



Rail Freight Corridor
North Sea – Baltic



Co-financed by the Connecting Europe
Facility of the European Union

RFC-NSB 2019 TMS Update

Final report

FEBRUARY 2020

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Definition of the corridor catchment area

- Catchment area
- Corridor alignment, planned and proposed extensions
- Border Crossing Points

General socio-economic development on the corridor

- Updated PEST analysis

Analysis of the current market on the corridor

- Transport volumes along main trade lanes
- Train traffic flows

Evaluation of the future market development on the corridor

- Transport volumes and traffic flows (short term prognosis)
- Summary of Rail Baltica Global project (long term forecasts)

Conclusions



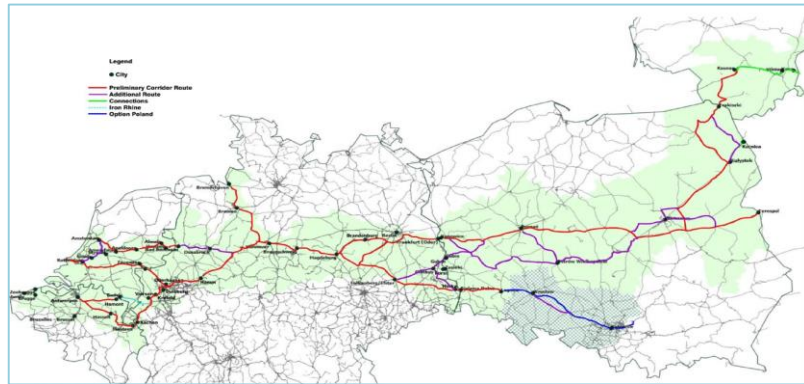
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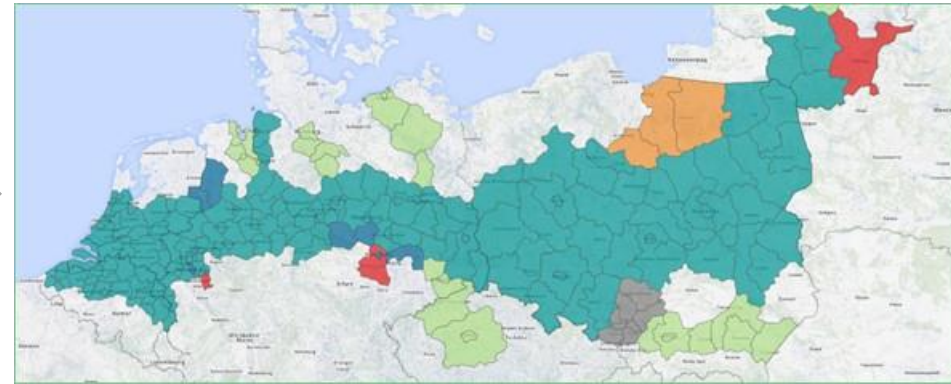
Definition of the corridor catchment area

Definition of the corridor catchment area

(1.) Corridor catchment area “2014” (NUTS 3)



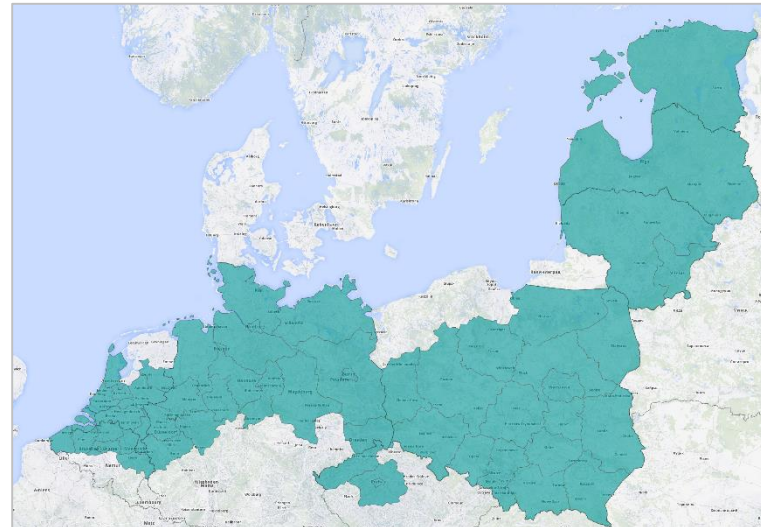
(2.) Corridor catchment area “2019” (NUTS 3)



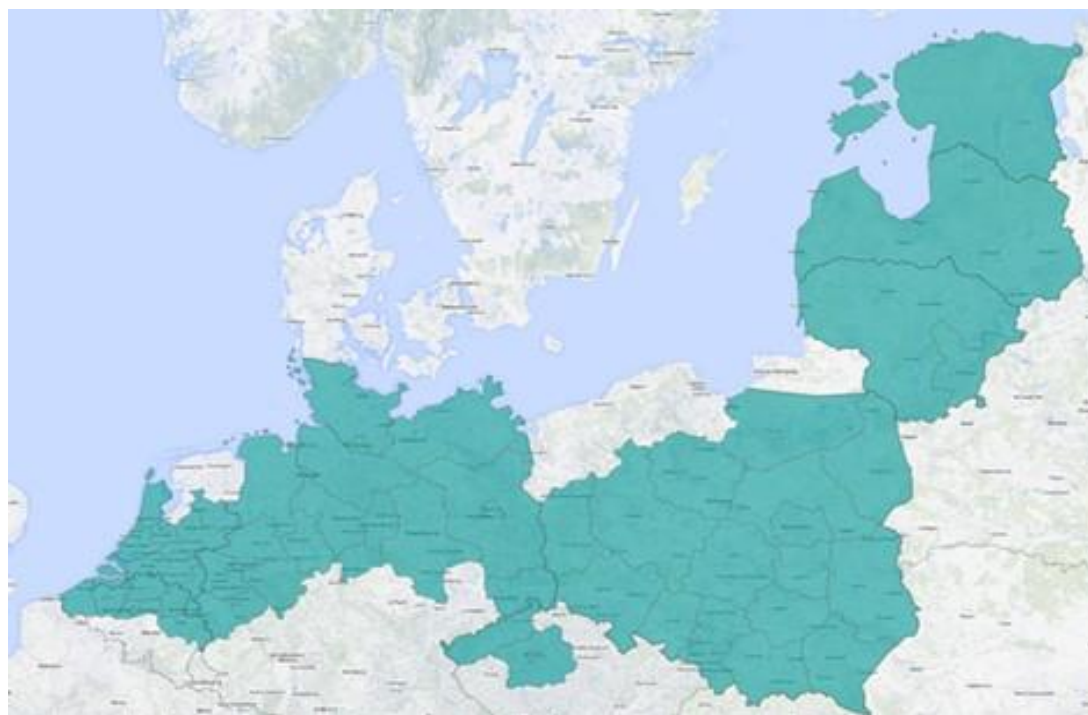
Identification of the NUTS 2 regions

- As a starting point, NUTS 3 regions have been identified considering the corridor sections and its extensions
- NUTS 2 regions have been subsequently identified which form together the catchment area of the RFC NS-B (see map in the following page). Overall 53 regions are included in the updated catchment area of the RFC NS-B

(3.) Corridor catchment area “2019” (NUTS 2)



Updated catchment area based on NUTS 2



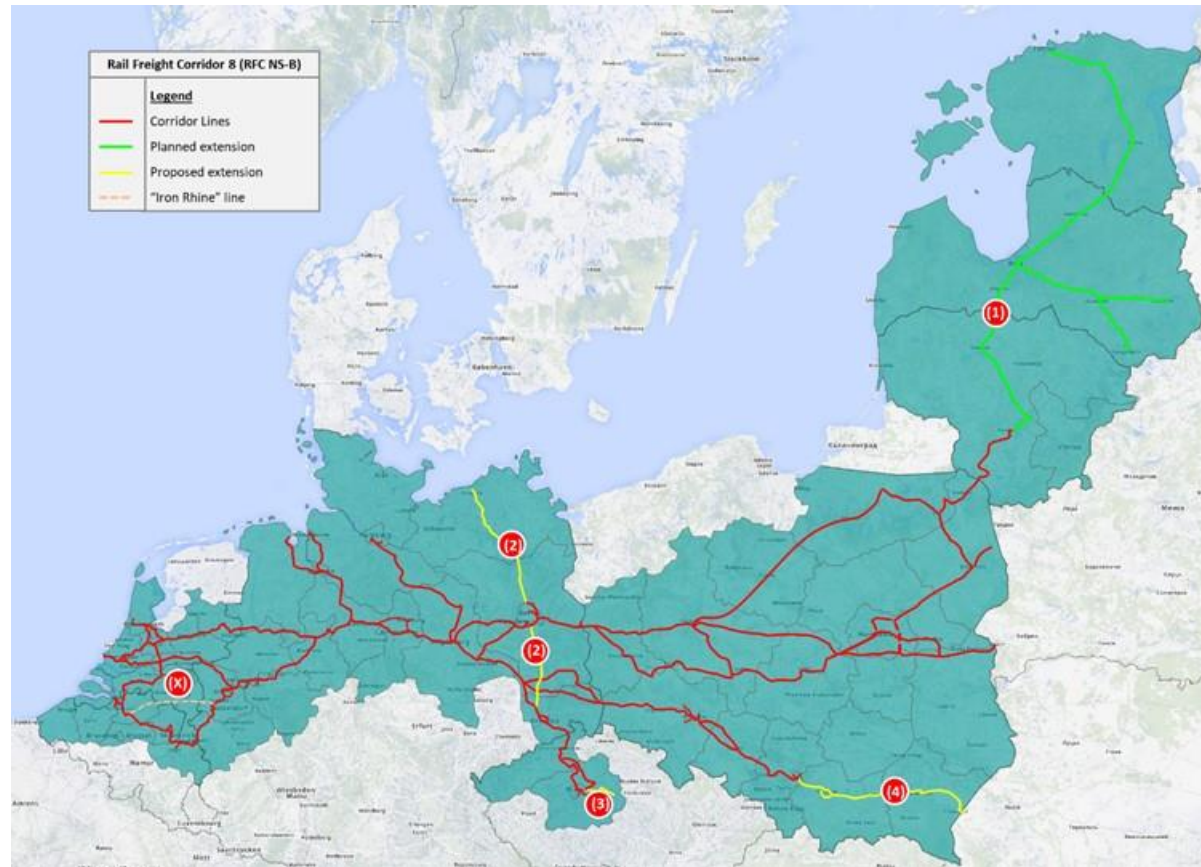
BE		7 NUTS 2 regions
NL		8 NUTS 2 regions
DE		17 NUTS 2 regions
CZ		3 NUTS 2 regions
PL		15 NUTS 2 regions
LT		2 NUTS 2 regions
LV		1 NUTS 2 region
EE		1 NUTS 2 region

Corridor alignment

Planned and proposed extensions:

- **(1)** Kaunas (LT) to Riga (LV), with extensions in Latvia towards the borders with Russia (Rēzekne), Belorussia (Daugavpils), and Tallinn (EE)
- **(2)** Rostock – Priestewitz / Dresden via Berlin (DE)
- **(3)** Praha Libeň – Kolín (CZ)
- **(4)** Katowice – Medyka (PL)

The “Iron Rhine” line (marked with an “x” in the figure and represented as a dotted orange line), currently only partially in operation, belongs to the RFC NS-B as expected principal line. It may be realized in the future. This line has not been further analysed in the TMS.



BCPs along the RFC NS-B

The table below lists the corridor BCPs, including the ones on the lines currently in operation between Lithuania, Latvia and Estonia.

Bordering Corridor Member States		Cross border section
BE	NL	Essen - Roosendaal
BE	NL	Hamont - Budel*
BE	DE	Botzelaer - Aachen West
NL	DE	Venlo - Kaldenkirchen*
NL	DE	Zevenaar - Emmerich
NL	DE	Oldenzaal - Bad Bentheim
DE	CZ	Bad Schandau - Děčín
DE	PL	Frankfurt (Oder) - Rzepin
DE	PL	Horka - Węgliniec
PL	LT	Trakiszki - Mockava
LT	LV	Joniškis - Meitene
LV	EE	Lugaži - Valga



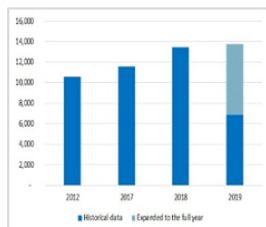
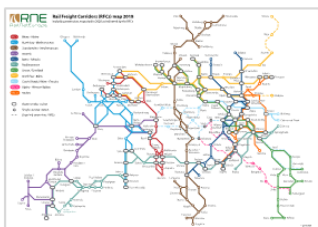
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General socio-economic development on the corridor

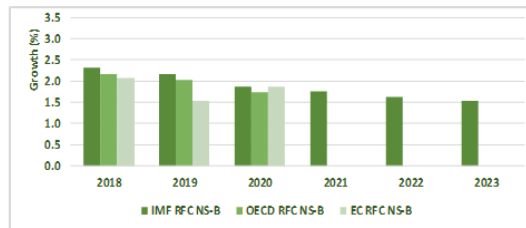
Political & Institutional

- **The European Corridors in the framework of the European Green Deal**
 - Ten Rail Freight Corridors (RFCs) are currently in operation, RFC 10 is under development/implementation (expected to be operational 2020)
 - A dual-layer (core and comprehensive) TEN-T network including 9 CNC corridors, with foreseen extensions in the upcoming revision of the CEF regulation
- **Eurasia Land Bridge/OBOR Initiative**
 - The RFC NS-B represent the main access route for the growing EU-China rail traffic
- **Measures supporting rail transport**
 - Monetary incentives to reduce Track Access Charges (TAC) (i.e. DE and NL)



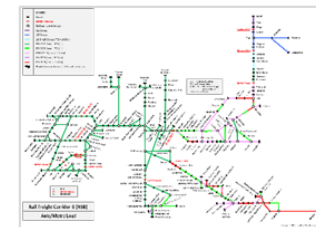
Socioeconomic

- **Short term outlook**
 - The outlook is characterised by an overall GDP growth at all territorial scales, albeit with decreasing annual rates (1.7% in average for the RCF NSB member states).
 - No other socio-economic variables are identified having either a positive or negative effect on the definition for the market of the RFC NS-B in the short term



Technical

- **Corridor characteristics**
 - Efforts are required to improve the characteristics (axle load, train length, speed, ERTMS) of the corridor in the Eastern Member States - most of the needed investments are in Poland
- **Planned developments**
 - Infrastructure improvements are foreseen, but no market impact is expected due to major projects in the short term
 - In the long term, potential impact of Rail Baltica Global Project



JJ Elaborated
but not
included in the
TMS Report



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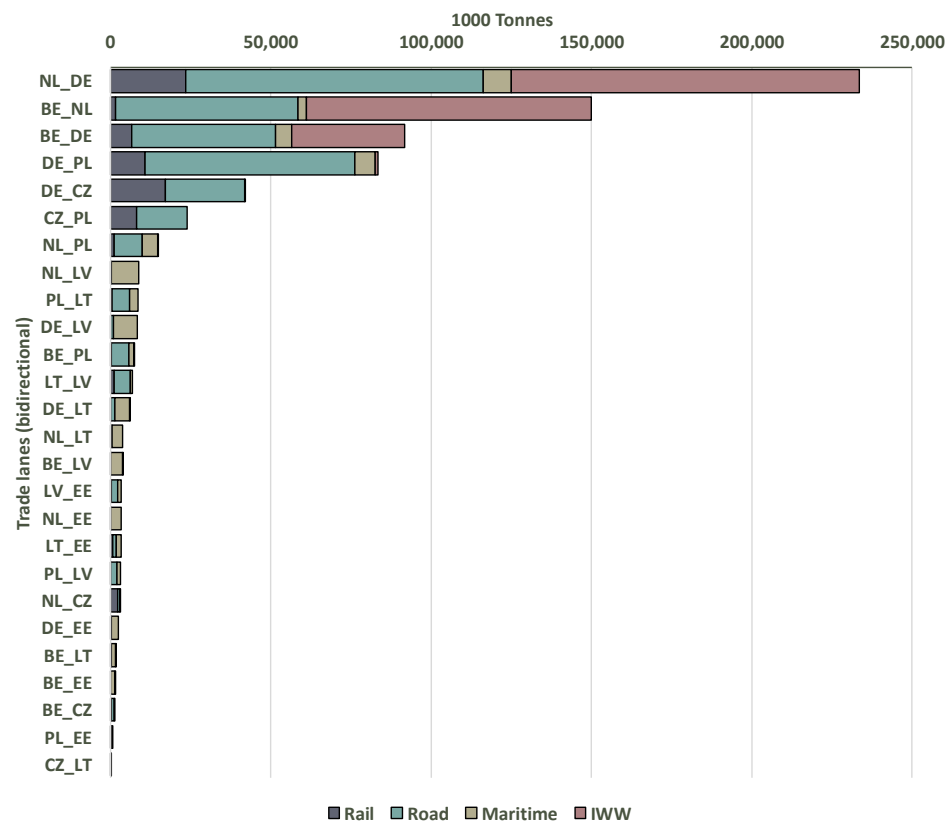
Analysis of the current market on the corridor

Modal split along the corridor

- Road is the dominant transport mode with 47% of the share of total transported tonnes between the MSs of the RFC NS-B
- IWW transport is absent for many O/D relations but represents 33% of the total freight moved between the corridor MSs (essentially BE, NL, DE)
- Both rail and maritime transport register a 10% share of the total freight moved

Main transport relations between corridor MSs

- According to the total tonnes moved between the RFC NS-B MSs in 2017, equalling 716 million tonnes, over 66% of the volumes are moved between Belgium, the Netherlands and Germany. Another 21% is moved between Germany, the Czech Republic and Poland



Source: Eurostat; Note: Figures relate to total transport at the country level (NUTS 0)

Main trends

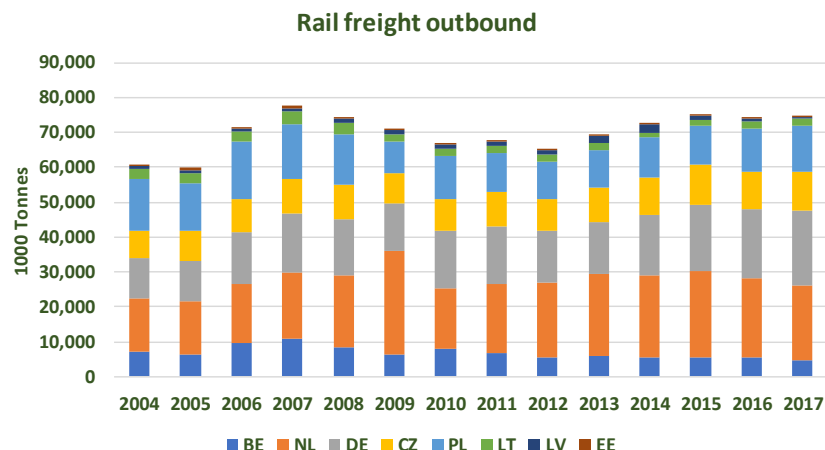
- The trend of transport volumes of freights between the corridor MSs in the 2013-2017 period is growing for road transport, overall steady for rail and IWW modes and slightly declining for maritime transport
- Trends related to rail and road transport volumes between the corridor MSs and Central Asia/Asia along the Eurasia Land Bridge show a relevant growth especially in the West-East direction

Main rail trade lanes

- Netherlands – Germany (more than 23 million tonnes)
- Czech Republic and Germany (17 million tonnes)
- Poland and Germany (almost 11 million tonnes)

Inbound and outbound flows

- Outbound flows are comparable between Germany and the Netherlands
- Germany is largely the prevalent attractor among the corridor MSs



Source: Eurostat; Note: Figures relate to total traffic at the country level (NUTS 0)

2017 data		Unloading Country							
1000 Tonnes		BE	NL	DE	CZ	PL	LT	LV	EE
Loading Country	BE	-	867	3,824	117	75	-	-	-
	NL	677	-	18,495	1,298	596	-	-	-
	DE	2,826	4,903	-	9,432	4,343	10	-	-
	CZ	71	958	7,772	-	2,515	1	-	-
	PL	86	609	6,506	5,686	-	55	5	1
	LT	-	-	6	4	418	-	1,056	734
	LV	-	-	-	-	20	141	-	95
	EE	-	-	-	-	-	26	192	-

Source: Eurostat; Note: Figures relate to total traffic at the country level (NUTS 0)



Source: Eurostat; Note: Figures relate to total traffic at the country level (NUTS 0)

Estimated trains at corridor BCPs (2017)

Cross-border train traffic by direction per border pair

Border pair	Direction	Value retained in the study
Essen (BE) – Roosendaal (NL)	Netherlands	4,050
	Belgium	4,080
Botzelaer (BE) – Aachen West (DE)	Germany	11,680
	Belgium	11,780
Zevenaar (NL) – Emmerich (DE)	Germany	12,250
	Netherlands	12,250
Oldenzaal (NL) – Bad Bentheim (DE)	Germany	2,930
	Netherlands	2,930
Bad Schandau (DE) – Děčín (CZ)	Czech Republic	14,290
	Germany	14,160
Frankfurt (Oder) (DE) – Rzepin (PL)	Poland	7,470
	Germany	7,170
Horka (DE) – Węgliniec (PL)	Poland	900
	Germany	860
Trakiszki (PL) – Mockava (LT)	Lithuania	220
	Poland	220
Joniškis (LT) – Meitene (LV)	Latvia	680
	Lithuania	560
Ludza (LV) – Valga (EE)	Estonia	730
	Latvia	610

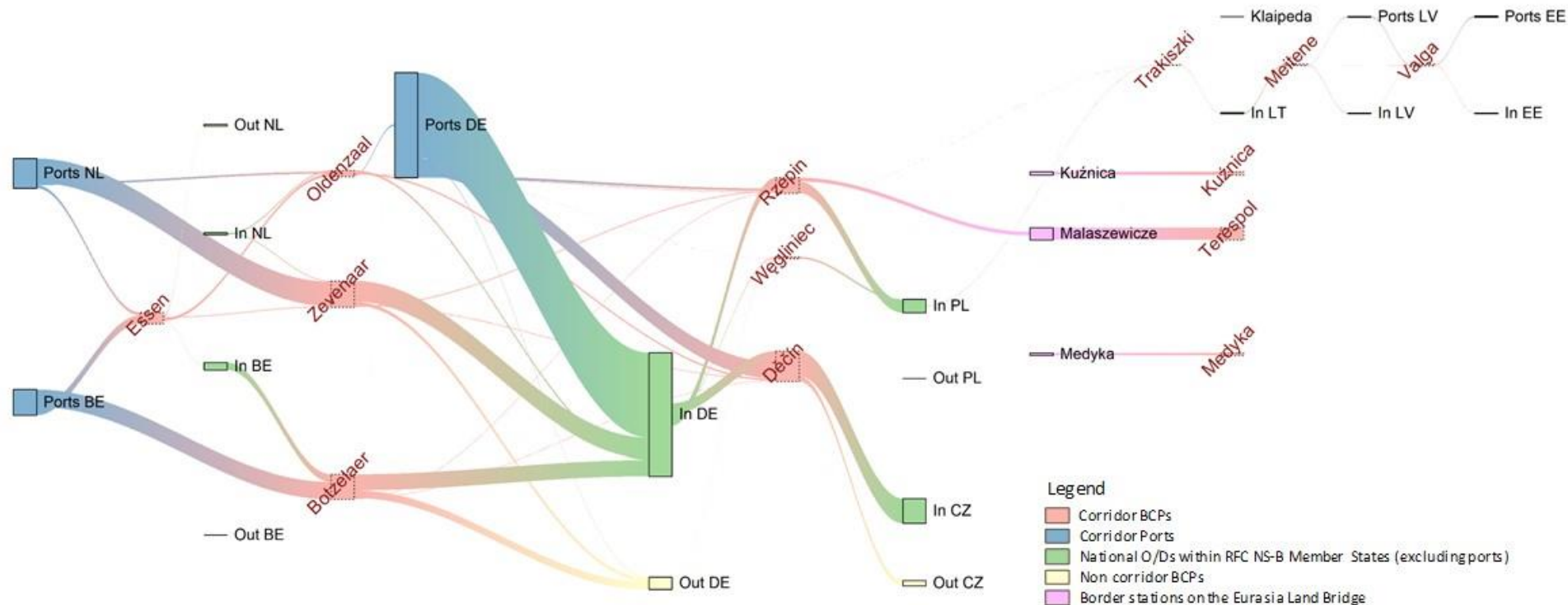
Note: *rounded figures

Bidirectional annual train flows at the Kuźnica (PL), Terespol (PL) and Medyka (PL) border crossing stations on the Polish side

Border station	Bidirectional trains
Kuźnica	3,120
Terespol	11,570
Medyka	2,260

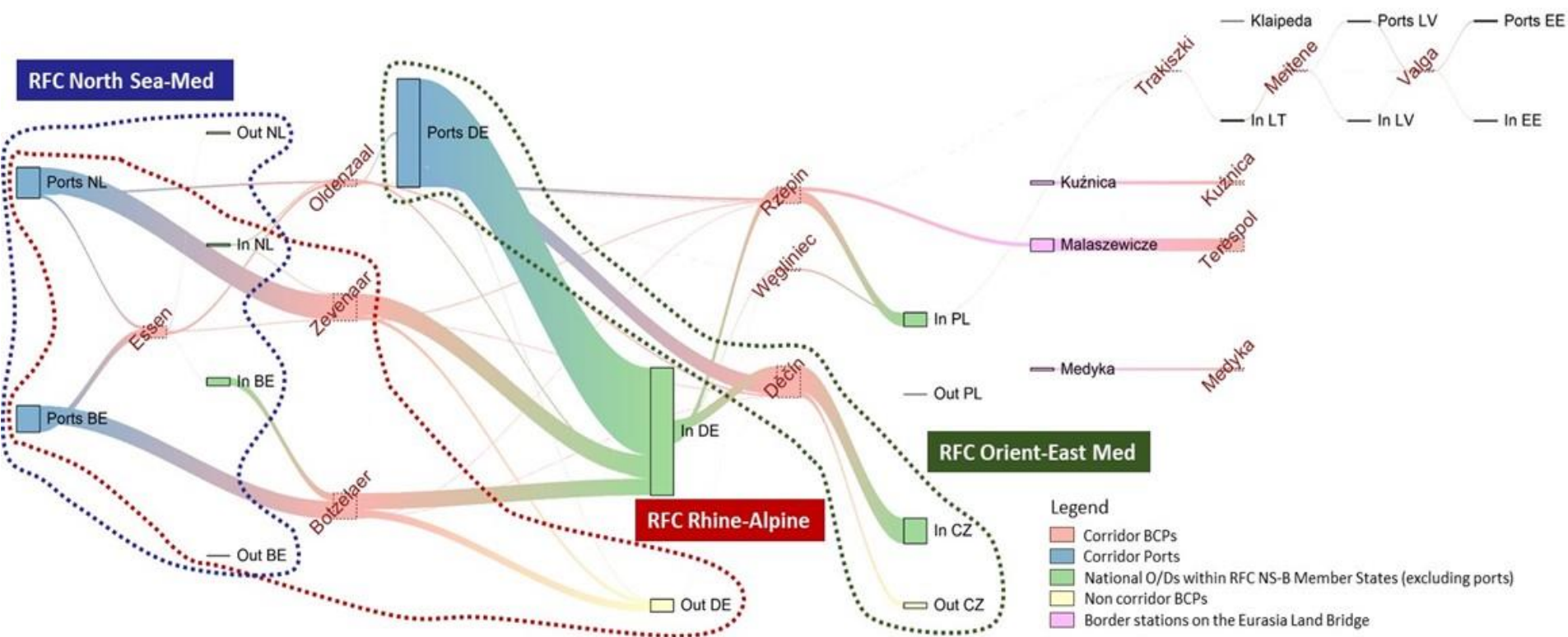
Note: *rounded figures

Train flows along the RFC NS-B crossing a corridor BCP including national traffic with O/D at German Ports



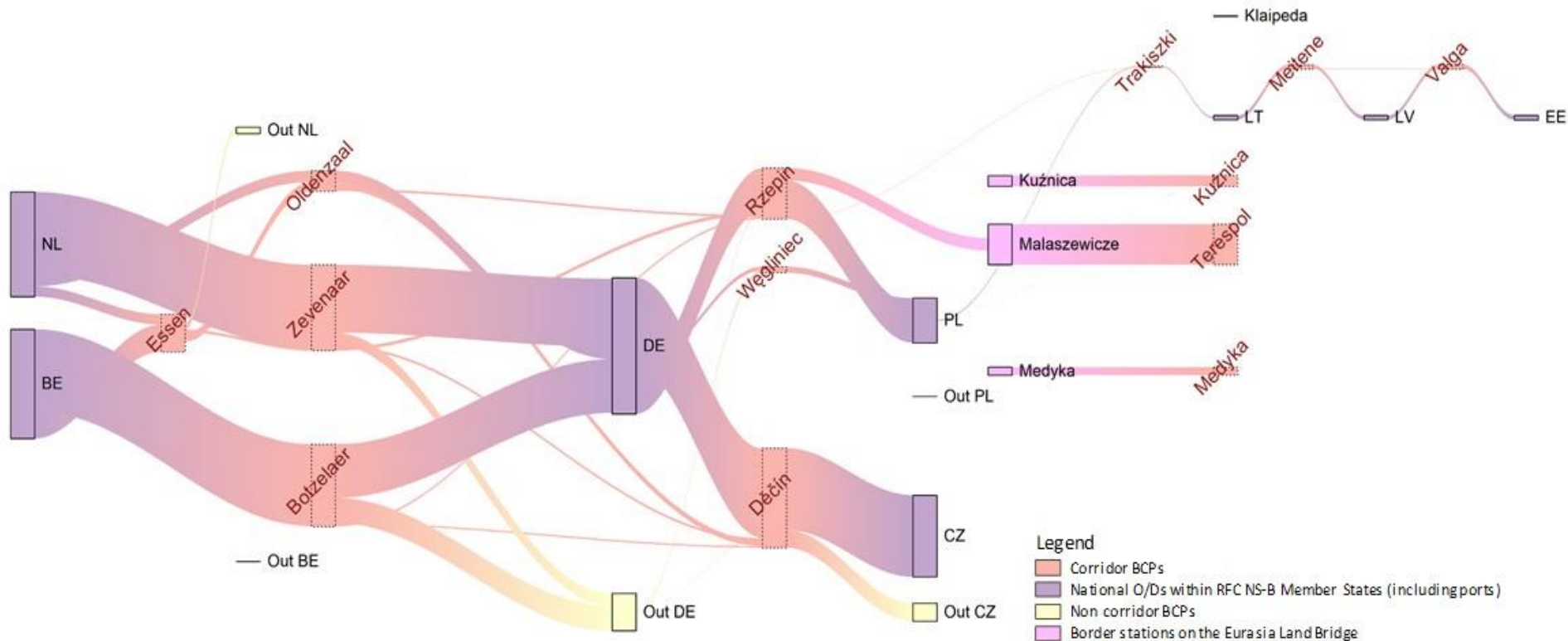
Source: Own elaboration on 2017 data provided by the IMs. Note: relations with a train frequency lower than 100 trains per year are not plotted; Train data for the Kuźnica Małaszewicze and Medyka border stations were provided only between these stations and the border crossing points with Belarus and Ukraine. Train data between the Kuźnica Małaszewicze and Medyka border stations and the Polish corridor BCPs of Frankfurt (Oder) (DE) – Rzepin (PL) and Horka (DE) – Węgliniec (PL) were available from the dataset related to these BCPs. According to O/D data at these BCPs, no traffic appears to exist in 2017 between them and the border crossing stations of Kuźnica and Medyka

Train flows also running on the alignment of other RFCs



Source: Own elaboration on 2017 data provided by the IMs. Note: relations with a train frequency lower than 100 trains per year are not plotted; Train data for the Kuźnica Małaszewicze and Medyka border stations were provided only between these stations and the border crossing points with Belarus and Ukraine. Train data between the Kuźnica Małaszewicze and Medyka border stations and the Polish corridor BCPs of Frankfurt (Oder) (DE) – Rzepin (PL) and Horka (DE) – Węliniec (PL) were available from the dataset related to these BCPs. According to O/D data at these BCPs, no traffic appears to exist in 2017 between them and the border crossing stations of Kuźnica and Medyka

2017 Country-to-country train flows along the RFC NS-B crossing a corridor BCP



Source: Own elaboration on 2017 data provided by the IMs. Note: relations with a train frequency lower than 100 trains per year are not plotted; Train data for the Kuźnica Małaszewicze and Medyka border stations were provided only between these stations and the border crossing points with Belarus and Ukraine. Train data between the Kuźnica Małaszewicze and Medyka border stations and the Polish corridor BCPs of Frankfurt (Oder) (DE) – Rzepin (PL) and Horka (DE) – Węliniec (PL) were available from the dataset related to these BCPs. According to O/D data at these BCPs, no traffic appears to exist in 2017 between them and the border crossing stations of Kuźnica and Medyka



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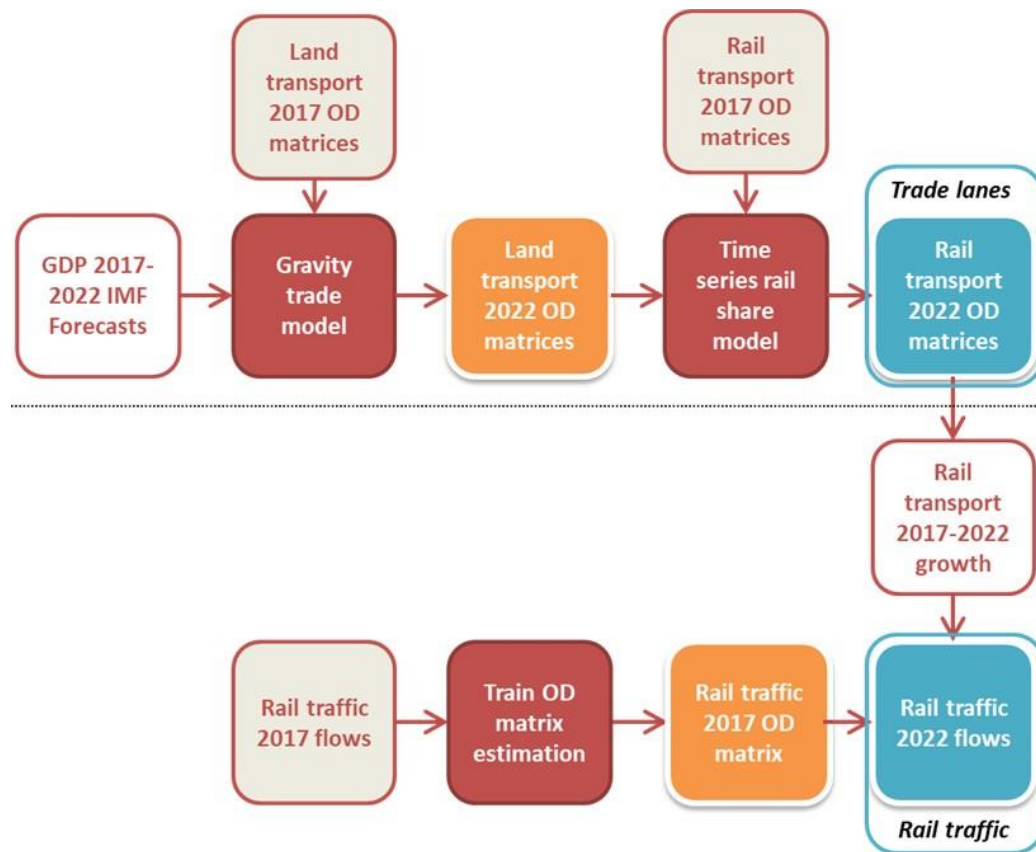
*Evaluation of the future market development on
the corridor*

Given the low response rate of the survey to the logistics and transport operators, a top-down approach has been used to develop the short-term (2022) market forecast for the RFC NS-B, setting up the following models based on the historical time series:

- A **gravity trade model** is used to forecast the overall international transport market growth based on socioeconomic drivers
- A **time series rail share** model is used to predict the changes in rail share demand based on the historical performance of each trade lane

The following outputs – corresponding to the equivalent data available about the transport market at the base year – have been estimated:

- Annual flows of goods along all RFC NS-B **trade lanes** for road and rail modes
- Annual **train traffic** flows on all RFC NS-B relations crossing at least one corridor BCP, and the corresponding annual flows at corridor BCPs



Comparison of the O/D matrix for rail freight transport in 2017 and 2022:

- The overall transport volume by rail is expected to grow from around 74 million tonnes/year to around 85 million tonnes/year, with an average annual compound **growth rate of 2.8%**. (However rail share will slightly decline from 18.1% in 2017 to 17.6% in 2022 due to a higher growth of road transport along the corridor trade lanes).
- The **largest bi-directional trade lane** on the corridor in 2022 will be between the Netherlands and Germany, which is also the largest in 2017: the total volume on this trade lane is expected to grow from 23 million tonnes to 27 million tonnes per year, with an average annual growth of 2.9%, higher than the corridor average and also slightly higher than the growth in road transport on the same trade lane: the rail share is expected to grow slightly from 20.1% in 2017 to 20.4% in 2022
- In the 2022 matrix, the **top 10 fastest-growing ODs** will be between the Netherlands, Germany and the Czech Republic, Poland and Lithuania
- Rail volumes are instead expected to **decline in the Baltic States**, which at least up until the completion of the ongoing modernisation works on the existing lines expected by 2022/2023 and the subsequent realisation of the Rail Baltica Global Project may suffer from competition with other modes
- The expected outlook for railway transport could be higher than described in the previous paragraphs above if looking at combined rail transport alone, for which the growth expectations are higher. The data available, however, do not allow developing separate forecast for this segment

2017		Unloading Country								
1000 t		BE	NL	DE	CZ	PL	LT	LV	EE	TOT
Loading Country	BE	-	867	3,824	117	75	-	-	-	4,883
	NL	677	-	18,495	1,298	596	-	-	-	21,066
	DE	2,826	4,903	-	9,432	4,343	10	-	-	21,514
	CZ	71	958	7,772	-	2,515	1	-	-	11,317
	PL	86	609	6,506	5,686	-	55	5	1	12,948
	LT	-	-	6	4	418	-	1,056	734	2,218
	LV	-	-	-	-	20	141	-	95	256
	EE	-	-	-	-	-	26	192	-	218
	TOT	3,660	7,337	36,603	16,537	7,967	233	1,253	830	74,420

Source: Eurostat; Note: Figures relate to total traffic at the country level (NUTS 0)

2022 E		Unloading Country								
1000 t		BE	NL	DE	CZ	PL	LT	LV	EE	TOT
Loading Country	BE	-	760	3,930	170	60	-	-	-	4,920
	NL	690	-	21,200	1,680	830	-	-	-	24,400
	DE	3,160	5,830	-	12,190	5,480	40	-	-	26,700
	CZ	90	1,250	9,330	-	2,420	-	-	-	13,090
	PL	80	810	6,920	5,810	-	70	-	-	13,690
	LT	-	-	-	-	580	-	970	690	2,240
	LV	-	-	-	-	-	90	-	40	130
	EE	-	-	-	-	-	20	140	-	160
	TOT	4,020	8,650	41,380	19,850	9,370	220	1,110	730	85,330

Growing trade lanes

Trade lanes with decreasing trend

Note: Figures (rounded to 10) relate to total traffic at the country level NUTS 0

Cagr 2017-2022 – Rail Transport Flows

	Unloading Country									
Loading Country		BE	NL	DE	CZ	PL	LT	LV	EE	TOT
	BE	-	-2.6%	0.5%	7.8%	-4.4%	-	-	-	0.2%
	NL	0.4%	-	2.8%	5.3%	6.8%	-	-	-	3.0%
	DE	2.3%	3.5%	-	5.3%	4.8%	32.0%	-	-	4.4%
	CZ	4.9%	5.5%	3.7%	-	-0.8%	-	-	-	3.0%
	PL	-1.4%	5.9%	1.2%	0.4%	-	4.9%	-	-	1.1%
	LT	-	-	-	-	6.8%	-	-1.7%	-1.2%	0.2%
	LV	-	-	-	-	-	-8.6%	-	-15.9%	-12.7%
	EE	-	-	-	-	-	-5.1%	-6.1%	-	-6.0%
	TOT	1.9%	3.3%	2.5%	3.7%	3.3%	-1.1%	-2.4%	-2.5%	2.8%

Note: Figures relate to total traffic at country level (NUTS 0); Figures in bold green present higher values compared to 2017 data, figures in red indicate lower values compared to 2017 data

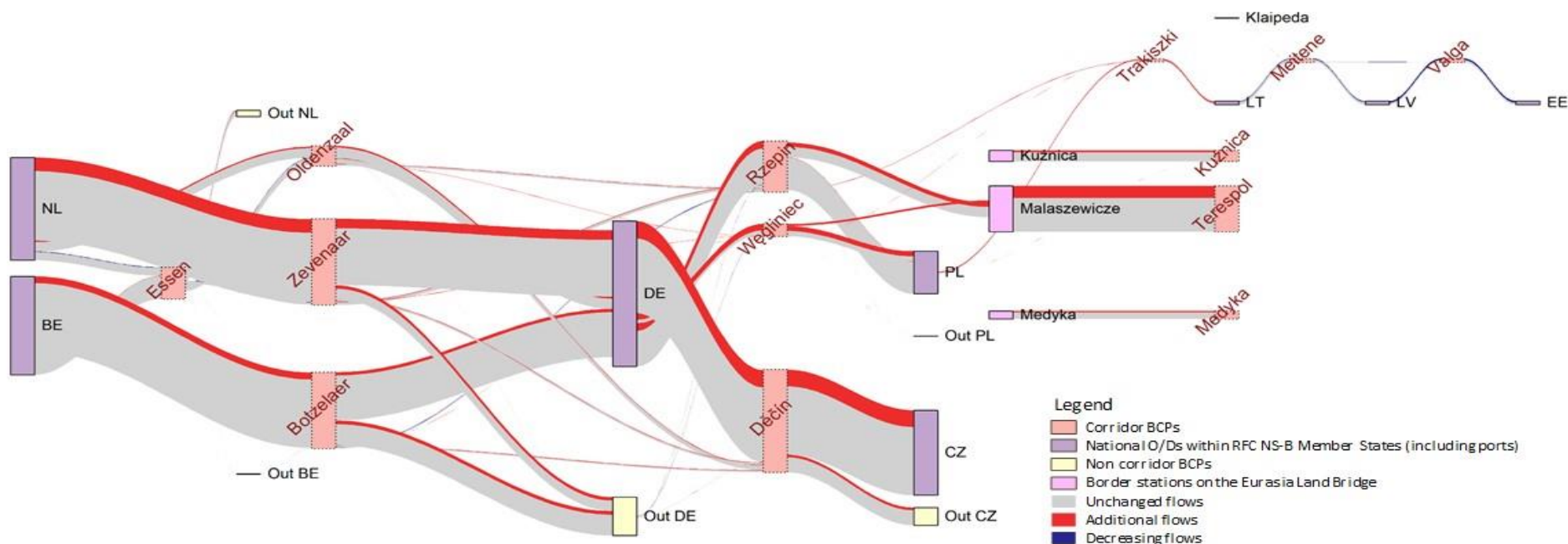
TRAIN TRAFFIC AT BCPS

Border pair	2017(*)	2022	DIFF.	DIFF. %
Essen (BE) – Roosendaal (NL)	8,130	8,190	60	0.7%
Botzelaer (BE) – Aachen West (DE)	23,460	25,870	2,410	10.3%
Zevenaer (NL) – Emmerich (DE)	24,500	29,250	4,750	19.4%
Oldenzaal (NL) – Bad Bentheim (DE)	5,860	6,580	720	12.3%
Bad Schandau (DE) – Děčín (CZ)	28,450	34,990	6,540	23.0%
Frankfurt (Oder) (DE) – Rzepin (PL)	14,640	16,890	2,250	15.4%
Horka (DE) – Węgliniec (PL)	1,760	4,220	2,460	139.8%
Trakiszki (PL) – Mockava (LT)	440	870	430	97.7%
Joniškis (LT) – Meitene (LV)	1,240	1,010	-230	-18.5%
Lugaži (LV) – Valga (EE)	1,340	800	-540	-40.3%
TOTAL	109,820	128,670	18,850	17.2%
Border station	2017(*)	2022	DIFF.	DIFF. %
Terespol	11,570	15,720	4,150	21.7%

Note: *rounded figures

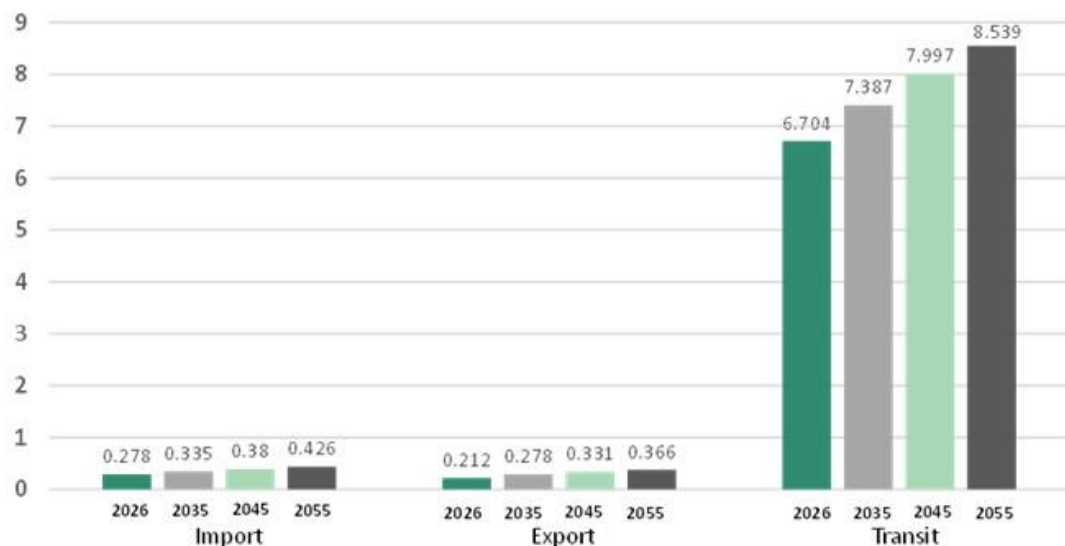
Train flows along the corridor: 2022 vs 2017

- Most O/Ds will experience growth, especially across the Western BCPs and towards the Czech Republic, Poland and Lithuania. Traffic growth at Rzepin is also related to the increase of traffic along the Eurasia Land Bridge
- Train traffic is expected to slightly reduce between the Baltic States. This effect will be counterbalanced by the completion by 2022/2023 of the ongoing works on the existing 1,520 mm track gauge lines and start of the operation of the Rail Baltica Global Project in 2026
- Based on available data, forecasts for the traffic with O/Ds from the ports were not possible to be elaborated



Source: Own elaboration on 2017 data provided by the IMs. Note: relations with a train frequency lower than 100 trains per year are not plotted; Train data for the Kuźnica Malaszewicze and Medyka border stations were provided only between these stations and the border crossing points with Belarus and Ukraine. Train data between the Kuźnica Malaszewicze and Medyka border stations and the Polish corridor BCPs of Frankfurt (Oder) (DE) – Rzepin (PL) and Horka (DE) – Węliniec (PL) were available from the dataset related to these BCPs. According to O/D data at these BCPs, no traffic appears to exist in 2017 between them and the border crossing stations of Kuźnica and Medyka. In absence of O/D data for 2017, also 2022 O/Ds were not possible to be represented in the plot for these two border crossing stations

Transit between the countries with 1,520mm railway system (CIS) and the EU (Base case) (million tonnes)



Source: Rail Baltica Global Project Cost-Benefit Analysis Final Report, 30 April 2017

Daily freight trains per section (Base case, 2030 – 2050)



Source: Rail Baltica Global Project Cost-Benefit Analysis Final Report, 30 April 2017

- According to forecast modelling, the annual transit flows will grow from approx. 6.7 million tonnes to 8.5 million tonnes during the forecast period
- These will be complemented by a minor volume of trade originating or ending in the Baltic States of almost 0.8 million tonnes in 2055



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Conclusions

A) Transport trends for the period 2004-2017 along the corridor seem confirming a **dualism**, with the market share for rail growing or stabilising in the Western part of the RFC NS-B and a generally declining share for rail in the Eastern part of the RFC NS-B (with relatively stronger decline in the Baltic States):

- This calls for the modernisation of the infrastructure in the Eastern part of the RFC NS-B and solve the interoperability gap affecting the Baltic States network that further to Kaunas is not at European standard gauge
- **Line modernisation projects in Poland and in the Baltic States** are ongoing and planned that together with the **Rail Baltica Global Project** are expected to improve the performance of the corridor (particularly after 2022)

B) The heterogeneous pattern along the corridor seems also reflecting a **fragility of the rail sector** that generally suffers from the competition of road transport along the investigated trade lanes:

- Governmental regulation and modal shift **promotion policies** either in favour of rail transport (i.e. subsidies on Track Access Charges (TAC) as implemented by Germany and the Netherlands) or discouraging road transport can support the competitiveness of the rail transport mode
- The **European Green Deal** and the adoption of policy measures affecting the cost of road transport in the future will further support the development of freight traffic by railway along the RFC NS-B

C) The «natural» location of the corridor on the **Eurasia Land Bridge** represents a key advantage for the RFC NS-B:

- Due consideration shall be given by the relevant national and international policy/decision makers to support and strengthen the development of the RFC NS-B along this promising global route

The strengths and weaknesses of the corridor as highlighted by the findings of the TMS supports the planned and proposed extensions of the corridor along the identified planned and proposed extensions:

- The **planned extension between Kaunas, Riga and Tallinn**, also including the lines interconnecting the corridor with Belarus via Daugavpils, and with Russia via Rēzekne, may support the development of traffic along the corridor either between the RFC NS-B Member States and between the EU and Central Asia/Asia along the Eurasia Land Bridge, subject to modernisation of the existing lines and development of the Rail Baltica Global Project
- The **proposed extension Rostock – Priestewitz / Dresden via Berlin** is expected to serve a relevant share of traffic to/from the border between Germany and the Czech Republic, which is estimated at the base year (2017) to be equal to 4,260 trains, corresponding to 15.0% of the traffic to/from the Bad Schandau (DE) - Děčín (CZ) BCP
- The **proposed extension Praha-Libeň – Kolín** allows widening the catchment area of the RFC NS-B in the Czech Republic. It is also potentially serving traffic to/from the border between Germany and the Czech Republic, for an estimated volume of about 500 trains in 2017, corresponding to 1.8% of the total traffic to/from the Bad Schandau (DE) - Děčín (CZ) BCP
- The **proposed extension Katowice – Medyka**, will create a continuous corridor branch from the BCP of Horka (DE) - Węgliniec (PL) to Medyka. This section will serve train traffic running between the Horka (DE) - Węgliniec (PL) BCP and the NUTS 2 regions involved by the extension of the corridor, i.e. Śląskie, Małopolskie and Podkarpackie. The total value, equal to 760 trains, represents 43.2% of the total traffic to/from the Horka (DE) - Węgliniec (PL) BCP