161.4) and Austria (160.1). Germany was only 110.1 thousand and Italy 120.8 thousand euros. EU was in 2016 129 thousand euros. Grow was from 2011 10 thousand euros.

In new EU Member States countries was it greater in 2016 from CEE-8 countries Slovenia (70.4) and from Baltic States Estonia (90.3). Poland was 66.2 thousand. Turnover per person zRomania (42.9), Lithuania (44.1) and Latvia (47.8 thousand euros).

Apparent labour productivity (Gross value added per person employed) was the highest in EFTA countries Norway (75.3) and Switzerland (91.4). From EU countries was greater in 2016 of United Kingdom (80.2), Denmark (66.2), Sweden (57.0), Netherlands (61.8), Austria (57.4), Ireland (57.5), Finland (55.0) and Luxembourg (60.0).

In new EU Member countries was it greater in 2016 from CEE-8 Slovenia (20.5) and from Baltic States Estonia (22.2). GVA was lower in Bulgaria (9.7), Romania (11.3) and Latvia (11.7).

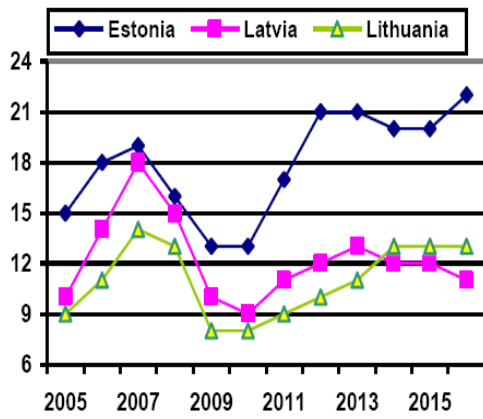


Fig6. Apparent labour productivity of Baltic States, thousand euros. Construction [20]

Gross value added per employee was the highest in EFTA countries Norway (82.5). From EU countries was greater in 2016 of United Kingdom (85.6), Denmark (73.1), Sweden (69.2), Netherlands (90.5), Austria (63.7), Ireland (81.5), Finland (63.7) and Luxembourg (60.7). EU was 54 thousand euro. In new EU Member States was it greater in 2016 from CEE-8 Slovenia (25.5) and from Baltic States Estonia (23.6). GVA was lower in Bulgaria (10.7), Romania (11.7) and Latvia (13.2).

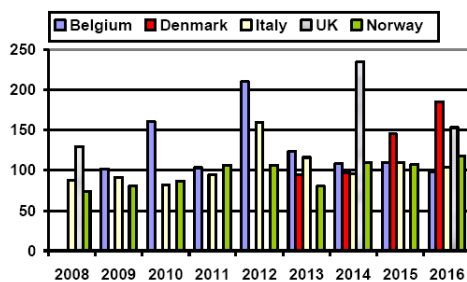


Fig7a. Gross value added per employee, thousand euro. Construction of railways and underground railways [20]

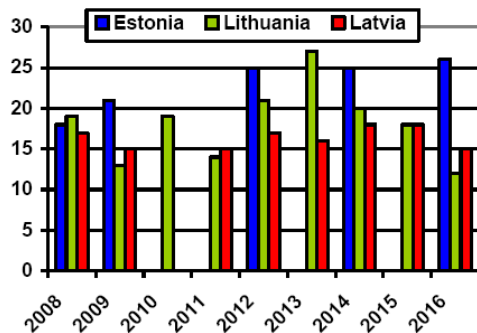


Fig7b. Gross value added per employee, thousand euro. Construction of railways and underground railways [20]

Gross value added per employee of construction of railways and underground

railways was the highest in EFTA countries Norway (117.1). From EU countries was greater in 2016 of Denmark (189.9), United Kingdom (153.3), Belgium (98.1), Sweden (81.3), Austria (86.0) and Finland (73.4). EU was 73 thousand euro. In 2016 Greece was 213.2 and Germany 70.9 thousand euro. In new EU Member States was it greater from CEE-8 countries Slovenia (46.5) and from Baltic States Estonia (25.7). GVA was lower in Bulgaria (18.5), Romania (16.5), Latvia (15.3) and Lithuania (11.9).

Apparent labour productivity (Gross value added per person employed) of construction of railways and underground railways was the highest in Norway (116.6). From EU countries was greater in 2016 of Denmark (185.4), United Kingdom (150.4), Belgium (92.3), Sweden (73.1), Austria (85.8) and Finland (72.7). EU was 72 thousand euro. In 2016 Greece was 209.1 and Germany 70.3 thousand euro. In new EU Member States was it greater from CEE-8 Slovenia (45.1) and from Baltic Estonia (25.4). GVA was lower in Bulgaria (18.1), Romania (16.5), Latvia (15.1) and Lithuania (11.9). The differences between 'per employee' and 'per employed' are very small. Also, in CEE-8 group of countries is large, nearly double the differences. However, all of these countries, the level is much lower than in Western European countries.

External Trade

Let's look at the volume of Baltic foreign trade and how much of it is sold to Western Europe. Is there anything to be sent to the train very quickly?

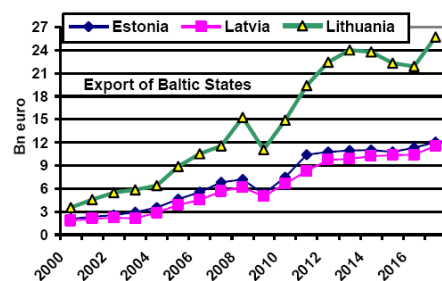


Fig8. Exports of goods, current prices, billion euros [22]

Exports of goods in 2000 - 2017 were grows in Estonia 5.7, in Latvia 6.3, in Lithuania 7.3, and in Poland 5.1 times. Better Finnish years were before the crisis, in 2007 and 2008. On 2017 were exports of Estonia 12.0, Latvia 11.5, Lithuania 25.7, Poland 201.6 and Finland 59.7 billion euro.

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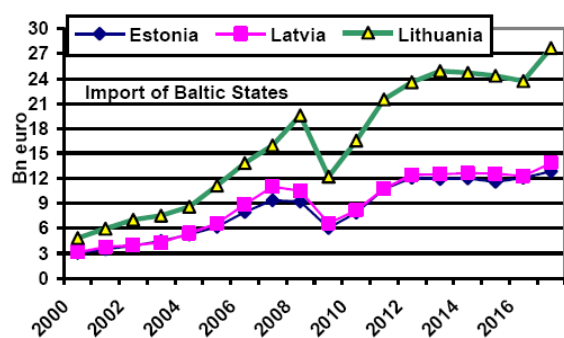


Fig9. Imports of goods, current prices, billion euros [22]

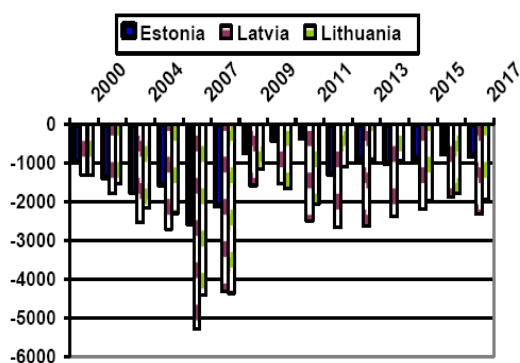


Fig10. Trade balance of goods of Baltic States, million euros [22]

Imports of goods in 2000 - 2017 were growing in Estonia 4.2, in Latvia 4.5, in Lithuania 5.8, and in Poland 3.8 times. Better Finnish years

Table1. Railway transport - Goods transported, thousands of tonnes [1]

	2005	2007	2009	2013	2016
Czech R	85,613	99,777	76,715	83,957	98,034
Denmark	7,706	6,901	6,163	7,956	9,252
Germany	317,294	361,116	312,087	373,738	363,512
France	107,532	111,214	86,126	88,989	89,107
Italy	89,755	105,314	76,336	87,960	92,949
Austria	101,829	115,526	98,887	95,449	99,784
Poland	269,553	245,307	200,819	232,596	222,523
Sweden	63,198	67,809	56,466	67,047	67,479
UK	103,263	104,383	87,666	117,769	78,549

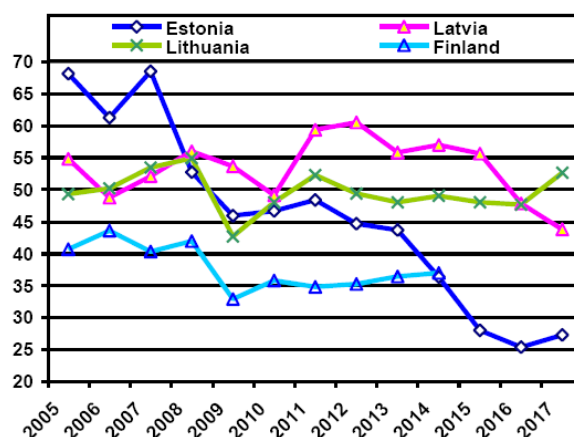


Fig11. Baltic Sea countries railway transport of goods

were also before the crisis, in 2007 and 2008. On 2017 were imports of Estonia 12.8, Latvia 13.9, Lithuania 27.7, Poland 200.5 and Finland.

On 2017 were external balance of goods in Estonia -816; Latvia -2,308; Lithuania -1,959; Poland +1,058 and Finland +1,786 million euros. A negative trade balance (exports – imports) means a cash outflow from a country. It has always been negatives for all the Baltic States - the money flows from the country from with trade and it has decreased in recent years. Finland has the opposite, and Poland is also positive for the last three years. At the same time, their exports grew faster than imports. The trade balance in Latvia and Lithuania from 2007 to 2008 was more than four billion euros. [22; 23]

Trade with countries with a negative trade balance is a debt for something. Could it be time to say: pay off old debts before you get new goods! Will the freight wagons stand empty?

Railway Transport of Goods

Freight by analyse tons and ton-kilometers of the Baltic Sea countries without Sweden. Freight is the main source of income for the railways. Here, in addition to the Baltic Sea countries, are listed the EU countries with larger volumes freight.

Table2. Railway transport of goods, million tonne-kilometre (tkm) [1]

	2005	2007	2009	2013	2016
Czech R	14,866	16,304	12,791	13,965	15,619
Denmark	1,976	1,779	1,700	2,449	2,575
Germany	95,420	114,615	95,834	112,613	116,164
France	40,701	42,612	32,129	32,230	32,569
Italy	22,761	25,285	17,791	19,037	22,712
Austria	18,957	21,371	17,767	19,278	20,856
Poland	49,972	54,253	43,445	50,881	50,650
Sweden	21,675	23,250	20,389	20,970	21,406
UK	21,427	21,265	19,171	22,401	17,053

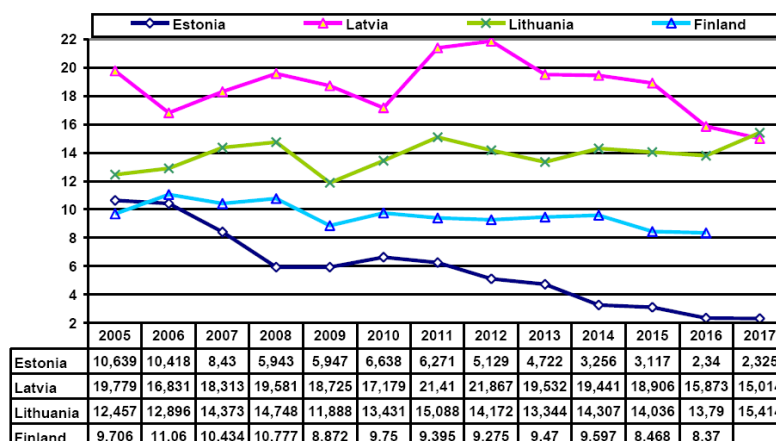


Fig12. Baltic Sea countries freight by railway, billion tkm (tonne-kilometre) [1]

Here, in addition to the Baltic Sea countries are listed countries with larger volumes freight by tkm. The largest are Germany and Poland. The largest freight country in the Baltic region Latvia was by ton-km 7.7 times smaller than Germany and 3.4 times smaller than Poland. Since Estonia is in turn 6.5 times smaller than Latvia and 5.9 times smaller than Lithuania, then Estonia's right to vote should be the smallest. The big problem of European railway transport of goods: Estonia great fall (!), by tonnes 2.7 times and by ton-km 4.6 times.

In Latvia period 2012 – 2017 fall freight by tonnes 1.384 times (27.7%) and by ton-km 1.456 times (31.3%) or nearly a third. Poland by tonnes decreased 1.2 times or 47 million tonnes and by ton-km 3.6 bn. Finland in 2008 = 41,937, but in 2015 = 33,392 and in 2016 = 36,162 thousand tonnes. Since 2013 has been steadily decreasing freight railways in Germany - 10.2 million tons.

However, by ton-km is stabilized. In France, Italy and, in particular, the UK has also fallen from 2013 to over 39 million tonnes or 1.5 times. The trend in Europe is that rail freight is reduced almost everywhere. Latvia, as well as of Estonia, decline is related to West sanctions against Russia, with a significant decrease in shipping with Russia.

Project Rail Baltica

Rail Baltica (RB) is a railway infrastructure project to link Finland, Estonia, Latvia, Lithuania

and Poland with a European standard gauge (1435 mm) rail line, providing passenger and freight service between the countries and improving rail connections between Central and Northern Europe. It will connect Estonia with Central and Western Europe and its neighbours. RB is one of the priority projects of the EU: Trans-European Transport Networks. RB in three Baltic States will be built as a new, fast conventional double-track electrified and ERTMS-equipped railway line with maximum design speed are 249 km/h for passenger trains and 120 km/h for freight trains.

The length of the railway between Tallinn and Warsaw will be at least 950 km. Total length of the Baltic railway part is 870 km.

In addition, it is planned to build an underwater railway tunnel between Tallinn and Helsinki. The project "Rail Baltica-2" is under construction, which provides for laying by 2024-2030 speed European gauge directly (and not by the old wide track) from northern Italy to Tallinn. Negative impact on the project implementation was significantly reduced passenger traffic on the railway transport, and increase - by road and air.

On January 31, 2017, the Prime Ministers of the three Baltic States signed the international agreement "Rail Baltica", which fixed the

obligations of the states that are necessary for the establishment of a rail link with the Central Europe through the Baltic States in a document of law. The agreement is one of the prerequisites for the construction of the RB railway connection. Its aim is, inter alia, to increase the mutual trust of the Contracting Parties to the RB on the establishment of a railway connection.

The agreement defined the general technical parameters of RB as well as the route and deadline for setting up. [24 - 26]

The construction of the RB infrastructure is planned to start in 2019 and should be completed in 2026. [24]

What Will be Transported?

How many people and of goods will be transported on the railway? According to the forecasts prepared in the launch stage of the project, the railway should be self-sufficient if 9 million tons of goods are serviced over the entire length of the route every year and a total of ca 3,000 people travel by train e.g. between Tallinn and Riga every day. Finnish companies are already interested in creating warehouse complexes and factories in Estonia if it becomes possible to

transport the goods to Europe via railway. [24 - 26]

The big problem of European railway transport of goods: Estonia great fall (!), by tonnes 2.7 times and by ton-km 4.6 times. [1; 27]

In Latvia on period 2012 – 2017 fall freight by tonnes 1.384 times and by ton-km 1.456 times [28].

Mainly used in Latvia international rail freight transport for import, in 2017 freight 2998 thousand tons [29]. Cargo turnover by road grew slowly to 15 bn tkm [30]. The same trend is in Estonia: international road freight transport grows and freight rail traffic decreases [31].

In international freight transport contracts deadlines are important, non-compliance with them will bring great contractual penalties to the exporter.

With road transport, it is easy to ensure. However, there is no rail transport, because it is not certain, when the cargo is to be transported from the railway terminal. In particular, in small quantities, it is necessary to wait for the wagon to be full and then travel to the required place.

Table3. Goods transport by road [33]

Thousand tonnes (t)

	2006	2009	2013	2015	2017
Ger	2,919,819	2,769,201	2,938,702	3,035,329	3,161,837
Est	33,780	30,088	31,080	28,162	28,969
Lat	54,640	37,819	60,610	62,569	68,013
Lit	56,026	44,697	52,346	58,601	76,980
Pol	897,414	1,170,478	1,300,608	1,264,960	1,501,811
Fin	396,800	350,588	274,637	271,912	280,744

Million tonne-kilometre (tkm)

	2006	2009	2013	2015	2017
Germany	330,016	307,547	305,744	314,816	313,149
Estonia	5,548	5,340	5,986	6,263	6,189
Latvia	10,753	8,115	12,816	14,690	14,972
Lithuania	18,134	17,757	26,338	26,485	39,099
Poland	128,315	180,742	247,594	260,713	335,220
Finland	29,715	27,805	24,429	24,488	27,966

Goods transport by road in tonnes of EU-28 decreased until 2013 and has continued to increase steadily.

The share of the European economy leader Germany in the EU-28 was 22%. Basically, it was the same trend as the EU-28, with 2010 - 2017, growth has been 427.232 thousand tonnes, or a sixth (15.6%). Based on this analysis of the Baltic Sea countries Latvia, Lithuania and Poland, were the same trends. Goods transport by road in tkm of EU-28 was the same trend as

in tonnes. Strongly it has grown by 2006 - 2017 in Poland (2.6 times), by 2009 – 2017 in Estonia (16%), in Latvia (1.85 times) and in Lithuania (2.2 times).

In Finland, it has been relatively stable, such as trade with Russia. In conclusion, the road transport in the new EU Member States is progressing well, thanks to the EU funds that allowed the modernization of road infrastructure.

Table4. Cargo traffic and cargo turnover by mode of transport of Latvia [27]

	Cargo traffic by mode of transport (thousand tons)				Cargo turnover by mode of transport (mln tkm)			
	Total	Rail	Road	Air	Total	Rail	Road	Air
2011	113 334	59 385	53 936	13	33 554	21 410	12 131	13
2012	113 241	60 601	52 621	19	34 058	21 867	12 178	13
2013	116 454	55 831	60 609	14	32 359	19 532	12 816	11
2014	119 293	57 039	62 239	15	33 124	19 441	13 670	13
2015	118 227	55 645	62 569	13	33 605	18 906	14 690	9
2016	111 220	47 819	63 389	12	30 111	15 873	14 227	11
2017	111 811	43 785	68 012	14	29 999	15 014	14 972	13

Table5. International rail freight transport by country, thousand tons of Latvia [29]

		2010	2011	2012	2013	2014	2015	2016	2017
Export freight transport	Total	3 206.4	4 931.9	4 886.2	4 356.4	4 520.9	2 848.9	2 383.5	1 838.6
	Belarus	407.1	493.6	332.7	305.4	397.8	110.0	103.5	173.4
	Estonia	1 032.7	1 012.4	856.6	1 619.0	1 705.3	459.4	223.2	94.3
	Kazakhstan	219.9	304.4	305.4	294.5	288.2	238.4	161.4	137.6
	Russia	902.7	2 127.8	2 187.8	1 268.3	1 296.9	1 062.0	893.7	1 003.2
	Lithuania	128.8	164.2	243.6	258.7	383.0	646.1	699.4	132.0
	Uzbekistan	178.9	487.3	604.7	415.3	237.0	160.8	156.8	166.8
Import freight transport	Total	40 973.0	48 437.8	49 727.9	47 668.6	49 408.1	48 276.7	42 036.3	36 583.8
	Belarus	7 132.9	9 357.0	10 326.0	5 205.2	5 588.3	8 831.7	6 389.0	6 208.1
	Estonia	149.9	112.9	143.9	140.7	140.0	104.5	92.1	190.2
	Kazakhstan	1 813.8	1 783.7	2 190.6	2 402.0	1 401.3	506.4	89.8	121.4
	Russia	30 275.2	35 570.1	35 456.3	38 417.6	40 999.0	37 563.8	34 206.6	28 604.3
	Lithuania	1 070.1	1 101.8	1 265.8	1 129.9	861.1	1 022.3	969.6	1 055.6
	Ukraine	374.7	333.4	240.9	313.0	327.8	185.6	216.9	261.1
	Uzbekistan	124.6	130.7	62.1	40.5	73.6	25.8	64.4	132.5

The key of international rail freight transport are imports, which is almost 20 times larger than exports. Of this, 78% are Russia, 17% Belarus, 3% Lithuania and 0.7% Ukraine. Of the small

export volumes, 55% are to Russia. West direction is practically no. What is needed for Latvia Europe rail track width?

Table6. Goods transport by rail Lithuania [30]

2017	Thousand tonnes	Thousand tonne-km
Goods carried, total	52,638.2	15,413,521
National transport	15,539.5	3,772,317
Entered the country	20,780.6	7,585,544
Left the country	4,664.8	1,235,100
Transit	11,653.4	2,820,560

Almost, the same trends as Estonia and Latvia, but not so much counterattacks. Lithuanian rail freight transport in tkm is half entered the country (import) and 18% transit. Left the country (export) by rail is 6 times smaller than entered the country (import).

The largest business centres of Lithuania are located in Vilnius. Whether there is easier to transport goods to Kaunas to RB-line or in directly to the Polish border, and then to Western Europe? When the goods arrive to Kaunas, it must first be loaded into the terminal. Then wait for the wagon received driving direction and reload again from the terminal to the wagon. For the business these costs are

considerably higher. How big is Lithuanian export in Western Europe?

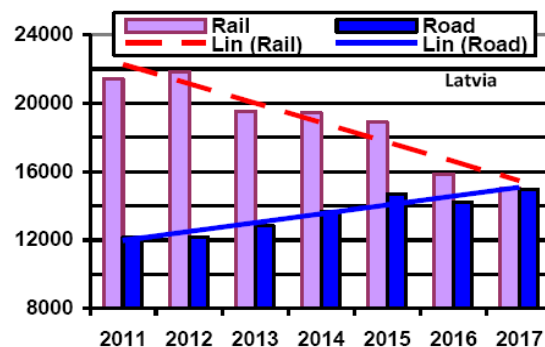


Fig13. Cargo traffic (mln tkm) in Latvia [28]

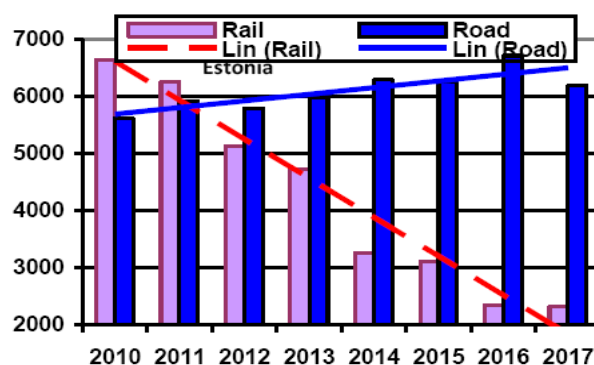


Fig14. Cargo traffic (million tkm) in Estonia [27]

The Baltic railway leader country Latvia the freight transport trend: rail transport is decreasing and road transport is increasing. The share of air transport is small. This trend is also in Estonia: international road freight transport is increasing and rail freight transport is decreasing. Has the growth of Russian transport decreased for both political and economic reasons? Despite the Western trade restrictions, Russia's rail transport of goods has steadily increased: from 2009 = 1108 million tons to 2017 = 1266 million tons or +158 million tons or 14.3% and from 2010 = 2011 billion tonne-km to 2016 = 2344 billion ton-km or +333 billion ton-km or 16.6%. [34]. On 2017

by railways Estonia-Russia total (loading + unloading) international freight was 421 thousand tonnes and transit freight 5,994 thousand tonnes; by turnover 69.5 million tonne-km and transit 878 million tonne-km. On 2017 by railways Estonia-Russia total (loading + unloading) international freight was 421 thousand tonnes and transit freight 5,994 thousand tonnes; by turnover 69.5 million tkm and 878 million tkm. 78.9% Estonian transit freight and 66.5% international freight turnover were with Russia. Shares of total freight were 26.7% and 21.0%. [34]. Consequently, the Baltic States count on increasing the volume of Russian goods and transit.

Table7. Freight traffic by rail by group of goods of Latvia [29]

	2008			2012			2016			2017		
	tons	tkm	%	tons	tkm	%	tons	tkm	%	tons	tkm	%
Total	56 061	19 581	100	60 601	21 867	100	47 819	15 873	100	43 785	15 014	100
Products of agriculture, fish, forestry	1 786	549	3.2	2 882	1 077	4.8	2 235	844	4.7	2 227	818	5.1
Coal; crude petroleum, natural gas	18 585	6 408	33.1	22 454	8 064	37.0	15 911	5 212	33.3	17 689	6 097	40.4
Metal ores; peat	297	67	0.5	1 549	550	2.6	1 295	610	2.7	993	388	2.3
Food products, beverages	1 413	552	2.5	1 644	656	2.7	1 810	727	3.8	1 418	567	3.3
Wood, products of wood; paper	1 036	316	1.8	966	320	1.6	1 607	445	3.4	1 112	309	2.6
Coke and refined petroleum products	19 706	7 215	35.2	18 372	7 310	30.3	16 624	5 503	34.8	13 014	4 587	29.7
Chemicals, chemical and plastic products	3 050	1 527	5.4	10 052	2 978	16.6	5 517	1 661	11.5	4 878	1 486	11.1
Basic metals; fabricated metal products, except machinery, equipmen	2 734	929	4.9	1 763	532	2.9	1 799	610	3.7	1 839	613	4.2

Notes: Freight transported thousand tons. Freight turnover, million ton-km. Percentage of total freight transported, %

Nearly 70% have been at all times Latvia's main commodity groups come from Russia coal and lignite; crude petroleum; natural gas; and coke and refined petroleum products. In addition, there are other raw materials. However, the

volumes of exports sent to Western Europe are very small, and it is very voluminous and cumbersome to complete the train and even the wagon.

Table8. Cargo traffic by rail (thousand tonnes) of Latvia [29]

	1993	1996	1999	2002	2005	2008	2010	2012	2014	2016	2017
Total	30 574	35 264	33 208	40 100	54 861	56 061	49 164	60 601	57 039	47 819	43 785
Domestic transportation	2 736	2 565	1 938	2 314	2 633	1 687	1 263	1 429	1 256	1 482	1 649
International transportation	27 838	32 699	31 270	37 786	52 228	54 374	47 901	59 172	55 783	46 337	42 136
...in exports transportation	1 427	1 510	1 663	662	1 992	2 652	3 206	4 886	4 521	2 384	1 839
...in imports transportation	3 433	3 667	3 577	3 492	44 532	47 116	40 973	49 728	49 408	42 036	36 584
...in transit transportation	22 978	27 522	26 030	33 632	5 704	4 606	3 722	4 558	1 854	1 917	3 713
...from international transport-tation - via Latvian ports	13 466	22 755	23 884	29 603	40 600	43 871	39 056	49 035	47 041	39 480	35 038

The main part of cargo traffic by rail is import transport (83.5%) and, in turn, the main transport from Latvian ports (80.0%). Once again, the question: What is the need for European railways?

Table9. Freight traffic on railways in Estonia, thousand tonnes, 2017 [35]

	Freight	Domestic freight	Outgoing goods	Incoming goods	Transit goods
Goods total	27 257.4	18 089.6	258.5	1 315.7	7 593.6
01 Products of agriculture, hunting, and forestry; fish and other fishing products	102.9	78.5	1.0	23.3	0.1
02 Coal, crude petroleum and natural gas, oil shale	15 659.1	15 599.4	0.0	7.4	52.3
03 Metal ores and other mining and quarrying products; peat; uranium and thorium	808.1	770.2	18.3	7.5	12.1
04 Food products, beverages and tobacco	163.8	0.5	7.3	22.6	133.4
07 Coke and refined petroleum products	3 458.4	795.5	98.0	905.6	1 659.3
08 Chemicals, chemical products and artificial fibres; rubber and plastic products	5 514.8	4.0	11.7	222.5	5 276.6
09 Other non-metallic mineral products	989.9	709.3	107.3	4.2	169.1
10 Basic metals; fabricated metal products, except machinery and equipment	210.4	83.9	1.0	109.8	15.7
11 Machinery, computers, communication, medical, optical and other equipment	55.9	5.4	7.3	8.3	34.9
17 Removal goods; baggage; motor vehicles being moved for repair; nonmarket goods	214.2	0.4	5.7	0.7	207.4

From total freight traffic on railways accounted domestic freight 66% and transit goods 28% or in total of 94%.

In 2017, there were three main groups of goods in Estonia (gr. 02; 07 and 08), but they are domestic freight. Outgoing and incoming goods (excl. transit) were only 1574.2 thousand tonnes, including gr. 07, what was 905.6 thousand tonnes. Transit goods were two main groups 07 and 08. [35]

What their arrival is so important in a few hour time savings? Is the expense of doing so expedient?

If one wagon can hold 60 tons and train has 50 wagons, then one train will be 3000 tons. Each year, one train will carry one million tons.

Several trains are needed in order to carry out these transports? We add that in the future gr. 07 need to decrease considerably in EU [6].

Rail Baltica is considered the main advantage of the speed of delivery of goods and passengers. We will analyse it. As the planned railway track runs practically straightforward, then Tallinn-Pärnu-Riga and the other sections will be shorter when compared to the highway. At speeds of 120 km/h this distance (Tallinn-Riga) is expected to take less than two hours. But here it is not taken into account that cities do not drive at full speed. Secondly, in Pärnu, Riga and other cities, there are also intermediate stops for loading additional goods or for picking up

wagons, but also for passengers. However, it will take time!

However, if we look at the Estonian railways freight traffic a commodity outgoing and incoming goods groups, then a few hours of time will not justify these tremendous costs for RB. But in the case of gr 11, it will be enough for a year only three trains and gr 01 for eight trains do these trains!

How long will it take from the point of departure of the goods a railway freight terminal and, later, the destination point of the railway terminal of the place of arrival?

Let's see the distances Tallinn-Tartu; Tallinn-Narva, Riga-Daugavpils, Kaunas-Vilnius and others. If we take the goods from the truck starting from the point of departure, then it will take no time for trans-shipment, or for terminal charging expectations. For example, the bus route Tallinn-Vilnius with intermediate stops takes 6 hours, from Tallinn to German border should arrive in two days.

According to railway specialists the time for Estonian transit operations will soon be completed. Estonian transit must turn new page, the flow of Russian is history. [37] The main causes doubts about the future profitability of the railway estimate because the exact volume of freight and passenger transport is quite difficult to predict.

Rail Baltica cost

How much will Rail Baltica cost?

Based on the current planning data as of November 2014, constructing the Estonian part of the RB route will cost approximately 1.3 billion euro. Estonian self-financing in the project will be approximately 500 million euro divided over ten years.

By the start of 2018, the three Baltic States and RB RAIL AS have received two grants designed under the CEF for the construction of the Rail Baltica railway, having signed Grant Agreements with a total value of 765 million euros. [25]

The total cost of the rail link from Tallinn to Poland-Lithuania border is estimated at 5.8 billion euros, of which up to 85% should be covered by EU funds. The share of Estonia is 1.35 billion euros, of which Estonian self-financing is 239 million euros.

In Estonia on 2015 income statement of rail transport were 94 million and of freight transport by road 1162 million euro. On 2017

income (revenue) of rail transport enterprises were carriage of passengers 1.74 million and carriage of goods 49.98 million euro, in the 4th quarter was a difference of 40 times. [38]

Let's think about the cost-effectiveness of Rail Baltica! Without the UK, the EU budget would face a permanent funding gap. British departure leaves a whole size of 10 to 15 billion euros per year. To cover this, it is planned to increase the contribution from the current 1% to 1.2-1.3% of GDP.

We are considering extending the tax base, for example, to harmonize corporate tax rates. Particularly affected by the EC budget reduction of new the EU Member States, net recipients. The lesson for the EU is that both Brussels and the Member States must radically change their spending. The EU needs radical innovations!?

According to preliminary data, the share of Lithuania and Estonia in the EU budget is reduced by 24%. There then the money for the RB? Need financing other areas like agriculture. [39]

The Financial Times wrote that the budget plan anticipates a drastic redistribution of funds to the southern countries at the expense of Central and Eastern European countries, and is significantly more redistributable than initially planned at 10%: Hungary, the Czech Republic, Estonia and Lithuania are likely to accept a 24% cut. The EU budget plan 2021-2027, announced yesterday, provides for a drastic redistribution of funds to the southern countries at the expense of Central and Eastern European countries. [40]

Brussels intends to channel more than 30 bn euros from Central and Eastern Europe to Greece, Italy and Spain. Hungary, the Czech Rep., Estonia and Lithuania are likely to accept a 24% cut. In total, the Baltic States and the four Central European countries known as the Visegrad Group will lose 37 bn euros in the next budget period. [41]

The Chinese can come to build Rail Baltic. RB construction can bring a lot of foreign workers to Estonia, including Chinese builders with their container houses, canteens and kindergartens. RB Raili coordinating Rail Baltic referred to delegations from China, Japan and Turkey, who are actively involved in the development of the RB project kept up to date. [42]

In October 2018, the RB project has reached a design phase, which follows the design guidelines approved in all three Baltic States. [43]

Criticism and opposition of Rail Baltica

Rail Baltica is the subject of much criticism and opposition.

According to experts [44], the RB Feasibility Study has several significant mistakes that take into account RB's total revenues of 4.1 bn euros and, therefore, RB is not even economically viable for the social economy but is harmful to the Baltic States and meet EU co-financing requirements. Priit Humal presented a 73-page document to the public at the press conference held on January 16, 2018, claiming that by manipulating emission standards and fuel consumption of trucks, the socio-economic benefits of artificially increased RBs have been raised. The critics also point out that the feasibility study for EY does not address the external costs of environmental impacts generated during railway construction or rail endurance.

There are several significant errors in the RB Feasibility Study, which will account for RB's total revenue of EUR 16 bn, down by EUR 4.1 bn.

The socio-economic benefits of RB have been artificially increased by manipulating emission standards and fuel consumption of Lorries.

The feasibility study for EY does not address the external costs of environmental impacts generated during railway construction or railroad endurance, as required by the Feasibility Study Guide.

Most of the road transport takes place directly from customer to customer. From RB Rail's and EY's replies, replacing such road transport with RB would not be cost-effective as the delivery of goods (the so-called last mile) is so costly.

The rest of the road transport, which includes the transport of goods through terminals, is compared with rail terminals from rail to another rail terminal, without taking into account the additional costs of delivering goods from the rail terminal to the central road terminal.

According to the PSP, "all data and sources used in the feasibility study" should be readily available, but despite frequent requests, no study used in the study has been made public and many of the sources mentioned are not public.

After the correction of these errors, it turns out that **the Rail Baltic is not socio-economically feasible** it is detrimental to the Baltic States and does not meet EU co-financing requirements. [44]

Add here more "Major mistakes in Rail Baltica Cost-Benefit Analysis"[45].

400 public letters of intellectuals: Rail Baltic Act, adopted on the basis of false information it should be **annulled**. [46]

At the same time continue to Baltic Rail-related lawsuits. [47]

Estonia has sad experiences. 10 years ago, despite the strong opposition of the environment and nature protectors, the deep seaport of Saaremaa was built. It was then hoped that this would make wonderful things for the Estonian economy. Now it stands empty and depletes. What is the analogy of Rail Baltica? Who is responsible? [48]

Estonia launched the RB. At first, it supported 2/3, now only 48% of the population.

In mid-October 2008, it turned out unexpectedly that RB Estonia's share rose by 18%, it is expected that it will increase even more.

Three years ago, formed a joint venture RB Rail Ltd., whose goal is to design, build and market the RB. RB maturing by 2026 faced great danger down, because countries satisfy their narrow interests.

Suddenly, from one day left Baiba A. Rubesa, RB Rail Ltd. CEO and Chairwoman of the Board. She said that cost-benefit analysis of RB proves that the project is economically viable and viable. 2017 was ratified by the Estonian, Latvian and Lithuanian parliaments RB project development agreement. Infrastructure management model suitability must approve the governments of the Baltic States by the middle of 2019. The final phase is also the completion of a long-term business plan and action plan. According to Rubesa, RB will not be able to implement properly, the parties will not be able to cooperate normally, and the transnational management is poor, cubic conflicts of interest.

There are still many problems to be solved, including transnational cooperation.

There is a *danger*, that the RB project may not be able to claim 0.8-1 billion euros by 2020. [43; 49]

Let's look at part of the numerous commentaries from Estonia on the RB. [43, comments on RB

Freight is needed spare parts, charging stations, new logistics centres etc. So far, there are used branches with an old track width, the infrastructure of which was built in the century. In the last couple of years there has been a large expansion of logistics centres for road transport, they do not coincide with the planned RB. Who

and who and for what kind of money will the ready-made freight carriage be built?

There are speed limits for freight there is no need for any RB. Moreover, the existing route can be converted into a European-wide railway, which would make sense...RB's profitability and need have been proven only on paper, based on your desire for dreams. Most of the goods are from Russia according to the plan. The only ones who will benefit will be builders. Estonia falls into the debt ladder because overtaking has to be paid on its own, in addition to the hackers of the foreign builders...

Firstly, the profitability has not been proven, but it is literally full of air; secondly, the entire route is completely planned thirdly it cannot compete with car and shipping in any way. What are we going to do?

RB is not required for the carriage of goods, since the carriage of goods has its own rules there is no need for a high-speed connection. Helping to reconstruct the existing railway.

To build a railway that is not needed by anyone, it would be necessary to make all major roads three-way and two-way, and obviously no one will use this superb rail. The entire project builds on poetry, assumptions and derivatives that have little in common with reality. Everyone is doing their tiny and useful projects so that later you can spread your hand and wonder how it all went now? Already, part of the material of this important project has been classified alarm clocks should be put into operation!

Who they will be missed when you capture cost?

I would like the wise men from specialists even a short list of goods which are transported RB had somewhere to Tallinn and back or forward.

The necessary part of Poland, however, does not want it on its surface, as it is becoming the last part of the "Silk Road" that passes through China through Russia. Poland has so far not allowed RB to build its territory...

The model's suitability must be approved by the governments of the Baltic States by mid-2019.

Nobody knows how much cargo will come and how much; the number of RB passengers is marginal. There are no adequate cost-benefit calculations, and one can also calculate how much RB will pay annual maintenance. What if RB funding, for example, is falling dramatically due to the economic crisis and construction is

underway? Then let's move on from Estonian budget? [43, comments on RB]

EU Transport Commissioner Violet a Bulk invited the Ministers of Finance and Infrastructure of Estonia, Latvia and Lithuania by the end of October 2008 within the framework of the crisis meeting, as the project would be stretched and enveloped in the risk of losing EU money. [50]

The main problems are next to the environment, is there still something to do with transport, and whether the EU still finances it.

This will help clarify this controversial issue. However, work has already begun.

Taking into account this publication and the previous work of the authors [2; 6 - 18], we can make the following conclusions.

CONCLUSIONS

Record level of GVA in enterprises of construction of Estonia was in 2007 and of Latvia and Lithuania in 2008, but in forward was big decline.

Pre-crisis level by labour productivity exceeded in 2012 only Belgium, Estonia, Luxembourg, Greece, Finland, Sweden, Norway and Switzerland.

Apparent labour productivity was highest in Norway (84.4), Switzerland (85.7), UK (67.6), Denmark (53.3) and Sweden (55.5). In 2009 was it in Ireland 117.6.

In CEE-8 countries was greater apparent labour productivity in 2012 in Slovenia (19.9) and in Baltic States in Estonia (21.1). It was lower in Bulgaria (8.3), Romania (10.1) and Lithuania (10.2).

The differences of productivity between the EU countries were very large, up to 46 times (!). In 2012, the difference was 21 times. Estonian productivity was 2.5 times higher than in Bulgaria.

There were great differences in the dynamics of the labour productivities of countries during the crisis and labour productivity by size class, thus also in how the economic crisis was overcome.

Transport plays a major role in the world and in the European economy.

Transportation and storage sector in Europe have developed very unevenly.

Spain, Italy, France and Germany constituted 43.1% of all transportation and storage enterprises in the EU.

In the new EU Member States Baltic region everyone has GDP per capita increased.

The biggest problem of European railway transport of goods: Estonia great fall, by tonnes 2.7 times and by ton-km 4.6 times. In Latvia fall freight by tonnes 1.4 times and by ton-km 1.5 times. Poland by tonnes decreased 1.2 times or 47 million tonnes and by ton-km 3.6 bn tonnes. Finland in 2008 = 41,937, but in 2015 = 33,392 and in 2016 = 36,162 *thousand tonnes*.

Since 2013 has been steadily decreasing freight railways in Germany (- 10.2 million tons), in France, Italy and in particular the UK (have fallen over 39 million tonnes or 1.5 times).

The trend in Europe is that rail freight is reduced almost everywhere.

The Baltic States cannot count on increasing the volume of Russian goods and transit.

In 2017 was the per capita by PPS of Estonia 79.0%, of Latvia 67.3%, of Lithuania 78.7% and of Poland 69.7% in the EU (without UK).

As the level of Estonia and Lithuania is already above 75% of the EU average, allocations to the new EU budget will come with larger cuts than Latvia and Poland.

In RB is not taken into account that cities do not drive at full speed. There are also intermediate stops for loading additional goods or for picking up wagons, but also for passengers.

If we look at the Estonian railways freight traffic a commodity outgoing and incoming goods groups, then a few hours of time will not justify these tremendous costs for RB.

How long will it take from the point of departure of the goods a railway freight terminal and, later, the destination point of the railway terminal of the place of arrival?

If we take the goods from the truck starting from the point of departure, then it will take no time for trans-shipment, nor for the terminal charging expectations. For example, the bus route Tallinn-Vilnius with intermediate stops takes 6 hours, from Tallinn to German border should arrive in two days.

In Estonia on 2015 income statement of rail transport were 94 million and of freight transport by road 1162 million euro. On 2017 revenue of rail transport enterprises were carriage of passengers 1.74 million and carriage of goods 49.98 million euro, in the 4th quarter was a difference of 40 times.

Without the UK, the EU budget would face a permanent funding gap. According to preliminary data, the share of Lithuania and Estonia in the EU budget is reduced by 24%. Are there then the money for the RB?

According to expert opinion there are several significant errors in the RB Feasibility Study, which will account for RB's total revenue of EUR 16 billion, down by EUR 4.1 billion. The socio-economic benefits of RB have been artificially increased by manipulating emission standards and fuel consumption of Lorries.

RB is not even economically viable for the social economy but is harmful to the Baltic States and meet EU co-financing requirements.

According to expert opinion by manipulating emission standards and fuel consumption of trucks, the socio-economic benefits of artificially increased RBs have been raised. After the correction of these errors, it turns out that *the Rail Baltica is not socio-economically feasible* it is detrimental to the Baltic States and does not meet EU co-financing requirements.

In conclusion, the Rail Baltica is not an economically and financially reasonable project, but only a political decision.

In the case of large projects, contradictions between the various interests are inevitable. The results of the future are the criteria of the truth.

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Citation: Lembo Tanning, "Reflections on the Construction of a New Railway in the Baltic States" *Journal of Architecture and Construction*, 2(1), 2019, pp. 6-22.

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