Rail Baltica Growth Corridor

Analysis of growth potential and governance model
9 August 2013 - Revised version
Analysis of growth potential and governance model

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Executive summary

Warsaw-Lodz-Poznan-Berlin

Kaunas-Bialystok-Warsaw

Baltic Capitals

Gulf of Finland Triangle

Helsinki-Tampere Growth Zone

RBGC Governance Model
# Executive Summary

## Aim
- The aim of this report is to identify potential sources of economic growth along the Rail Baltica Growth Corridor ("RBGC") and to outline possible governance model and next steps to realise that growth. In addition this report seeks to illustrate that the economic growth in the cities along the RBGC is interdependent and that the cities can draw strength from each other.
- The RBGC covers six European capitals (Helsinki, Tallinn, Riga, Vilnius, Warsaw and Berlin) over a distance of 1,600km where the potential for transport infrastructure improvements and resulting gains in economic growth are significant.

## Analysis
- The source material analysed for this report included previous work undertaken under the RBGC initiative, statistical information on the economy and transport as well as interviews with logistics experts and local stakeholders.
- The report analyses the RBGC in five sections: 1) Warsaw-Lodz-Poznan-Berlin, 2) Kaunas-Bialystok-Warsaw, 3) Tallinn-Riga-Kaunas/Vilnius (Baltic Capitals), 4) Helsinki-Tallinn-St. Petersburg (Gulf of Finland Triangle) and 5) Helsinki-Tampere Growth Zone.
- Governance Model analysis included a high level analysis of governance models of twenty growth corridor projects worldwide, of which the Brenner Corridor was analyzed in more detail. The evidence from these case studies was summarized as ten steps of good governance model.

## Main findings
- There are four sources of economic growth along the RBGC that strengthen the case for further development of transport, and especially rail infrastructure:
  - **Commuting duopolies** – the main cities in the Baltic States are in close proximity of each other with road transport increasing dramatically in the region over the last decade. The Baltic cities have the potential, with the appropriate transport connections, to function as commuting duopolies of two or more cities increasing their productivity and attractiveness as destinations. Helsinki-Tampere Growth Zone is an example of a functioning commuting duopoly whereas the Allegro train connection from Helsinki to St Petersburg is an example of how a strategic transport investment can have a significant impact on travel times.
  - **Passenger transport inter-modality** – a competitive passenger route involves smooth changes locally from one transport mode to another. In terms of passenger transport, significant potential for improvement can be identified in most of the capital cities. Reducing the time it takes to switch transport mode has key role in building commuting areas. Developments with significant transport impacts have been ongoing, for example, in Tallinn, Lodz and Poznan.
  - **Freight flows** – rail freight volumes on the RBGC north-south axis are limited at the moment. The majority of the freight that originates from Finland is transported by sea to Germany. The rail route via the Baltic States is currently not competitive due to the condition of the existing infrastructure and the challenging alignment. In order to trigger a change in freight flows from sea to rail the Baltic States transport route must be proven by building up freight volumes on the existing rail infrastructure in stages. There are existing rail freight volumes within Estonia and between Estonia and Latvia providing a base for this future growth.
  - **Freight transport inter-modality** – competitive logistics hubs will emerge at locations were freight must of is economic to shift from one mode of transport to another or transport routes intersect with each other. The existence of such hub can generate further economic activity as is seen in Helsinki and Kaunas with Berlin developing a world class information system to increase the share of rail freight.
### Executive Summary

#### Next steps

- The issues across the RBGC are similar and solutions to them are likely to have common elements making the benefits of and the case for cooperation across the corridor self-evident.
- The next steps are to establish a series of working groups under the RBGC platform to document best practice and outline actions for implementation along the corridor.
- Potential working group focus areas include 1) commuting duopolies around population centres, 2) improving passenger transport connections in the cities, 3) attracting more freight onto the existing rail route and 4) understanding and creating environments where logistics hubs can emerge.

#### Governance Model

- 10 critical steps for good governance model according to governance model analysis are: 1) forming network of public and private actors; 2) creating dialogue forums for stakeholders; 3) setting up a clear vision; 4) designing a formal platform; 5) getting strong personalized leadership; 6) gaining lobbying power; 7) making clear strategy and action plan; 8) establishing task forces; 9) forming solid competence and information basis; and 10) using best practice examples.
- RBGC all Baltica Growth Strategy is taking it’s first and second steps on this list. A clear and inspiring vision of Rail Baltica growth should be a core group of cities, together with private sector representatives. After the vision is formed, an action plan or action strategy – a (rail)road map – should be drawn. In addition the financial plan should be created and funding sources should be identified. In early stages, politically heavyweight should be appointed to steer development. He or she must have the resources (secretariat), and task forces at his disposal to carry out a substantial pieces of work.
The Rail Baltica Growth Corridor ("RBGC") connects Helsinki and St Petersburg in the north with Warsaw and Berlin in the south via Tallinn, Riga and Kaunas in the Baltic States.
Analysis of growth potential and governance model

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**Executive summary**

### Introduction

- The aim of this section is to identify potential sources of economic growth along the Rail Baltica Growth Corridor ("RBGC"), focusing on the Warsaw-Berlin section, and to outline possible next steps to realise that growth.
- Berlin and Warsaw are two major European capitals separated by approximately 500km. The two other RBGC cities along the corridor are Lodz (approximately 737,000 people) and Poznan (approximately 550,000 people) which both benefit from the proximity of the two European capitals as potential platforms for economic growth.

### Passenger transport

- The passenger travel time between Berlin and Warsaw by train is approximately 5 hours 10 minutes whilst the travel time by car is 5 hours. The travel time by train makes day business trips between the two cities inconvenient and significant improvements in the existing rail infrastructure are needed, and indeed ongoing, to generate a genuine commuting duopoly between the two capitals. However, given the economies of the two cities the benefits from closer integration on the Warsaw-Lodz-Poznan-Berlin section of the corridor are self-evident.
- Lodz is the third largest city in Poland in terms of population forming a commuting duopoly with Warsaw. The interconnectivity of the two cities is likely to be further enhanced going forward given modernisation and enhancement of the railway station in Lodz which will have a positive impact on the local transfers with other forms of public transport. Improvement have already been realised in Poznan where a modernized station was opened for the Euro 2012.

### Freight transport

- At the moment, 73% of the freight in Poland is transported on the road. This is believed to be in part due to the capacity constraints on the existing rail line and the compromised quality of the available rail infrastructure. Improvements in especially infrastructure are seen to have the potential to encourage a modal shift in some of the trade being transported across the region, and especially between Germany and Poland, as Germany is by far Poland’s most important trading partner.
- The share of all freight in Germany grew from 2003 onwards until 2011 and has since declined. The decline is argued to be in part due to the inflexibility of rail logistics and systematic efforts are ongoing to facilitate smooth transfers from road to rail transport to another by increasing the supply of real time information on the available alternatives in the Berlin Brandenburg region. The service currently available is seen as a best practice solution in real time information provision.

### Next steps

- The rail line between Warsaw and Berlin is in need of improvement in order to facilitate both more efficient passenger transport between the two cities as well as a modal shift in freight from rail to road. The case for the investment should be self-evident given the concentration of economic activity both in Berlin and Warsaw as well as in the cities along the corridor.
- It will also be important for the other cities along the RBGC to learn from the experiences of 1) Berlin Brandenburg in improving logistics via intermodal freight facilities and better provision of information and of 2) Lodz and Poznan in taking the full advantage of modernized railway stations in terms of improving passenger transport inter-modality.
Warsaw-Lodz-Poznan-Berlin section of Rail Baltica links two important European markets, Poland (39 million people) and Germany (82 million people), at the intersection of three TEN-T network corridors.

### Geographical definition

- **Warsaw**
  - Two TEN-T network corridors (Priority Axis 23 and Priority Axis 27) pass through Warsaw.
  - Warsaw has rail connections to all key cities in Poland and a number of European capitals, including Berlin, Moscow, Vienna, Budapest, Prague, and Vilnius.
  - Chopin Airport is located 10km from Warsaw City Centre with 8.7 million passengers in 2012.

- **Lodz**
  - Recent modernisation of the rail line between Lodz and Warsaw has reduced the travel time by approximately an hour. The route is used for primarily commuting.
  - One TEN-T network corridor (Priority Axis 25) passes through Lodz.
  - Lublinek Airport is located 6km from Lodz City Centre with 0.5 million passengers in 2012.

- **Poznan**
  - Poznan is located 160km from the German border and 272km from Berlin.
  - Poznan has good rail connections with services to all the main cities in Poland and to international destinations such as Berlin, Prague, and Kiev.
  - Lawica Airport is located 7km from Poznan City Centre with 1.6 million passengers in 2012.

- **Berlin**
  - Berlin has a high quality rail network in place with excellent connectivity throughout Europe.
  - There are two major international airports in Berlin – Tegel and Schönefeld. The majority of passenger traffic will shift to the Berlin Brandenburg Airport currently under construction and scheduled to open in 2014.

### Existing transport infrastructure

**Sources:** City of Berlin, TEN-T EA, Investment in Poland - KPMG, Airport Of Warsaw Lodz and Poznan, Google Maps
Warsaw and Poznan are both well positioned to grow and catch-up with Berlin in terms of economic development. Lodz is the third largest city in Poland when population is considered but is currently facing economic and employment challenges.

**Economic profiles**

- These four RBGC cities are located in close proximity of each other. The distance from Warsaw to Berlin is 575km. Berlin is the second largest city in Europe in terms of population whereas Warsaw is the ninth largest. Lodz and Poznan are among the largest cities in Poland.
- Poznan has the second strongest city economy in Poland after Warsaw with a low rate of unemployment.
- The economic growth in Lodz has been in line with that in Poland. Lodz is the third largest city in terms of population but GDP per capita is below most of the large cities in Poland (10th). In addition the unemployment rate in Lodz is among the highest in Poland.
- The GDP per capita in Warsaw was only 10% lower than in Berlin in 2010. Growth and catch-up has been strong with Warsaw growing 167% between 2000 and 2010 against 37% growth in Berlin over the same period.

**Sources:** Urban audit, Eurostat, Statistical office of Poland, City of Berlin, KPMG in Poland
Warsaw-Lodz-Poznan-Berlin
Passenger travel times 1(3)

Lodz is not on the main rail line between Warsaw and Berlin. There is a 1 hour 10 minutes connection to Warsaw making a daily commute between the cities possible.

<table>
<thead>
<tr>
<th>Connectivity in Warsaw-Lodz-Poznan-Berlin</th>
<th>Connectivity after rail modernisation in Poland (2030)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Warsaw</strong></td>
<td><strong>Warsaw</strong></td>
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<td><strong>Lodz</strong></td>
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<td>- By train</td>
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<td>- Travel time 1 hour 10 minutes</td>
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<td>- By car***</td>
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<td></td>
<td>- Travel time 1 hour 25 minutes</td>
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<td><strong>Poznan</strong></td>
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<td>- By train</td>
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<td>- Travel time 2 hours 50 minutes</td>
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<td></td>
<td>- Travel time 2 hours 46 minutes</td>
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<td><strong>Berlin</strong></td>
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<td>- By train</td>
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<td>- Travel time 5 hours 10 minutes</td>
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<td>- By car***</td>
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<td>- Travel time 5 hours</td>
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<td></td>
<td><strong>Lodz</strong></td>
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<td>- By train**</td>
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<td>- Travel time 45 minutes</td>
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<td>- By car***</td>
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<td></td>
<td>- Travel time 1 hour 25 minutes</td>
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<td><strong>Poznan</strong></td>
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<td>- By train</td>
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<td>- Travel time 1 hours 30 minutes</td>
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<td>- Travel time 2 hours 46 minutes</td>
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<td></td>
<td><strong>Berlin</strong></td>
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<td>- By train</td>
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<td>- Travel time 2 hours 55 minutes</td>
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<td>- By car***</td>
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<tr>
<td></td>
<td>- Travel time 5 hours</td>
</tr>
</tbody>
</table>

* Note: Distance by car
*** Note: Estimated travel time at 200km/h

Sources: PKP – Polish Railways; Google Maps; A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM; Warsaw Convention Bureau and Howard HTL; Ministry of Infrastructure in Poland – “Program budowy i uruchomienia przewozów Kolejami Dużych Prędkości w Polsce”
The fastest rail connection from Lodz to Berlin currently involves an interchange at Kutno.

**Connectivity in Warsaw-Lodz-Poznan-Berlin**

- **Warsaw**
  - By train: Travel time 1 hour 10 minutes
  - By car***: Travel time 1 hour 25 minutes

- **Lodz**
  - By train: Travel time 1 hour 10 minutes (Interchange at Kutno)
  - By car***: Travel time 2 hours 6 minutes

- **Poznan**
  - By train: Travel time 3 hours 10 minutes (Interchange at Kutno)
  - By car***: Travel time 3 hours 10 minutes

- **Berlin**
  - By train: Travel time 6 hours (Interchange at Kutno)
  - By car***: Travel time 4 hours 23 minutes

**Connectivity in Lodz**

- Lodz is not located on the main rail line between Warsaw and Berlin
- Lodz has good and fast connections to Warsaw after a recent rail modernisation. The estimated travel time is 1 hour 10 minutes
- At the moment, the fastest connection from Lodz to Poznan is via Kutno, a town located on the main rail line (Rail Baltica) from Warsaw to Poznan
- A modernisation of the Lodz-Poznan will upgrade the line for 120km/h
- In addition, the High Speed Rail project on the Warsaw-Lodz-Poznan/Lodz-Wroclaw line called “Y-shape”, is currently analysed and the modernisation is planned to be finalised in 2030

**Illustration of the Y-Shaped high speed rail line project**

*S Note: Distance by car
*** Note: Google Maps

Sources: PKP- Polish Railways; Google Maps; A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM; Railway Gazette; KPMG in Poland; Ministry of Infrastructure in Poland – “Program budowy i uruchomienia przewozów Kolejami Duzych Prędkości w Polsce”
Warsaw-Lodz-Poznan-Berlin
Passenger travel times 3(3)

Poznan holds a strategic location between Warsaw and Berlin. With the arrival of Rail Baltica and resulting travel time improvements it could be possible for Poznan to form a commuting duopoly with both Warsaw and Berlin.

### Connectivity in Warsaw-Lodz-Poznan-Berlin

<table>
<thead>
<tr>
<th>Location</th>
<th>By train</th>
<th>Travel time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warsaw</td>
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<tr>
<td>Lodz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Berlin</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Warsaw
- By train: Travel time 2 hours 50 minutes
- By car**: Travel time 2 hours 46 minutes

#### Lodz
- By train: Travel time 3 hours 10 minutes (Interchange at Kutno)
- By car**: Travel time 2 hours 6 minutes

#### Berlin
- By train: Travel time 2 hours 25 minutes
- By car**: Travel time 2 hours 37 minutes

*Note: Distance by car
** Note: Google Maps

### Connectivity after rail modernisation in Poland (2030)

<table>
<thead>
<tr>
<th>Location</th>
<th>By train</th>
<th>Travel time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warsaw</td>
<td></td>
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<tr>
<td>Lodz</td>
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<tr>
<td>Berlin</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Warsaw
- By train: Travel time 1 hour 30 minutes **
- By car**: Travel time 2 hours 46 minutes

#### Lodz
- By train: Travel time 1 hour
- By car**: Travel time 2 hours 6 minutes

#### Berlin
- By train: Travel time 1 hours 30 minutes **
- By car**: Travel time 2 hours 37 minutes

*Note: Distance by car
** Note: Estimated travel time at 200km/h
*** Note: Google Maps

Sources: PKP - Polish Railways; Google Maps; A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM; Railway Gazette; Ministry of Infrastructure in Poland – "Program budowy i uruchomienia przewozów Kolejami Dukch Predkosci w Polsce"
Passenger transport inter-modality in Łódź

The New Fabryczna Station will create an inter-modal transport hub in the Lodz City Centre. The station opening in 2015 will be able to incorporate the Rail Baltica high speed service in the future.

New Łódź Fabryczna Station
- The new station aims to create an inter-modal transport hub in the city centre. The station will be able to incorporate the Rail Baltica high speed service in the future.
- The project will see a modernization of the track to Łódź Widzew station and four platforms with capacity for 200,000 passengers per day.
- The station surroundings will include a bus terminal for local and long distance buses and parking facilities for both private cars and bicycles.
- The new station will act as a central hub for conventional rail, high speed rail and a network of modern trams to be reconfigured to fit around the new station.
- The new station will facilitate enhanced inter-modal passenger transport in Lodz starting from 2015.

Sources: City of Lodz; Construction of Lodz Fabryczna Station, Consortium Torpol-Astaldi-PBDIM-Intercor; Expert Interview.
Poland has been successful in attracting Foreign Direct Investment. This may be in part due to its well educated workforce and competitive cost of labour.

**GDP growth Poland in 2007-2011**
- The annual GDP growth rate in 2011 was 4.3% in Poland whereas in more advanced economies the growth has been slower, Germany 1.3% and Finland 2.3%
- Quarterly GDP growth rate fell 7.1% in the beginning of 2009. However, the Polish economy recovered quickly during 2009 with annualised growth being 3.2% by the end of the year. Poland was the only EU country to survive the economic slowdown without negative growth.
- Poland has succeeded in attracting Foreign Direct Investment during 2000-2012 slightly more than Russia in terms of inward Foreign Direct Investment per capita.
- The rate of higher education is 40% of the population and the cost of labour is 9 EUR per hour.

**FDI stock per capita growth in large RBGC countries 2000-2012**
- Foreign Direct Investment in Poland

**Cost of labour in Poland vs. rate of higher education**
- Labour cost (EUR/h) vs. Higher education of population (%)

*Note: 1 USD = 0.76 EUR*

Sources: Global Cities Monitor 2012 - KPMG; Investment in Poland - KPMG; UNCTAD World Investment Report 2012; Trading Economics
Labour productivity is key to a competitive economy. It can be improved through greater specialisation and concentration of economic activity. This requires Foreign Direct Investment. High quality transport connections also play a key role in realizing faster economic growth and catch-up with the development economies.

Labour productivity in 2011

Source: Urban Audit
Foreign Direct Investment in Poland 3(4)

Poland has been successful in attracting Foreign Direct Investment due its good performance on indicators deemed important when choosing investment destinations.

### Importance of the Investment criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political stability and juridical security</td>
<td>96 %</td>
</tr>
<tr>
<td>Accessibility of skilled human resources</td>
<td>88 %</td>
</tr>
<tr>
<td>Economic growth</td>
<td>87 %</td>
</tr>
<tr>
<td>Market accessibility and size</td>
<td>87 %</td>
</tr>
<tr>
<td>Infrastructures</td>
<td>77 %</td>
</tr>
<tr>
<td>Quality of education</td>
<td>70 %</td>
</tr>
<tr>
<td>Living costs, salaries and tax levels</td>
<td>68 %</td>
</tr>
</tbody>
</table>

**The important investment criteria are met in Poland**

- **Political and juridical security**
  - Poland is a member of the EU, Poland has a network of institutions supporting investors

- **Accessibility of skilled human resources**
  - Poland has large, young, well educated and skilled workforce

- **Economic growth**
  - Poland has experienced a rapid development of a market economy after political changes in 1989 and has a long industrial tradition

- **Market access and size**
  - Poland is a country of 39 million people having borders with Germany and the other CEE countries

- **Infrastructure**
  - Infrastructure developments will enhance transport connections under TEN-T Priority Axis 23, Priority Axis 25 and Priority Axis 27, making Poland one of the best located and connected countries in the EU

- **Quality of education**
  - Poland has a high standards of education

- **Living costs, salaries and tax levels**
  - The average salary is much lower than in Western Europe being 850-1 175 EUR in the largest cities per month
  - Cost of living is considerably lower than in Western Europe. One bedroom apartment costs 210-400 EUR per month in the largest cities

**Sources:** Global Cities Monitor 2012 - KPMG; Investment in Poland - KPMG; UNCTAD World Investment Report 2012
The history of Foreign Direct Investment in Poznan has been into the industrial sector with the city seeking to attract investment into its services based industries going forward.

Foreign Direct Investment in Poznan

- Foreign Direct Investment between 1990 and 2008 in Poznan totalled 4.8 billion EUR*
- The largest investments were made into the industry sector by a number of well known international companies
- Poznan is pursuing a strategy of attracting more service industry investments from companies in the field of IT, design and financial and accounting services in order to generate employment opportunities for its well educated workforce. This has started to deliver results as Microsoft, Itelligence and Arvato have located into the city.

Key investors in Poznan up to 2008

- Exide Technologies
- SKF
- Unilever - 2000
- Wrigley - 1993
- VW - 1993
- SAB Miller - 1995
- Bridgestone - 1998
- GlaxoSmithKline - 1998
- Imperial Tobacco - 2008

Source: City of Poznan, 2008

* Note: 1 USD = 0.76 Euro
Germany is the most important country in terms of origin and destination of freight flow on the north-south axis of the Baltic Sea region.

For the purpose of this report we have used the data available in the Rail Baltica feasibility study undertaken by Aecom. The data set is in most part for 2008 as it reflects better the future volumes of Rail Baltica and are not affected by the post 2008 economic crisis.

The Classification of the bulk and non bulk commodities are shown in the Appendix 1.

Germany as an origin and destination of freight
- Annually 23.4 million tonnes of RBGC freight arrives in Germany via the north-south axis of the Baltic Sea region.
- Annually 18.6 million tonnes of RBGC freight originates from Germany travelling via the north-south axis.
- The largest commodity type on the route is paper transported from Finland to Germany. This amounts to 2.5 million tonnes annually. Wood products is the second largest commodity type with one million tonnes annually on the Finland to Germany route.

Source: A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM.
Poland and Germany have close ties in trade of goods and services

**Trade between Poland and Germany**
- Germany is Poland’s most important trade partner accounting for 22.3% of imports and 26.1% of exports
- The volume of trade between the two countries has increased rapidly in the last decade. The growth between 2000 and 2011 was 264% in imports and 405% in exports
- The most notable indication of close ties is trade in services. Germany’s total trade of services with Poland, acquired and provided, is more two and half times larger than with the United Kingdom

**Polish trade partners in 2011**

**Polish trade in services with OECD countries in 2011**

*Source: A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM*
In 2011, 38.8 million tonnes of rail freight was either dispatched or received in Berlin-Brandenburg. This accounts for 6.5% of the total rail freight in Germany.

Nordrhein-Westfalen transported 152 million tonnes and Niedersachsen 94 million tonnes of rail freight.

Both Nordrhein-Westfalen and Niedersachsen have good rail connections to Berlin, which serves as gateway to the CEE markets.

The total volume of rail freight has declined 2.4% from 375 million tonnes (2011) to 366 (2012) million tonnes.

**Rail freight in 2011 (top six areas)**

<table>
<thead>
<tr>
<th>Area</th>
<th>Million tonnes</th>
</tr>
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<tbody>
<tr>
<td>Nordrhein-Westfalen</td>
<td>152</td>
</tr>
<tr>
<td>Niedersachsen</td>
<td>94</td>
</tr>
<tr>
<td>Bayern</td>
<td>79</td>
</tr>
<tr>
<td>Sachsen-Anhalt</td>
<td>68</td>
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<tr>
<td>Hamburg</td>
<td>49</td>
</tr>
<tr>
<td>Brandenburg</td>
<td>36</td>
</tr>
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**Source:** Statistisches Bundesamt (Preliminary results. Excluding transit freight)

*Note: Excluding transit freight*
Warsaw-Łodz-Poznan-Berlin

Logistics hubs

The Inter-modal Node Information System can enhance the cooperation and co-marketing of logistics hubs along the RBGC and as a result bring out the synergies of different logistic terminals providing tailored solutions to businesses finding the most convenient route and transport mode and ultimately the best transport service.

Inter-modal Node Information System in the Brandenburg

- The Ministry of Infrastructure and Agriculture Brandenburg has introduced an Inter-modal Node Information System (INIS) to facilitate freight transfers from road to rail and vice versa in the Brandenburg region.
- The INIS which is open to public online gives up to date information to the transport service providers and consumers on the availability of the logistics terminals and railways access points as well as practical information and instructions of arrival.
- The INIS system is designed to be easily used and utilises the “Brandenburg Viewer” maps to help the transport service providers to identify most convenient transfer points.
- Furthermore the INIS serves as a marketing instrument for the companies and the logistic and industrial areas of Brandenburg.
- The development plan in the future is to make best use of synergies between the different hubs and logistic terminals along to Rail Baltica Growth Corridor providing tailored services to businesses seeking freight transportation through the corridor.

Source: Study “Shifting Road- to Railway-Transport in the Region of Ludwigsfelde in Context of the Rail Baltica Growth Corridor”
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2. Warsaw-Lodz-Poznan-Berlin
3. Kaunas-Bialystok-Warsaw
4. Baltic Capitals
5. Gulf of Finland Triangle
6. Helsinki-Tampere Growth Zone
7. RBGC Governance Model
# Executive summary

## Kaunas-Bialystok-Warsaw

### Introduction
- The aim of this section is to identify potential sources of economic growth along the Rail Baltica Growth Corridor ("RBGC"), focusing on the Kaunas-Bialystok-Warsaw section and to outline possible next steps to realise that growth.
- Kaunas in Lithuania and Bialystok in Poland are two cities with approximately 300,000 populations separated by a distance of approximately 250km. Warsaw is the capital of Poland with a population of 1.7 million around 200km southwest of Bialystok. The routes of both Via Baltica and Rail Baltica pass through Kaunas and Bialystok before reaching Warsaw.

### Passenger transport
- The current passenger traffic between Kaunas and Bialystok is limited due to the travel times involved. Although the cities are only 250km apart the existing travel time between them, for example, by train is almost six hours. This is in part due to the poor condition of the existing rail infrastructure and in part due to the gauge break in Sestokai. Whilst Kaunas is well integrated in terms of passenger transport with the Lithuanian capital Vilnius, with the distance of 100km the travel time from Bialystok to Warsaw in Poland is over three hours with the distance being under 200km.
- Kaunas and Bialystok are both cities with universities and have well educated populations. However, university graduates are, given the high rates of unemployment locally, drawn by opportunities elsewhere within the European Union, and in the case of Bialystok, by those in Warsaw.
- Whilst especially Bialystok would benefit from better integration with Warsaw in terms of generating further economic growth potential and retaining more university graduates, Kaunas and Bialystok could also potentially benefit from closer collaboration with each other in developing employment opportunities. Better transport links would have a key role in such integration of the economies of the two cities.

### Freight transport
- As with rail passenger transport, the rail freight on the north-south axis is limited and an improvement in the quality of the infrastructure is required. The progress on extending the standard gauge track from Sestokai to Kaunas has slowed since 2011 and the completion is anticipated by the end of 2015 at the earliest. This connection could have a very positive impact on the amount of freight flowing across the Polish-Lithuanian border as the gauge and transport mode transfers become more possible within the Kaunas logistics hub.
- Kaunas is an important transport location as routes from the Klaipeda Port, Kaliningrad (Russia), Latvia, Poland, Russia and Belarus intersect in the city. This makes it also an ideal location for a logistics hub and one has developed benefiting greatly from the Free Economic Zone policy in Lithuania. The City of Kaunas is seeking to capitalise on the logistic hub by investing in inter-modal terminal to facilitate changes from one mode of transport to another. Kaunas-Bialystok in turn is an intersection point from Warsaw to both Lithuania and Belarus with the Belarusian border also being the border of the European Union making it also a suitable location for a logistics hub.
- Kaunas and Bialystok are both cities where food processing is the largest industry resulting in transportation needs to markets elsewhere. This means that the two cities are also originations of freight highlighting a potential area for further collaboration.

### Next steps
- The improvement of the existing rail line from Warsaw to Bialystok and Kaunas can potentially have a significant impact on the economies of the two cities as well as further afield. It is of vital importance to work together with the other RBGC partners to understand how rail freight can be increased on the existing line. Equally, it will be important for the other cities to understand how Kaunas has taken an advantage from the Free Economic Zone and inter-modal logistic services in developing its logistics industry and whether lessons learned can be applied elsewhere.
The economic cooperation between Lithuania and Poland is currently hampered by the low quality of transport infrastructure between Kaunas and Warsaw.

The infrastructure in the section between Bialystok and Warsaw is also of importance for the internal economic development of Poland.

**Existing transport infrastructure**

- The distance between Kaunas and Bialystok by road is 241km and between Bialystok and Warsaw 197km.
- Via Baltica (E67), a part of the TEN-T network, passes through Kaunas, Bialystok and Warsaw.
- Kaunas has good east-west connections with Vilnius to Minsk (Belarus) to the east and Klaipeda as well as Kaliningrad (Russia) to the west.
- Bialystok is located near the Lithuanian (approximately 150km) and Belarussian (approximately 50km) borders.
- The existing rail infrastructure between Kaunas and Bialystok is of low quality with a gauge break in Sestokai in Lithuania.
- The condition of rail and road infrastructure around Bialystok has significant room for improvement.
- The transport infrastructure in Warsaw is described in the Warsaw-Lodz-Poznan-Berlin section of this report.

Sources: Google Maps, Expert Interview.
Kaunas and Bialystok are very similar cities in terms of population, GDP and unemployment. However, the economic growth in Kaunas in the past decade has been considerably faster than that in Bialystok.

**Economic profile**
- The population in Kaunas and Bialystok is approximately 300,000 people, whereas Warsaw is the ninth largest city in Europe with approximately 1.7 million people.
- Warsaw is considerably wealthier than Kaunas and Bialystok, having twice as higher GDP per capita.
- In terms of GDP, Kaunas has grown the fastest between 2000-2009, with a growth rate of 167% against that of 60% in Bialystok and 70% in Warsaw.
- The unemployment rate in Warsaw was 4.9% in 2012 whereas the rate in Kaunas was 9.3% and in Bialystok 14.3%.

**Sources:** Eurostat, Central Statistical Office of Poland, City of Kaunas

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**Population in 2012**
- Kaunas: 309,000
- Bialystok: 294,000
- Warsaw: 1,720,000

**GDP per capita**
- Kaunas
- Warsaw
- Bialystok

**Unemployment rate in 2012**
- Kaunas: 9.3%
- Bialystok: 14.3%
- Warsaw: 4.9%
The construction of Rail Baltica would create a smooth crossing at the border between Lithuania and Poland by a rail without a break of gauge. The rail travel times would be reduced substantially with train becoming a faster mode of transport than car.

### Connectivity in the Kaunas-Bialystok-Warsaw

<table>
<thead>
<tr>
<th>Destination</th>
<th>By Train</th>
<th>By Car</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sestokai (98 km*)</td>
<td>Travel time 5 hours 44 minutes</td>
<td>Travel time 3 hours 27 minutes</td>
</tr>
<tr>
<td>Bialystok (241 km*)</td>
<td>Travel time 8 hours 52 minutes</td>
<td>Travel time 5 hours 23 minutes</td>
</tr>
</tbody>
</table>

### Connectivity after Rail Baltica

<table>
<thead>
<tr>
<th>Destination</th>
<th>By Train</th>
<th>By Car</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sestokai (98 km*)</td>
<td>Travel time 3 hours 9 minutes **</td>
<td>Travel time 5 hours 23 minutes</td>
</tr>
<tr>
<td>Bialystok (241 km*)</td>
<td>Travel time 1 hour 55 minutes **</td>
<td>Travel time 3 hours 27 minutes</td>
</tr>
<tr>
<td>Warsaw (396 km*)</td>
<td>Travel time 1 hour 55 minutes **</td>
<td>Travel time 3 hours 9 minutes **</td>
</tr>
<tr>
<td>Warsaw</td>
<td>Travel time 3 hours 27 minutes</td>
<td>Travel time 5 hours 23 minutes</td>
</tr>
</tbody>
</table>

*Note: Distance by car
** Note: Estimated travel time at 120km/h
*** Note: Google Maps

Sources:
PKP – Polish railways; Google Maps; A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM; Warsaw Convention Bureau and Howard HTL
The construction of Rail Baltica could reduce the train travel times from Bialystok to Warsaw by almost two hours and from Bialystok to Kaunas by more than four hours. These accessibility improvements could have a transformational impact on the economy around Bialystok and Eastern Poland. The train travel time from Bialystok to Warsaw and Kaunas would be within a daily commuting window.

Connectivity in the Kaunas-Bialystok-Warsaw

- **Kaunas**
  - By train:
    - Travel time 5 hours 44 minutes
  - By car:
    - Travel time 3 hours 27 minutes

- **Warsaw**
  - By train:
    - Travel time 3 hours 7 minutes
  - By car:
    - Travel time 2 hours 29 minutes

- **Bialystok**
  - By train:
    - Travel time 3 hours
  - By car:
    - Travel time 2 hours 29 minutes

**Sources:**
PKP – Polish railways; Google Maps; A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM; Warsaw Convention Bureau and Howard HTL.

Connectivity after Rail Baltica

- **Kaunas**
  - By train:
    - Travel time 1 hour 55 minutes
  - By car:
    - Travel time 3 hours 27 minutes

- **Warsaw**
  - By train:
    - Travel time 1 hour 34 minutes
  - By car:
    - Travel time 2 hours 29 minutes

**Note:**
- Distance by car
- Estimated travel time at 120km/h

**Sources:**
PKP – Polish railways; Google Maps; A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM; Warsaw Convention Bureau and Howard HTL.
Lithuania and Poland both have a well educated workforce illustrated by, for example, both Kaunas and Bialystok having universities. The low cost of labour in the two countries is a source of economic competitiveness, acknowledging that Russia is in a more advantageous position still in this respect.

Source: Economist Intelligence Unit, Trading Economics, OECD

* Note: 1 USD = 0.77 EUR
High quality transport connections to Warsaw, one of the fastest growing major cities in Europe, could potentially boost the economy of Bialystok and Kaunas. A better rail connection could also enhance the distribution channels for the food processing industry in Bialystok allowing for distribution to the wider European market.

### Main industry sectors

<table>
<thead>
<tr>
<th>Industry and construction</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food processing</td>
<td>Financial services</td>
</tr>
<tr>
<td>Liqueur and spirits production</td>
<td>Wholesale and retail</td>
</tr>
<tr>
<td>Agriculture machinery</td>
<td>B2B services</td>
</tr>
<tr>
<td>High-tech industry</td>
<td>e-commerce</td>
</tr>
<tr>
<td>Electronics industry</td>
<td>IT</td>
</tr>
<tr>
<td>Construction and building materials industry</td>
<td></td>
</tr>
<tr>
<td>Transportation infrastructure construction</td>
<td></td>
</tr>
</tbody>
</table>

### Economic activity

#### Warsaw
- Warsaw is the economic engine of Poland and the driving force in the development of the country.
- Warsaw has a domestic market of 1.7 million people and well developed connections to other markets.
- Warsaw has more service industries than Bialystok and Kaunas. The change to more value added service sector is enhancing productivity and developing Warsaw as an attractive place for an educated workforce.

#### Bialystok
- The share of agriculture, forestry and fishing in Bialystok and its surrounding areas is the largest in Poland.
- The development of the industry sector in Bialystok is clustered around agriculture with processed organic food and organic farming seen as the key activities over the next ten years.

#### Kaunas
- The largest companies in Kaunas are those active in wholesale and retail trade, wholesale of agriculture equipment, transport infrastructure construction, confectionery and IT.

Sources: Statistics of Kaunas; Investment in Poland - KPMG; Expert Interview
Kaunas is located in the junction of two important freight corridors. On the one hand, the vicinity of Klaipeda and Kaliningrad ports and on the other hand the intersecting rail lines, which with the construction of Rail Baltica, will use two different gauges, may further increase the demand for inter-modal transport facilities.

**Introduction**

- The distances from Kaunas to Port of Klaipeda, Port of Kaliningrad and Vilnius are 220km, 250km and 100km respectively.
- Kaunas public logistic centre will consist of a logistic park (an area for warehousing, distribution, value-added activities) and Kaunas inter-modal terminal.
  - The Kaunas inter-modal terminal is intended to be an intermediary that provides a public service combining access to transport infrastructure, freight handling facilities and markets for goods. Construction completion is expected in July 2014.
  - The logistic park is still in a feasibility assessment stage.

---

**Freight flows on road and rail**

- **Rail**
  - 18 – 20 mln. t per year*
  - 5 – 7 mln. t per year*
  - 2 – 3 mln. t per year*
  - up to 1 mln. t per year*

- **Road**
  - 5 – 7 mln. t per year*
  - 2 – 3 mln. t per year*
  - up to 1 mln. t per year*

---

*Note. Internal flow of freight is not shown*
Kaunas-Bialystok-Warsaw
Transport hub in Kaunas 2(2)

The optimum location for the Kaunas intermodal terminal could be in the proximity of the Kaunas international airport, the railway station and the main roads.

Kaunas inter-modal terminal
- The optimum location for the Kaunas inter-modal terminal could be in the proximity of:
  - Kaunas Airport
  - Highway A1 (Vilnius – Kaunas – Klaipėda)
  - Highway A6 (Kaunas – Zarasai – Daugpilis)
  - Via Baltica (7km away)
  - Kaunas railway station
  - Kaunas Free Economic Zone
  - Logistic terminals in the area

- The suggested plans include renovating the existing logistic terminal in the junction of main railway line and the A1 highway
- New road links are intended to facilitate transport to Kaunas inter-modal terminal

Kaunas Free Economic Zone (FEZ)
- Kaunas FEZ is an industrial development area of 534 ha with well developed infrastructure
- FEZ offers tax incentives to companies establishing new operations in the area

Source: Expert Interview
Finland and Germany have the highest quality of rail infrastructure in the RBGC countries comparison, whereas Russia and Poland have the largest potential for improvement in infrastructure.

### Quality of overall infrastructure

<table>
<thead>
<tr>
<th>Country</th>
<th>Overall Infrastructure Quality Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>6.5</td>
</tr>
<tr>
<td>Germany</td>
<td>6.2</td>
</tr>
<tr>
<td>Estonia</td>
<td>5.4</td>
</tr>
<tr>
<td>Lithuania</td>
<td>5.1</td>
</tr>
<tr>
<td>Latvia</td>
<td>4.6</td>
</tr>
<tr>
<td>Poland</td>
<td>4.0</td>
</tr>
<tr>
<td>Russia</td>
<td>3.5</td>
</tr>
</tbody>
</table>

### Quality of rail infrastructure

<table>
<thead>
<tr>
<th>Country</th>
<th>Railroad Quality Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>6.5</td>
</tr>
<tr>
<td>Germany</td>
<td>6.2</td>
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<tr>
<td>Estonia</td>
<td>5.4</td>
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<tr>
<td>Lithuania</td>
<td>5.1</td>
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<tr>
<td>Latvia</td>
<td>4.6</td>
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<tr>
<td>Poland</td>
<td>4.0</td>
</tr>
<tr>
<td>Russia</td>
<td>3.5</td>
</tr>
</tbody>
</table>


Quality of infrastructure in RBGC countries:
- Poland and Russia have the most room for improvement in terms of quality of overall and rail infrastructure.
- The existing condition of the rail infrastructure from the Lithuanian border to Warsaw is seen to be in line with the World Economic Forum observation.
Poland’s road infrastructure is in compromised condition in comparison to other RBGC countries. At the same time road transport is growing rapidly, which raises the question of sustainability of the road infrastructure in Poland. More efficient use of rail capacity both in terms of passenger and freight transport could ease the burden on road infrastructure in Poland.

**Quality of road infrastructure**
- Road transport has been increasing rapidly in Poland from 2004 to 2011 despite the 2008 economic slowdown.
- Passenger car registrations are expected to increase by 50% from 2012 to 2017.

**Road transport turnover in Poland**

**Passenger cars registrations in Poland**

Sources: World Economic Forum - The Global Competitiveness Report, 2012-2013; Eurostat; Economist Intelligence Unit
The largest RBGC freight volumes on the north-south axis in Poland (excluding Germany) are to the St Petersburg area and Lithuania.

**Bulk freight volumes by route in 2008**

- Poland - Russia (Gulf of Finland)
- Lithuania - Poland
- Poland - Lithuania
- Poland - Finland
- Finland - Poland

**Non bulk freight volumes by route in 2008**

- Poland - Russia (Gulf of Finland)
- Poland - Finland
- Lithuania - Poland
- Poland - Lithuania
- Finland - Poland

**North bound freight in Poland**
- The largest volumes of north bound freight in Poland is to St Petersburg area and Lithuania
- Lithuania is the second and Finland the third most important trade partner of Poland in the north bound freight traffic

Source: A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM
On the RBGC north-south axis rail freight transportation is used only between Poland and Lithuania (excluding Germany).

### Rail transported freight volumes by route in 2008

- **Lithuania - Poland**:
  - Bulk: 80%
  - Non bulk: 20%

- **Poland - Lithuania**:
  - Bulk: 80%
  - Non bulk: 20%

### Rail transported goods* between Poland and Lithuania in 2008

- **Export**
  - Oil: 20%
  - Inorganic chemical products: 20%
  - Timber: 40%
  - Ferrous metals: 20%
  - Other: 0%

- **Import**
  - Oil: 20%
  - Inorganic chemical products: 20%
  - Timber: 40%
  - Ferrous metals: 20%
  - Other: 0%

*Does not include transit traffic*

**RBGC rail freight**

- Timber is the main commodity transported via rail from Poland to Lithuania.
- The rail freight from Lithuania to Poland consists mostly of ferrous metals and inorganic chemical products.

**Source**: A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM, Lithuanian railways.
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### Executive summary

#### Baltic Capitals

**Introduction**
- The aim of this section is to identify potential sources of economic growth along the Rail Baltica Growth Corridor ("RBGC"), focusing on the Baltic Capitals, and to outline possible next steps to realise that growth.
- Tallinn, Riga, Vilnius and Kaunas are the main cities in the Baltic States with populations around 0.5 million. They are separated by a geographical distance of 600km, although the travel times for passengers and freight between the cities, especially by rail, can be substantial.
- Rail Baltica will be a new-built 1435mm gauge rail line connecting Tallinn, Riga, Kaunas in the Baltic States and further affiield Poland with an estimated capital cost of 3.5 to 4 billion EUR. The rail infrastructure has the potential to transform travel times within the Baltic States significantly improving the economic competitiveness of the three countries.

**Passenger transport**
- The Baltic States have service-based economies with populations and economic activity heavily concentrated in the main cities.
- A key to the success of a service-based economy is access to skilled workforce. However, all three states are facing a challenge of declining populations primarily as a result of emigration of the best qualified people drawn by better employment prospects elsewhere.
- A key determinant in the decisions where businesses locate is the quality of the locally available infrastructure whilst infrastructure investment is also effective in generating employment in the local economy. Rail Baltica can thus be a potential intervention with a significant employment impact.
- Rail Baltica has the potential to create commuting duopolies between Tallinn and Riga as well as Riga and Kaunas by shrinking the travel times to close to two hours. This can have a significant impact on the growth potential of the cities as a greater economic area can grow at an accelerated rate and have higher labour productivity.
- It will be important to start to prepare to realise the benefits of Rail Baltica through improvements in the inter-modal passenger transport connections within the main cities so as not to grow the travel times between the cities by compromised transfers within the cities. It will also be important to continue to develop the already functioning commuting duopoly of Kaunas and Vilnius as a single economic zone.

**Freight transport**
- The vast majority of rail freight in the Baltic States travels from the Baltic ports to Russia and vice versa with the north-south corridor being fairly underdeveloped. The freight on the east-west axis is dominantly bulk such as wood products and minerals and fuels and oils.
- Most of the freight in the north south direction currently travels by road. There is, however, some freight travelling by rail. The majority of this is between Latvia and Lithuania and domestic freight within Estonia and Lithuania. This freight is dominantly bulk such as oil shale where rail transport is able to provide a competitive alternative, albeit the considerable travel times within the Baltic States.
- It is important to continue to develop the existing rail system and to grow the rail freight from the current low base within the Baltic States so as to demonstrate the case for the investment into Rail Baltica. An enhanced rail connections would also facilitate further concentration of logistics hubs around Baltic capitals and generation of economic activity.

**Next steps**
- Practical steps are needed to accelerate the Rail Baltica investment and realise the full economic benefits from that investment. The next steps include co-operation around creating functional commuting duopolies, improving passenger transport inter-modality in the cities, growing rail freight on the existing rail infrastructure within the Baltic States and facilitating the environment for logistics hubs to thrive.
The Baltic States are a region where three European capitals are located in close proximity with limited rail interconnectivity.

**Existing transport infrastructure**

- All the Baltic States have international airports. Riga Airport is the largest with 4.8 million passengers in 2012.
- Tallinn and Vilnius have a similar size airports, both had 2.2 million passengers in 2012.
- Kaunas has considerably smaller airport with 830,000 passengers in 2012.
- Latvia has three ports: the Freeport of Riga, Ventspils Free Port and Port of Liepaja. The largest port is the Freeport of Riga having a total of 36 million tonnes of freight in 2012 whilst Ventspils Free Port had 28.5 million tonnes and Port of Liepaja had 7.4 million tonnes in 2012.
- The largest international port in Estonia is the Port of Tallinn. The total annual volume of freight in Port of Tallinn was 29.5 million tonnes in 2012.
- Klaipeda is the most important transport hub in Lithuania connecting sea, road and railway routes from east to west. The total annual volume of freight was 35.2 million tonnes in 2012.
- In Estonia, there are rail connections from Tallinn to St Petersburg via Narva and from Tallinn to Valga via Tartu.
- In Latvia, there are rail connections from Riga to Ventspils, Valka and Daugavpils and internationally to Vilnius, Kaunas, Moscow, Minsk and via Daugavpils to St. Petersburg.
- In Lithuania, there are rail connections from Vilnius to Kaunas, Siauliai, Klaipeda and Sestokai. International connections include Moscow via Minsk, Riga, Kaliningrad and Warsaw.
- The Via Baltica (E67) road has been improved through investments but congestions around the cities remains a feature of traffic. Congestions around cities can’t be avoided.

Sources: Freeport of Riga Authority, Ventspils Free Port, Port of Liepaja, BPO - Baltic Ports Organisation, Port of Klaipeda, Airport of Riga, Airport of Tallinn, Airport of Kaunas, Airport of Vilnius, Eurailmap, The Automobile and Touring Club of Finland (Autoliitto)
Population and economic activity in the Baltic States is especially concentrated in four cities. The improvements in passenger transport connectivity between these cities would grow the respective economic areas and enhance the potential for accelerated economic growth.

### The Baltic economies

- Population in the Baltic States is concentrated in four cities, for example Tallinn and Riga, account for third of national populations.
- Baltic capitals are important centres of employment, more than a third of the populations have full-time employment in the capital cities in Estonia and Latvia.
- Vilnius and Kaunas together account more than half of the GDP of Lithuania.

### Capital’s share of the national population

<table>
<thead>
<tr>
<th>Country</th>
<th>0%</th>
<th>20%</th>
<th>40%</th>
<th>60%</th>
<th>80%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latvia</td>
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<td>Estonia</td>
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<td>Finland</td>
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<td>Germany</td>
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</table>

### Share of the national GDP in 2010

<table>
<thead>
<tr>
<th>City</th>
<th>0%</th>
<th>20%</th>
<th>40%</th>
<th>60%</th>
<th>80%</th>
<th>100%</th>
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<tbody>
<tr>
<td>Riga</td>
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<td>Tallinn</td>
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<td>Vilnius</td>
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<td>Kaunas</td>
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</table>

### Capital’s share of full-time employees

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<thead>
<tr>
<th>City</th>
<th>0%</th>
<th>20%</th>
<th>40%</th>
<th>60%</th>
<th>80%</th>
<th>100%</th>
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</thead>
<tbody>
<tr>
<td>Riga</td>
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<td>Tallinn</td>
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<tr>
<td>Vilnius</td>
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</table>

**Baltic Capitals**

**Introduction 3(6)**

The Baltic States have service sector based economies typical of developed economies. Having access to a skilled workforce is one of the key factors in success of a service sector based economy.

**GDP by sector in 2012**

- **Germany**
- **Finland**
- **Latvia**
- **Lithuania**
- **Estonia**
- **Poland**
- **Russia**

The economic structure in the Baltic States is very close to each other. Poland and Russia are slightly more concentrated on industry and agriculture.

GDP per capita in the Baltic States is 15 to 20 thousand EUR less compared to the advanced economies such as Finland and Germany.

Industry covers approximately one third of the economy in all of the Baltic States.

**Similar economic structures based on service industries**

- The economic structure in the Baltic States is very close to each other. Poland and Russia are slightly more concentrated on industry and agriculture.
- GDP per capita in the Baltic States is 15 to 20 thousand EUR less compared to the advanced economies such as Finland and Germany.
- Industry covers approximately one third of the economy in all of the Baltic States.

**GDP per capita**

Sources: OECD, Economist Intelligence Unit
The Baltic States are in the process of catching up their economic performance with growth outstripping that of Finland and Germany.
The three Baltic countries are faced with a significant challenge in terms of population decline arising from emigration as well as prevailing demographics. The access to a skilled workforce is a key foundation for a thriving service-based economy.

**Rapid decline in population**

- Over the last statistically reported ten years the natural population change and net migration have been negative in all of the Baltic States.
- The relative importance of natural population change in the total population decline decreased notably in Estonia whereas the situation is the opposite in Latvia.
- The highest negative net migration has been in Lithuania during 2010, resulting almost a decline of 78,000 in total population.
Emigration in the Baltic countries is understood to be driven by improved employment prospects elsewhere. The main migration destinations have been the UK, Ireland, Finland, Russia and Norway.

**Unemployment rate, 2012**

<table>
<thead>
<tr>
<th>Country</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>5.5</td>
</tr>
<tr>
<td>Russia</td>
<td>6.3</td>
</tr>
<tr>
<td>Estonia</td>
<td>7.5</td>
</tr>
<tr>
<td>Latvia</td>
<td>12.0</td>
</tr>
<tr>
<td>Lithuania</td>
<td>15.1</td>
</tr>
<tr>
<td>Poland</td>
<td>13.2</td>
</tr>
<tr>
<td>Germany</td>
<td>8.0</td>
</tr>
</tbody>
</table>

**Net migration in 2011**

<table>
<thead>
<tr>
<th>Country</th>
<th>1000 People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>279 thsd</td>
</tr>
<tr>
<td>Estonia</td>
<td>-112 thsd</td>
</tr>
<tr>
<td>Latvia</td>
<td>-341 thsd</td>
</tr>
<tr>
<td>Lithuania</td>
<td>-389 thsd</td>
</tr>
<tr>
<td>Poland</td>
<td>-110 thsd</td>
</tr>
</tbody>
</table>

**Sources:** Economist Intelligence Unit, Trading Economics
The rail travel times between the main cities on the RBGC are substantial for day-to-day commuting purposes. Rail Baltica, once operational, would reduce the travel times between the cities to the point where living in Tallinn and working in Riga would be possible and vice versa.

### Connectivity in the Baltic Capitals

<table>
<thead>
<tr>
<th>City 1</th>
<th>City 2</th>
<th>By Train 1</th>
<th>By Train 2</th>
<th>By Car 1</th>
<th>By Car 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tallinn</td>
<td>Kaunas</td>
<td>Travel 8h</td>
<td>Travel 5h</td>
<td>Travel 8h</td>
<td>Travel 5h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>308km</td>
<td>308km</td>
<td>27h</td>
<td>27h</td>
</tr>
<tr>
<td>Riga</td>
<td>Tallinn</td>
<td>Travel 2h</td>
<td>Travel 3h</td>
<td>Travel 2h</td>
<td>Travel 3h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>572km</td>
<td>572km</td>
<td>12h</td>
<td>12h</td>
</tr>
<tr>
<td>Kaunas</td>
<td>Riga</td>
<td>Travel 8h</td>
<td>Travel 2h</td>
<td>Travel 8h</td>
<td>Travel 2h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>572km</td>
<td>572km</td>
<td>28h</td>
<td>28h</td>
</tr>
<tr>
<td>Vilnius</td>
<td>Kaunas</td>
<td>Travel 8h</td>
<td>Travel 3h</td>
<td>Travel 8h</td>
<td>Travel 3h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>572km</td>
<td>572km</td>
<td>28h</td>
<td>28h</td>
</tr>
<tr>
<td>Riga</td>
<td>Vilnius</td>
<td>Travel 2h</td>
<td>Travel 3h</td>
<td>Travel 2h</td>
<td>Travel 3h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>572km</td>
<td>572km</td>
<td>12h</td>
<td>12h</td>
</tr>
</tbody>
</table>

### Connectivity after Rail Baltica

<table>
<thead>
<tr>
<th>City 1</th>
<th>City 2</th>
<th>By Train 1</th>
<th>By Train 2</th>
<th>By Car 1</th>
<th>By Car 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tallinn</td>
<td>Kaunas</td>
<td>Travel 6h</td>
<td>Travel 3h</td>
<td>Travel 6h</td>
<td>Travel 3h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>308km</td>
<td>308km</td>
<td>5h</td>
<td>5h</td>
</tr>
<tr>
<td>Riga</td>
<td>Tallinn</td>
<td>Travel 2h</td>
<td>Travel 3h</td>
<td>Travel 2h</td>
<td>Travel 3h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>572km</td>
<td>572km</td>
<td>12h</td>
<td>12h</td>
</tr>
<tr>
<td>Kaunas</td>
<td>Riga</td>
<td>Travel 6h</td>
<td>Travel 3h</td>
<td>Travel 6h</td>
<td>Travel 3h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>572km</td>
<td>572km</td>
<td>5h</td>
<td>5h</td>
</tr>
<tr>
<td>Vilnius</td>
<td>Kaunas</td>
<td>Travel 6h</td>
<td>Travel 3h</td>
<td>Travel 6h</td>
<td>Travel 3h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>572km</td>
<td>572km</td>
<td>5h</td>
<td>5h</td>
</tr>
<tr>
<td>Riga</td>
<td>Vilnius</td>
<td>Travel 2h</td>
<td>Travel 3h</td>
<td>Travel 2h</td>
<td>Travel 3h</td>
</tr>
<tr>
<td></td>
<td></td>
<td>572km</td>
<td>572km</td>
<td>12h</td>
<td>12h</td>
</tr>
</tbody>
</table>

*Note: Distance by car
**Note: Google Maps

Sources: Rail Baltica Influence Area: State of Operating Environment Lappeenranta University of Technology; Google Maps; A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM
The construction of Rail Baltica would create a platform for commuting duopolies to form between Riga and Tallinn as well as Riga and Kaunas/Vilnius. Such duopolies would increase the size of the economic area around each of the main cities enhancing their economic growth and job creation potential.

### Connectivity in the Baltic Capitals

- **Tallinn**
  - By train: Travel time 8 hours 8 minutes
  - By car**: Travel time 3 hours 56 minutes

- **Riga**
  - By train: Travel time 12 hours 48 minutes
  - By car**: Travel time 3 hours 24 minutes

- **Kaunas**
  - By train: Travel time 16 hours 36 minutes
  - By car**: Travel time 3 hours 24 minutes

- **Vilnius**
  - By train: Travel time 12 hours 48 minutes
  - By car**: Travel time 3 hours 28 minutes

### Connectivity after Rail Baltica

- **Tallinn**
  - By train: Travel time 3 hours 7 minutes
  - By car**: Travel time 3 hours 56 minutes

- **Riga**
  - By train: Travel time 2 hours 18 minutes
  - By car**: Travel time 3 hours 24 minutes

- **Kaunas**
  - By train: Travel time 3 hours 33 minutes
  - By car**: Travel time 3 hours 28 minutes

- **Vilnius**
  - By train: Travel time 3 hours 33 minutes
  - By car**: Travel time 3 hours 28 minutes

*Note: Distance by car
**Note: Google Maps*

Sources: Rail Baltica Influence Area: State of Operating Environment Lappeenranta University of Technology; Google Maps; A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM

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The existing train travel time between Kaunas and Vilnius is 1 hour 15 minutes already functioning as a single commuting zone. Rail Baltica, once operational, together with improvements to the existing rail line between Kaunas and Vilnius can potentially extend this single zone from Vilnius to Riga.

### Connectivity in the Baltic Capitals

**Tallinn**
- By train: Travel time 28 hours 35 minutes
- By car**: Travel time 7 hours

**Riga**
- By train: Travel time 16 hours 36 minutes
- By car**: Travel time 3 hours 24 minutes

**Vilnius**
- By train: Travel time 1 hour 15 minutes
- By car**: Travel time 1 hour 15 minutes

### Connectivity after Rail Baltica

**Tallinn**
- By train: Travel time 5 hours 25 minutes
- By car**: Travel time 7 hours

**Riga**
- By train: Travel time 2 hours 18 minutes
- By car**: Travel time 3 hours 24 minutes

**Vilnius**
- By train: Travel time 1 hour 15 minutes
- By car**: Travel time 1 hour 15 minutes

---

*Note: Distance by car
**Note: Google Maps*

Sources: Rail Baltica Influence Area: State of Operating Environment Lappeenranta University of Technology; Google Maps; A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM
Baltic Capitals
Passenger transport inter-modality in Riga 1(4)

For well functioning Rail Baltica it is crucial that the rail line is well connected with other means of transport in the cities.

Riga has been taken as an illustrative example of how there could be multiple ways to interconnect the different modes of transport and to facilitate passenger and freight transfers.

The aim is not to give any suggestions on the best feasible alignment but merely to point out that the route options should be well analysed for economic impact.

The first option would seem to be fast and less complex to implement, but is not as well interconnected to the other means of transport as some of the other options.

### Positive aspects
- This route option was proposed by the Aecom feasibility study and is acknowledged by Rail Baltica Task Force.
- Appears to be the fastest route.
- Easiest option to implement, using existing track in the city centre, even though the track has to be reconstructed to match the new gauge.
- This would entail less of the challenging construction work in the city centre.

### Negative aspects
- May not be the cheapest option, because a large part of the land owned by private landowners, which would require an extensive redemption processes.
- The river is wider at the southeast side of Riga and could cause extra cost construction a bridge or a tunnel.
- There is no existing infrastructure which could provide synergies on the north to south line.
- There is no direct connection to the Riga Freeport or Airport.
- Light rail would have to be built to connect the Rail Baltica with the airport, which would increase the total cost estimate.

Source: Riga City Council – City planning expert
Baltic Capitals
Passenger transport inter-modality in Riga 2(4)

Positive aspects
- Use of mostly existing infrastructure that only has to be upgraded for the new gauge
- Direct connection to Riga Railway Station and the city centre
- Potentially less land use issues southwest of Riga as the bypass road embankment could be utilised for the rail alignment

Negative aspects
- Uncertainty over railway bridge capacity over River Daugava
- Some of the freight flows would run through the city centre
- No direct connection to Riga Freeport and Riga Airport
- Light rail would have to be built to connect the Rail Baltica and the airport, which would increase the total cost
- New rail line would have to be built on the south side of the River Daugava, which could result in land use issues

Rail Baltica route, option 2 – Central passage

This option would use the existing railway bridge crossing the river Daugava

Rail Baltica route, option 2

Source: Riga City Council – City planning expert
One possible route option for Rail Baltica is that the rail line would deviate from the existing rail line and pass by Riga Airport. This route would directly connect the city centre and the airport but would have to go through urban areas on the south bank of the river.

Positive aspects
- Use of existing infrastructure on the north side of River Daugava that only has to be upgraded for the new gauge
- Direct connection to Riga Railway Station and the city centre
- Potentially less land use issues southwest of Riga as the bypass road embankment could be utilised for the rail alignment

Negative aspects
- Uncertainty over railway bridge capacity over River Daugava
- Some of the freight flows would run through the city centre
- New rail line would have to be built on the south side of the River Daugava, which could result in land use issues

Source: Riga City Council – City planning expert
Positive aspects

- Connects Riga Freeport and the airport directly with Rail Baltica
- Creates additional awareness and robustness to existing transport system relieving the city center from cargo flows
- Logistic terminal would be strategically in the best place at the Riga Freeport area
- The configuration of the northern transport corridor would make land use and city planning less complex
- Use of existing infrastructure that only has to be upgraded for the new gauge

Negative aspects

- No direct connection to the city centre and does not connect to the public transport system as well as the other options
- Needs a tunnel and new infrastructure in the city centre increasing costs
- New rail line would have to be built on the south side of River Daugava, which could cause land use issues
According to a business leader survey undertaken by KPMG there is a clear need for building awareness of the economic benefits that Rail Baltica would have in Latvia.

KPMG survey

- In 2013 KPMG conducted a survey directed to business leaders in the Baltic States. The business leaders were asked questions on the economic situation in their respective countries as well as specific questions on infrastructure projects including Rail Baltica.
- 30% of the respondents saw the improvements of the road coating and infrastructure as the most critical strategic project in Latvia.
- The second most important strategic projects according to the respondents were development of the Riga International Airport as a transit hub for regional air traffic, accounting 22% of the answers, and the improvements to ports, with 16% share of the answers.
- Business leaders in Latvia were also asked how they rated the relevance of the Rail Baltica project to the Latvian economy. Only 18% considered Rail Baltica highly important.

Importance of infrastructure projects in Latvia

In your opinion, which three of the following strategic projects are the most critical for Latvia?

- Improvement of the road coating and infrastructure in Latvia (30%)
- Development of Riga International Airport as a transit hub for regional air traffic (22%)
- Improvements in the port governance structure and investments in the port infrastructure (Krievu sala and other projects in Riga, Ventspils and Liepāja) (16%)
- Implementation of the Rail Baltica project (10%)
- Construction of a liquefied gas terminal in Latvia (8%)
- Electrification of the railway infrastructure (electrification of the East-West rail corridor) (7%)
- Completion of Phase 2 of Riga Second Thermal Power Exchange (TEC-2) (2%)
- Modernization of passenger rail cars (procurement of new passenger rail cars) (2%)

Relevance of Rail Baltica to the Latvian economy

Please rate the relevance of the Rail Baltica project to the Latvian economy:

- 31% rated Rail Baltica as highly important (5)
- 16% rated Rail Baltica as important (4)
- 18% rated Rail Baltica as somewhat important (3)
- 3% rated Rail Baltica as not so important (2)
- 2% rated Rail Baltica as not important at all (1)

Source: Pulse of Economy 2013, KPMG Baltics survey
The RBGC freight volumes on the north-south axis in Estonia are limited. Finland is the main origin and destination for bulk freight whereas non bulk freight is dominantly domestic.

RBGC freight on the north-south axis
- The vast majority of RBGC north-south freight in Estonia is bulk.
- Finland is the largest trading partner for bulk freight. The total amount of freight between the countries was 6.2 million tonnes in 2008.
- The total amount of domestic freight in Estonia was 3.9 million tonnes in 2008.

**Bulk freight volumes by route in 2008**
- Estonia - Finland: 3177 '000 tonnes
- Finland - Estonia: 2361 '000 tonnes
- Estonia (north) - Estonia (south): 1318 '000 tonnes
- Estonia (south) - Estonia (north): 1101 '000 tonnes
- Estonia - Germany: 738 '000 tonnes

**Non bulk freight volumes by route in 2008**
- Estonia (north) - Estonia (south): 815 '000 tonnes
- Estonia (south) - Estonia (north): 668 '000 tonnes
- Germany - Estonia: 608 '000 tonnes
- Estonia - Finland: 328 '000 tonnes
- Finland - Estonia: 316 '000 tonnes

Source: A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM
The RBGC rail freight volumes transported in Estonia are small and dominantly domestic. The majority of the domestic rail freight is oil shale accounting for 72% of the total volume.

### Bulk rail freight volumes by route in 2008

<table>
<thead>
<tr>
<th>Route</th>
<th>'000 tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estonia (S) - Estonia</td>
<td>187</td>
</tr>
<tr>
<td>Estonia (N) - Estonia</td>
<td>185</td>
</tr>
<tr>
<td>Latvia - Estonia</td>
<td>158</td>
</tr>
<tr>
<td>Estonia - Latvia</td>
<td>56</td>
</tr>
<tr>
<td>Estonia - Finland</td>
<td>32</td>
</tr>
</tbody>
</table>

### Non bulk rail freight volumes by route in 2008

<table>
<thead>
<tr>
<th>Route</th>
<th>'000 tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estonia (N) - Estonia</td>
<td>49</td>
</tr>
<tr>
<td>Estonia (S) - Estonia</td>
<td>47</td>
</tr>
<tr>
<td>Latvia - Estonia</td>
<td>39</td>
</tr>
<tr>
<td>Estonia - Latvia</td>
<td>14</td>
</tr>
<tr>
<td>Estonia - Finland</td>
<td>3</td>
</tr>
</tbody>
</table>

### Rail transported domestic freight by commodity in 2008

- **Oil shale**: 72%
- **Ferrous metals**: 6%
- **Timber**: 5%
- **Fertilisers**: 5%
- **Bulk**: 5%
- **Other goods**: 2%
- **Other**: 12%
- **Oil products**: 5%

**Source:** A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania – AECOM, Estonian Railways Ltd
The main potential is increasing RBGC rail freight in the trade between Estonia and Germany where volumes are acknowledged to be limited yet the share of rail has significant growth potential.

**Modal split of bulk freight in 2008**

- Estonia - Finland: 3.2* million tonnes
- Finland - Estonia: 2.4* million tonnes
- Estonia (north) - Estonia (south): 1.3* million tonnes
- Estonia (south) - Germany: 1.1* million tonnes
- Estonia - Germany: 0.7* million tonnes
- Latvia - Estonia: 0.4* million tonnes
- Estonia - Latvia: 0.4* million tonnes

* Note: million tonnes

- Rail
- Sea
- Road

**Modal split of non-bulk freight in 2008**

- Estonia (north) - Estonia (south): 0.8* million tonnes
- Germany - Estonia: 0.7* million tonnes
- Estonia - Finland: 0.6* million tonnes
- Finland - Estonia: 0.3* million tonnes
- Estonia - Latvia: 0.2* million tonnes
- Latvia - Estonia: 0.06* million tonnes

* Note: million tonnes

**Foreign trade* between Estonia and Germany in 2008**

- Import
- Export

- Machinery and mechanical appliances; electrical equipment
- Mineral products
- Base metals and articles of base metal
- Wood and articles of wood
- Other products

* Does not include transit traffic

* Note: million tonnes

**Source**: A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania – AECOM, Statistics Estonia
The RBGC freight volumes on the north-south axis in Latvia are limited. Germany is the main origin and destination of bulk freight whereas major non-bulk freight flows from Latvia terminate in Germany and Finland.

**RBGC freight on the north-south axis**
- Germany is by far Latvia's largest RBGC trading partner on the north-south axis with a total of 8.9 million tonnes annually.
- Most of the freight between Latvia and Germany is bulk counting 72% of the total freight volume.

**Bulk freight volumes by route in 2008**
- Latvia - Germany: 4,052,000 tonnes
- Latvia - Finland: 2,415,000 tonnes
- Latvia (North) - Latvia (South): 790,000 tonnes
- Lithuania - Latvia: 707,000 tonnes
- Latvia (South) - Latvia (North): 690,000 tonnes

**Non bulk freight volumes by route in 2008**
- Germany - Latvia: 1,320,000 tonnes
- Latvia - Germany: 1,168,000 tonnes
- Latvia (North) - Latvia (South): 297,000 tonnes
- Latvia (South) - Latvia (North): 259,000 tonnes
- Lithuania - Latvia: 225,000 tonnes

Source: A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM
The amount rail freight in and out of Latvia on the north-south axis is limited with Lithuania being the main origin and destination of rail freight. Majority of the imports from Lithuania to Latvia is oil and exports from Latvia to Lithuania is mineral products and fertilizers.
Road and sea freight dominate as modes of transport between Latvia and Germany. These freight flows consist of commodities where rail can be a competitive alternative.

**Modal split of bulk freight in 2008**

<table>
<thead>
<tr>
<th>Origin</th>
<th>Rail</th>
<th>Sea</th>
<th>Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latvia - Germany</td>
<td></td>
<td></td>
<td>4.1*</td>
</tr>
<tr>
<td>Latvia - Finland</td>
<td>2.4*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latvia (north) - Latvia (south)</td>
<td>0.8*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lithuania - Latvia</td>
<td>0.7*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latvia (south) - Latvia (north)</td>
<td>0.7*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latvia - Lithuania</td>
<td>0.5*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latvia - Estonia</td>
<td>0.5*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estonia - Latvia</td>
<td>0.4*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Note: million tonnes

**Modal split of non-bulk freight in 2008**

<table>
<thead>
<tr>
<th>Origin</th>
<th>Rail</th>
<th>Sea</th>
<th>Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany - Latvia</td>
<td>1.3*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latvia - Germany</td>
<td>1.2*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latvia (north) - Latvia (south)</td>
<td>0.3*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latvia (south) - Latvia (north)</td>
<td>0.3*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lithuania - Latvia</td>
<td>0.2*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latvia - Lithuania</td>
<td>0.2*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estonia - Latvia</td>
<td>0.2*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latvia - Estonia</td>
<td>0.06*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Note: million tonnes

**Trade between Latvia and Germany by commodity in 2008**

<table>
<thead>
<tr>
<th>Category</th>
<th>Exports</th>
<th>Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport vehicles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machinery and mechanical appliances; electrical equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood and articles of wood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food and agricultural products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Products of chemical and allied industries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base metals and articles of base metals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other goods</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania – AECOM, Central Statistical Bureau of Latvia

- The share of bulk rail freight is 10% of the total bulk freight
- Bulk freight is mainly transported to Germany and Finland by sea
- Most rail freight is transported between Latvia and Lithuania
- Latvian domestic non bulk freight is mostly transported by road
The most RBGC freight on the north-south axis in Lithuania is domestic, accounting for 56% of total with 58% of the domestic freight being bulk.

The main trade flow is with Germany totalling approximately 3,000 tonnes per annum with 69% of the flow being bulk.

Source: A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM
Most of the rail freight in Lithuania is bulk.

**Bulk rail freight volumes by route in 2008**

- Lithuania - Latvia: 460 '000 tonnes
- Latvia - Lithuania: 424 '000 tonnes
- Lithuania (N) - Lithuania: 378 '000 tonnes
- Lithuania - Poland: 356 '000 tonnes
- Poland - Lithuania: 89 '000 tonnes
- Lithuania (S) - Lithuania: 11 '000 tonnes

**RBGC rail freight**

- Large part of the freight transported via rail on the north-south axis in Lithuania is between the neighboring county of Latvia. Of this freight 82% is bulk.
- Some domestic freight is transported via rail on the north-south axis in Lithuania. This freight is chemical products, coke and refined petroleum.

**Non bulk rail freight volumes by route in 2008**

- Latvia - Lithuania: 58 '000 tonnes
- Lithuania - Latvia: 39 '000 tonnes
- Lithuania - Poland: 24 '000 tonnes
- Estonia - Lithuania: 8 '000 tonnes
- Poland - Lithuania: 6 '000 tonnes
- Lithuania (N) - Lithuania: 5 '000 tonnes
- Lithuania (S) - Lithuania: 1 '000 tonnes

**Domestic rail freight by commodity in 2008**

- Coke and refined petroleum products: 38%
- Other goods n.e.c.: 4%
- Other non-metallic mineral products: 6%
- Metal ores and other mining and quarrying products; peat; uranium and thorium: 15%
- Chemicals, chemical products, and man-made fibres; rubber and plastic products; nuclear fuel: 25%
- Products of agriculture, hunting, and forestry; fish and other fishing products: 12%

Sources: A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM, Lithuanian Railways
The main potential for attracting more rail freight from other forms of transport is in the trade between Lithuania and Germany where virtually all freight is by sea or road. The characteristics of German exports and imports appear suitable for rail freight. Lithuania also holds potential for rail in domestic freight.

Modal split of bulk freight in 2008

- Most rail freight is between Latvia and Lithuania.
- The main potential for attracting more rail freight from other forms of transport is in the trade between Lithuania and Germany where virtually all freight is by sea or road. The characteristics of German exports and imports appear suitable for rail freight.
- Lithuania also holds potential for rail in domestic freight.

Modal split of non-bulk freight in 2008

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- Lithuania also holds potential for rail in domestic freight.

Trade by commodity between Germany and Lithuania in 2008

- Most rail freight is between Latvia and Lithuania.
- The main potential for attracting more rail freight from other forms of transport is in the trade between Lithuania and Germany where virtually all freight is by sea or road. The characteristics of German exports and imports appear suitable for rail freight.
- Lithuania also holds potential for rail in domestic freight.
Analysis of growth potential and governance model

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2. Warsaw-Lodz-Poznan-Berlin
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5. Gulf of Finland Triangle
6. Helsinki-Tampere Growth Zone
7. RBGC Governance Model
## Executive summary

### Introduction
- The aim of this section is to identify potential sources of economic growth along the Rail Baltica Growth Corridor ("RBGC"), focusing on the Gulf of Finland Triangle, and to outline possible next steps to realise that growth.
- The Gulf of Finland Triangle is formed by the three cities of Helsinki, Tallinn and St Petersburg. Helsinki and Tallinn are similar in size. St Petersburg is considerably larger with a population 4.9 million. It thus represents a major market in the region as the city’s population is similar to that of Finland and five times that of Estonia.

### Passenger transport
- The Allegro connection between Helsinki and St Petersburg entered into service in 2010 reducing travel times between the two cities from 5 hours and 30 minutes to just over 3 hours and 30 minutes. This connection that is competitive with the air connection has made it possible to undertake convenient city centre to city centre daytrips between the two destinations facilitating further business activity. The connection is a clear demonstration of the benefits of cross border collaboration and how a commuting duopoly can be created by coordinated action.
- Tallinn is in the process of improving passenger transport interconnectivity through a new tram line linking the port and the airport via the train and bus stations. This is likely to have a role in facilitating the stronger commuting duopolies between Tallinn and both Helsinki and St Petersburg. Helsinki and Tallinn already have well-functioning ferry, catamaran, plane and helicopter connections whereas Tallinn and St Petersburg has great improvement potential in the train connection especially if the improvements demonstrated by the Allegro service can be realised along the route.

### Freight transport
- The Russian economy is expected to grow at a significant phase over the next decade. A major proportion of this growth is expected to occur around Greater St Petersburg. This means that going forward the region is likely to be an increasingly important source and destination of freight. It will be a source of freight due to its cost competitiveness and thus becoming a location for manufacturing activity. It will be a destination of freight due to the demand generated by its growing economy and ever increasing disposable income of its population.
- The realisation of economic growth in the Gulf of Finland Triangle will in part be influenced on the functioning of logistics in the region. The thriving logistics hub around Ring Road III in Finland could be replicated elsewhere. A similar hub has emerged around Muuga harbour and to some extent at Ülemiste Airport in Tallinn.

### Next steps
- A practical steps are, through the collaboration of the cities along the RBGC to capture the lessons in realising the Allegro train service through a cross-border joint venture as this is likely to have relevance along the RBGC spanning across six countries.
- It will also be important to understand the dynamics of the growth in the Greater St Petersburg region in order to appreciate the resulting transport needs in order to allow the businesses in the RBGC cities to take full advantage of the economic opportunities, including those in freight transport through the Baltic States to and from the European markets, around the emerging logistics hubs.
Gulf of Finland Triangle
Introduction

Gulf of Finland Triangle

Gulf of Finland Triangle is formed by Helsinki, Tallinn and St Petersburg with 0.8, 0.4 and 4.9 million people respectively.

The triangle has multimodal transport infrastructure in place with connectivity by ferry, plane, car and train.

Existing transport infrastructure

**Tallinn**

**Airport**
- Tallinn has an international airport 4.2km from the city centre
- Tallinn Airport had 2.2 million passengers in 2012

**Port**
- The main freight port is located in Muuga 20km from the Tallinn City Centre
- Port of Tallinn handled 29.5 million tonnes of freight in 2012
- The passenger terminals of the Port of Tallinn are in the city centre with 8.8 million passengers in 2012

**St Petersburg**

**Airport**
- St Petersburg’s international airport, Pulkovo is located 20km south from the city centre
- Pulkovo Airport was used by 11 million passengers in 2012

**Ports**
- The ports in St Petersburg include Port of Primorsk, Port of Kronshtadt, Port of Lomonosov, Port of Bronca and the Port of St Petersburg. In 2011, the Large Port of St Petersburg handled 60 million tonnes of freight.
  - The largest is Port of Primorsk handling approximately 75 million tonnes in 2012 perdominately crude oil
  - The other port in the area is Ust Luga with annual freight of 46.7 million tonnes in 2012

**Ports in St Petersburg**

Sources: Tallinn Airport, Port of Tallinn, Pulkovo Airport, Seaport Administration "Large Port of St. Petersburg", Ust-Luga Port, International – Analytical Agency Port News
Gulf of Finland Triangle

Passenger transport travel times

The travel time by train between Helsinki and St Petersburg is 3 hours 36 minutes and between Tallinn and St Petersburg 6 hours 38 minutes.

The travel distances are similar, with border formalities being a key contributor to the greater travel time between Tallinn and St Petersburg.

The convenient rail connection between Helsinki and St Petersburg allows for business trips to be undertaken between the cities within a single day, representing a potential source for increased business activity.

Connectivity in the Gulf of Finland Triangle

### Helsinki
- **By train**
  - Travel time: 3 hours 36 minutes
  - 4 trains per day
- **By car**
  - Travel time: 5 hours (exclusive border formalities)
  - Bus travel time: 8 hours

### St Petersburg
- **By train**
  - Travel time: 6 hours 38 minutes
  - 1 train per day
- **By car**
  - Travel time: 5 hours (exclusive border formalities)
  - Bus travel time: 7 hours

Connectivity between Helsinki and Tallinn

### Helsinki
- **By ferry**
  - Fastest service has travel time of 1 hour 30 minutes and the slowest 3 hours 30 minutes
  - 18 departures per day on average

### Tallinn
- **By ferry**
  - Travel time: 14 hours 30 minutes
  - 2 ferries per week

Passenger transport travel times

- **By ferry**
  - Helsinki and Tallinn have a frequent ferry connection between the cities with 18 departures per day on average and convenient travel times from 1 hour 30 minutes to 3 hours 30 minutes depending on the ferry.
  - The Helsinki-Tallinn route had 7.6 million passengers in 2012, which was 3.1% increase to previous year.

- **By helicopter**
  - Copterline offers helicopter flight connections between Helsinki-Tallinn with a 20 minutes travel time.
  - Copterline has on average five departures on weekdays.

Sources: VR Group – Finnish State Railways, Google Maps, St. Peter line, Port of Helsinki
The fast train services between Helsinki and St Petersburg known as Allegro is an excellent example of how international collaboration and coordinated action can enhance intercity connectivity by realising travel time savings.

**Gulf of Finland Triangle**

**Passenger transport travel times 2(3)**

### Allegro joint venture
- The Allegro, a fast train connection between Helsinki and St Petersburg, was introduced in December 2010. This reduced the time of travel from 5 hours 30 minutes to 3 hours 30 minutes.
- The service is operated by Allegro, a 50/50 joint venture of Finnish and Russian national railway companies.
- The trains are owned by another joint venture by the same owners, with a contract to provide the maintenance services and sublease the trains to the operator.
- The Allegro service has been successful as the number of passengers has grown by 43% since it has been in service.

### Border control
- The border control on Allegro is done on the train, making it convenient for the travelers.
- Border control officials from both countries embark the train from the station closest to the border and carry out passport control on the train.

**Travel time**

- **Before Allegro**: 5 hours 30 minutes
- **After Allegro**: 3 hours 30 minutes

**Passenger numbers**

- **2010**: 28% (Helsinki), 12% (St Petersburg)
- **2011**: 28% (Helsinki), 12% (St Petersburg)
- **2012**: 28% (Helsinki), 12% (St Petersburg)

Source: VR Group
St Petersburg represents the largest market along the RBGC when population is considered. The economy in the Greater St Peterburg area is also an important source of growth for Finland and Estonia. This makes the ability to create commuting duopolies between the three cities increasingly vital.
Passenger ferry transport between Helsinki and both Tallinn (7.5 million passengers in 2012) and St Petersburg (380 hundred thousand in 2012) is an ever increasing potential source of tourism revenue.

**Gulf of Finland Triangle**

**Passenger ferry transport**

**Growth in ferry passengers**

- The number of ferry passengers from Helsinki to St Petersburg has grown significantly after St. Peter Line begun the operations on the Helsinki - St Petersburg route in 2010.
- Passengers travelling to St Petersburg by ferry are relieved of applying for visa if the time at the destination does not exceed 72 hours, which corresponds a maximum of two nights at a hotel.
- On a national scale St Petersburg ferry passengers account only for 2.1% of total ferry passengers in Finland. However the proportion of St Petersburg passengers is growing rapidly as in 2003 it was 0.2%.
- Passenger figures on the Tallinn route have also been growing constantly. The growth has been 34% between 2003 and 2012, whereas Swedish ferry traffic has remained largely unchanged with one percent decline.

**Ferry passengers between Helsinki and St Petersburg**

<table>
<thead>
<tr>
<th>Year</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
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<td>0</td>
<td>50</td>
<td>75</td>
<td>100</td>
<td>125</td>
<td>150</td>
<td>175</td>
<td>200</td>
<td>225</td>
<td>250</td>
<td>300</td>
</tr>
</tbody>
</table>

**Ferry passengers in Finland in 2012**

- Sweden: 51%
- Estonia: 42%
- Russia: 2%
- Germany: 1%
- Foreign Cruise Ships: 4%
- Other: 0%

*Note: includes passengers both in and out of Finland*

**Growth in ferry passengers in Finland**

<table>
<thead>
<tr>
<th>Year</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
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<tr>
<td>Million people</td>
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<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td></td>
</tr>
</tbody>
</table>

Source: Liikennevirasto - Finnish Transport Agency

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The tourism industry can be a significant source of economic activity for the main cities in the Gulf of Finland Triangle. Tourism has been growing significantly in the past decade with overnight stays, for example by Russians, in Tallinn growing by more than twofold from 2005 to 2011.

Growth in tourists
- The number of Russian tourist has increased in both Helsinki and Tallinn from 2005 and 2011
- The number of Finns visiting Tallinn has also grown whilst the number of Estonians visiting Helsinki has grown only slightly.

Sources: Russian Committee for Investment and Strategic Projects, Helsinki tourism statistics
Tallinn is amidst revolutionising the inter-modality of its passenger transport. A new tram line will link the port and the airport via the bus and train stations taking a step towards a genuinely more integrated transport system. This development has the opportunity to improve point-to-point connectivity with both Helsinki and St Petersburg.

Planned tram line will connect the different modes of transport with the city centre. The Ülemista station will become an important crossing point linking railway to the public transport and the airport.
Greater St Petersburg is an emerging economic area with especially manufacturing and wholesale/retail sector growing rapidly. Whilst freight transport by rail is prevalent within Russia it is not so when it comes to imports and exports. The competitiveness of rail transport to Finland and to Estonia and to the large European markets must improve in order for rail transport to capture some of the growth potential.

**Business turnover in St Petersburg in 2011**
- Real estate, renting and business activities: 7%
- Transport and communications: 8%
- Manufacturing activity: 36%
- Wholesale and retail trade, repair services: 40%
- Other activities: 9%

**Imports and exports in Russia***
- Pipeline: 49%
- Railway: 43%
- Road: 5%
- Waterway: 2%
- Other: 1%

**Freight turnover by form of transport in Russia**

**Industrial production in St Petersburg**
- The largest industrial sectors in the Greater St Petersburg area are manufacturing and wholesale/retail
- The manufacturing industry has grown 97% and the wholesale/retail sector 53% between 2009 and 2011
- Both of these industries are reliant on imports and exports
- The import of goods and services are expected to grow 36% and export 24% from 2013 to 2017
- Rail transportation is 43% of the total Russian freight turnover even though in terms of share volumes transported goods the railways carry only 17% of the total volume
- By comparison road transportation is dominant in terms of volumes at 68%, but counts only 5% of the total freight turnover

**Sources:** Statistics of St Petersburg, Economist Intelligence Unit

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*Note: Real exports and imports of constant prices

**Note: 1 RUB = 0,024646 EUR
The amount of freight from Russia to Finland by train has been increasing in the last five years. Additional scope for growth however exists as total exports are growing as is there share of rail as a mode of transport.

**Container freight from Russia to Finland**

- A major part of the container freight from Russia to Finland are manufactured products, which account for 67% of the annual volumes.
- Second largest in terms of volumes are chemical products, which account for 21% of the annual volumes.
- Rail accounts for 21% of the annual transport turnover of manufactured products. The share of road transport is 42% and sea transport 37%.
- 98% of the turnover of chemical products is transported by rail and the remaining 2% by sea transport.
- Both of these commodity types have seen an increase in rail transport in the last ten years, manufactured products 856% and chemical products 321%.

**Sources:** Finnish Custom Office, ULJAS database
The container freight from Russia to Finland show a long term growth trend. Approximately 20% of manufactured products are transported by rail and there is significant scope for increasing the use of rail as a mode of transport of these imports.

Container freight from Finland to Russia

- The three most important commodity types of container freight from Finland to Russia are machinery and vehicles, raw materials (excluding fuels) and chemical products. Together they account for 88% of Finnish container freight to Russia.
- 54% of the turnover of chemical products are transported by rail and 28% road and 18% by sea transport.
- The biggest part of the manufactured products are transported by road 66%, railway accounts 18% and sea transport 16%.
- Raw materials are mostly shipped by sea (95%) and resting 5% by road transport.
- The railway transports share of the turnover of chemical products has increased 1617% in last ten years and manufactured products 65%.
- The rail transport volumes have been increasing from 2008 even thought the trend of exports to Russia have been the opposite.

Share of transport mode in 2012

- Raw materials 32%
- Manufactured products 20%
- Chemical products 10%
- Other 10%

*Note: railway turnover km/tonnes

Sources: Finnish Custom Office, ULJAS database
Russia is seen as the most vibrant retail market along the RBGC. The Greater St Petersburg area can potentially capture a large share of this growth given that GDP growth in the region remains strong and unemployment rate low. This makes high quality transport links with Finland, Estonia and the other RBGC countries priority for economic growth.

Economic growth in Russia
- St Petersburg’s economy seem to have recovered well from the post 2008 crisis and continues to grow
- GDP in St Petersburg has grown 185% during 2004-2011
- The employment rates have also shown positive signs of recovery. The employment rate has grown 116% during 2009-2011
- The economic growth and better employment rates are in line with the growing private consumption in Russia, which is expected to grow 17% between 2013-2017
- As the retail sales forecasts illustrate the growth of sale numbers is much bigger in Russia than for example in Germany or Poland
- The retail sales are expected to continue growing 46.5% until 2017
**Gulf of Finland Triangle**

**The case of automotive industry 1(2)**

The production of passenger cars has increased in the Greater St Petersburg area since 2007. This may be in part due to the growing demand for passenger cars in Russia and the cost competitiveness of the region.

### Car production in RBGC countries

- Passenger car production has recovered after the slowdown in 2008 in Germany and in Russia.
- Poland has seen a slight decrease of the car production but remained at the same level as in the past ten years.
- Germany is by far the largest car producer in the RBGC countries, with 5.9 million cars produced in 2012, when Russia produced 1.7 and Poland 0.7 million cars.
- St Petersburg’s automotive industry has grown rapidly in last few years. Last year passenger car production grew by 50% to 389,300 units.
  - The production in St Petersburg covers approximately 20% of the total car production in Russia.
- St Petersburg has grown into the second-largest car production region in Russia after the Samara region.
- Car sales in Russia grew 11% in 2012 to total of 2.9 million.

**Passenger car production**

- **Germany**: 0 million units in 2000, peaking at 6 million units in 2011, producing 5.9 million cars in 2012.
- **Poland**: 0.7 million units in 2000, remaining stable around 1 million units, with a slight decrease in recent years.
- **Russia**: Production has increased from 1 million units in 2000 to 3 million units in 2011, growing to 1.7 million cars in 2012.

**Sources:** Economist Intelligence Unit, Eurofound, Bloomberg
In addition to the cost competitiveness of manufacturing, the success of the automotive industry is also seen to thrive when it can rely on a high quality supply chain. The automotive industries both in the Greater St Petersburg area as well as Germany and Poland could greatly benefit from a reliable rail freight connection between the clusters.

Vehicle assembly plants in the vicinity of Rail Baltica

Passenger car production
- Germany is the largest car producer in both in terms of cars produced and number of assembly plants
- St Petersburg has seen rapid growth in the automotive industry and has been able to attract more producers and open new production facilities. Hyundai and Scania are the latest additions to the St Petersburg automotive cluster with new assembly plant opened in 2010

Growing market in Russia
- Russian market is the fastest grown car market in the RBGC region and the car registration are expected to grow 30% until 2017
- German and Polish markets have remained almost unchanged for the last twelve years

Passenger car registrations

Sources: Eurofound, Bloomberg, Economist Intelligence Unit
# Analysis of growth potential and governance model

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2. **Warsaw-Lodz-Poznan-Berlin**
3. **Kaunas-Bialystok-Warsaw**
4. **Baltic Capitals**
5. **Gulf of Finland Triangle**
6. **Helsinki-Tampere Growth Zone**
7. **RBGC Governance Model**
## Executive summary

### Introduction
- The aim of this section is to identify potential sources of economic growth along the Rail Baltica Growth Corridor ("RBGC"), focusing on the Helsinki–Tampere Growth Zone, and to outline possible next steps to realise that growth.
- Helsinki–Tampere Growth Zone is a corridor stretching 180km northeast of Helsinki. The main cities along the corridor are Helsinki, Vantaa, Riihimäki, Hämeenlinna and Tampere. Approximately 1.5 million people live in the Helsinki–Tampere Growth Zone.

### Passenger transport
- The travel time by train from Helsinki to Tampere is 1 hour 30 minutes at its shortest. Thus, it has been possible for the Helsinki–Tampere Growth Zone to function as a single economic area due to high levels of connectivity. The cities of Helsinki and Tampere effectively function as a commuting duopoly. It is possible for people to live in one city and work in another.
- The good inter-modal passenger transport connections, especially in Helsinki, play a key role in the commuting duopoly as the time spent on transferring from the main transport hubs to place of work using local public transport remains limited. The new tram line number nine, western extension of the metro system and Ring Rail Line to the airport in Helsinki are all recent or ongoing enhancements in this passenger transport inter-modality.
- It is often argued that greater concentration of economic activity allows for greater specialisation and thus labour productivity and further job creation. The cities along the corridor tend to have higher gross value add per capita and generate more new jobs than cities elsewhere in Finland.

### Freight transport
- A significant non-bulk freight flow originating from Finland is currently transported to Germany by sea. The Port of Vuosaari in Helsinki is a major terminal for this traffic. If there was a competitive rail freight connection through the Baltic States to the major European markets then some of this sea freight might potentially transfer onto the rail route. This is especially the case if the rail route were able to offer more predictable travel times and the prospect of less handling damage.
- A freight logistic hub has emerged the northeastern corner of Ring Road III. This is a location with excellent transport links given the proximity of the airport, the port, the main rail line to the north of the country as well as the ring road around the capital. It is at this location that freight transfers from one mode of transport to another facilitating further economic activity.

### Next steps
- Helsinki–Tampere Growth Zone appears to be a functioning commuting duopoly relying heavily in the inter-modality of passenger transport in Helsinki City Centre. A considerable portion of non-bulk freight departs Finland by sea given the absence of a competitive alternative. A thriving logistics hub has emerged around Ring Road III.
- A practical next steps are, through the collaboration of the cities along the RBGC, to capture the lessons in the Helsinki–Tampere Growth Zone on 1) the commuting duopoly, 2) passenger transport inter-modality in Helsinki and 3) emergence of a logistic hub, for the benefit of all the cities involved. It will also be important to understand 4) what practical steps can be taken to make rail a more attractive alternative for non-bulk freight originating from Finland so as to facilitate further growth along the RBGC.
Helsinki-Tampere Growth Zone

Introduction

Helsinki-Tampere Growth Zone is a multimodal transport corridor stretching approximately 180km northwest of Helsinki.

Existing transport infrastructure:

- Helsinki-Tampere Growth Zone is a corridor stretching 178km northwest from Helsinki. The travel time by train is 1 hour 30 minutes and by car 2 hours.
- Both Helsinki and Tampere have international airports with 14.8 million passengers travelling through Helsinki and 0.6 million through Tampere in 2012.
- Port at Vuosaari is located 16km from the Helsinki City Centre, handling freight with annual volume at 10.6 million tonnes in 2012.
- The passenger ferry terminals to the Baltic Sea destinations (Stockholm, Tallinn and St Petersburg) are located in the city centre in West Harbour, South Harbour and Katajanokka.
- The long-distance ferries to Germany (Travemünde and Rostock) and Poland (Gdynia) depart from the Port of Vuosaari.

Population in the main cities in 2012:

<table>
<thead>
<tr>
<th>City</th>
<th>Population ('000 people)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helsinki</td>
<td>604</td>
</tr>
<tr>
<td>Espoo</td>
<td>257</td>
</tr>
<tr>
<td>Tampere</td>
<td>217</td>
</tr>
<tr>
<td>Vantaa</td>
<td>205</td>
</tr>
<tr>
<td>Hämeenlinna</td>
<td>67</td>
</tr>
<tr>
<td>Hyvinkää</td>
<td>46</td>
</tr>
<tr>
<td>Riihimäki</td>
<td>29</td>
</tr>
</tbody>
</table>

Sources: Liikennevirasto – Finnish Transport Agency, Statistics Finland.
Helsinki-Tampere Growth Zone has excellent passenger transport connections both by car and by train. These short travel times make it possible for people to live in one city and work in another allowing the corridor to function as a commuting duopoly generating further potential for economic growth.

### Helsinki-Tampere Growth Zone

**Passenger transport travel times**

<table>
<thead>
<tr>
<th>Location</th>
<th>Connect by Train</th>
<th>Travel Time</th>
<th>Trains per Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tampere</td>
<td>Travel time 1 hr 30 min</td>
<td>1-3 trains per hour</td>
<td></td>
</tr>
<tr>
<td>Helsinki</td>
<td>Travel time 2 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hämeenlinna</td>
<td>Travel time 1 hr 3 min</td>
<td>1-2 trains per hour</td>
<td></td>
</tr>
<tr>
<td>Hyvinkää</td>
<td>Travel time 40 minutes</td>
<td>1-4 trains per hour</td>
<td></td>
</tr>
</tbody>
</table>

**Passenger transport connectivity**

- Helsinki to Tampere connection is served by at minimum hourly trains with the travel times being 1 hour and 30 minutes at their shortest.
- The travel time between the two cities is approximately 2 hours by car.
- There is also a 35 minute plane connection between Helsinki and Tampere. However, the transfer times locally make the overall travel time by train and car more competitive.

Sources: VR Group, Google Maps
Helsinki Regional Transport Authority introduced a new extension for the tram line number nine connecting railway station, bus terminal (public transport & long distance bus services), and the ferry terminal in Länsisatama.

Sources: VR Group, HSL - Helsinki Regional Transport Authority
The new Ring Rail Line opening in July 2015 will improve the connectivity of the Helsinki-Vantaa Airport and its business districts in Vantaa with the Helsinki City Centre.

The Ring Rail Line will connect the Helsinki-Vantaa Airport and the surrounding business district in Vantaa to the Helsinki City Centre with a direct train service. The Ring Rail Line is expected to start service in July 2015 with trains running every 10 minutes at rush hours in both directions. The train service between the Helsinki city centre and the airport will take approximately 30 minutes. Travelers arriving by long distance trains from the north and east bound, from ST. Petersburg direction, can change to the airport service at Tikkurila in Vantaa which is 7 minutes and three stops from the airport.

Source: Liikenneviraston arkisto – Finnish Transport Agency
Helsinki-Tampere Growth Zone
A commuting duopoly 1(2)

High quality rail and road connections from Helsinki to Tampere make it the primary commuting corridor in and out of the capital city.

Source: Statistics Finland
The high quality transport infrastructure connecting the region has enabled people to commute along the corridor.

### Proportion of commuters 2010

<table>
<thead>
<tr>
<th>City</th>
<th>Commuters</th>
<th>Residents working within municipality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tampere</td>
<td>19%</td>
<td>81%</td>
</tr>
<tr>
<td>Hyvinkää</td>
<td>45%</td>
<td>55%</td>
</tr>
<tr>
<td>Riihimäki</td>
<td>47%</td>
<td>53%</td>
</tr>
<tr>
<td>Hämeenlinna</td>
<td>24%</td>
<td>76%</td>
</tr>
<tr>
<td>Helsinki</td>
<td>22%</td>
<td>78%</td>
</tr>
</tbody>
</table>

### Growth of proportion of commuters 1990-2010

- All the major cities along the Helsinki-Tampere corridor have seen an increase in the number of people commuting.
- The smaller cities along the corridor have a higher proportion of commuters than Helsinki and Tampere which tend to have greater concentrations of businesses and jobs.
- Tampere has the lowest percentage of commuters at 19% and Riihijärvi the highest at 47% of population.
- The share of commuters in Hämeenlinna has increased the most, by 79%, over the past 20 years.

Source: Statistics Finland
The high quality transport connections and concentrations of people and businesses may be one factor contributing to positive economic development along the corridor known as Helsinki-Tampere Growth Zone.

### Population density in 2013 (top 20 cities)

<table>
<thead>
<tr>
<th>City</th>
<th>Residents per square km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helsinki</td>
<td>3000</td>
</tr>
<tr>
<td>Kauniainen</td>
<td>2500</td>
</tr>
<tr>
<td>Kerava</td>
<td>2000</td>
</tr>
<tr>
<td>Järvenpää</td>
<td>1500</td>
</tr>
<tr>
<td>Marianhamina</td>
<td>1000</td>
</tr>
<tr>
<td>Vantaa</td>
<td>900</td>
</tr>
<tr>
<td>Espoo</td>
<td>800</td>
</tr>
<tr>
<td>Lahti</td>
<td>700</td>
</tr>
<tr>
<td>Turku</td>
<td>600</td>
</tr>
<tr>
<td>Raisio</td>
<td>500</td>
</tr>
<tr>
<td>Tampere</td>
<td>400</td>
</tr>
<tr>
<td>Riihimäki</td>
<td>300</td>
</tr>
<tr>
<td>Kemi</td>
<td>200</td>
</tr>
<tr>
<td>Pirkkala</td>
<td>100</td>
</tr>
<tr>
<td>Pietarsaari</td>
<td>50</td>
</tr>
<tr>
<td>Kaarina</td>
<td>40</td>
</tr>
<tr>
<td>Kotka</td>
<td>30</td>
</tr>
<tr>
<td>Imatra</td>
<td>20</td>
</tr>
<tr>
<td>Vaasa</td>
<td>10</td>
</tr>
<tr>
<td>Tuusula</td>
<td>10</td>
</tr>
<tr>
<td>Kempele</td>
<td>0</td>
</tr>
</tbody>
</table>

### Job creation 1990-2010 (top 10 cities)

<table>
<thead>
<tr>
<th>City</th>
<th>Number of jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Espoo</td>
<td>33832</td>
</tr>
<tr>
<td>Vantaa</td>
<td>29486</td>
</tr>
<tr>
<td>Tampere</td>
<td>19249</td>
</tr>
<tr>
<td>Oulu</td>
<td>15190</td>
</tr>
<tr>
<td>Helsinki</td>
<td>13768</td>
</tr>
<tr>
<td>Jyväskylä</td>
<td>9293</td>
</tr>
<tr>
<td>Seinäjoki</td>
<td>4815</td>
</tr>
<tr>
<td>Vaasa</td>
<td>4463</td>
</tr>
<tr>
<td>Kerava</td>
<td>3025</td>
</tr>
<tr>
<td>Kuopio</td>
<td>2767</td>
</tr>
</tbody>
</table>

### A concentration of population and businesses
- The cities of the Helsinki-Tampere Growth Zone are densely populated in comparison to other cities in Finland.
- The cities in the Helsinki-Tampere Growth Zone have created more jobs in the past 20 years than those elsewhere in Finland.
- The high quality transport infrastructure connecting the region has potentially allowed for a high concentration of businesses to build up along the corridor.

Source: Statistics Finland
Economic performance in Southern Finland

Helsinki-Tampere Growth Zone

Regional economic development

- All the areas in the Helsinki-Tampere Growth Zone show positive development between 2000 and 2010
- The best performing areas of Porvoo and Loviisa are on a major transport corridor, the E-18, and within a commuting distance from Helsinki towards St Petersburg in the east
- Other areas on the E-18 transport corridor are Kotka-Hamina, Raasepori, Salo, Turunmaa and Turku
- Helsinki-Tampere Growth Zone is demonstrating better performance throughout the corridor than E-18 corridor

*GEP-index combines Gross Value Added (GVA), Employment and Population statistics of the region, giving a more comprehensive illustration of regional development and helps in comparison of regions and in identifying trends

**Tampere is not part of the Southern Finland and has been included in the graph for illustration purposes

Source: Statistics Finland
Finland is a leading origin and destination of RBGC north-south freight.

The vast majority of the commodity flows originating from Finland arrive in Germany.

Rail Baltica could thus create an alternate economically competitive transports route to a key export market for Finland.

RBGC freight on the north-south axis

- A large part of the freight flows on the north-south axis of the Baltic sea region are between Germany and Finland.
- Of the freight between Finland and Germany 73% is non bulk.

Source: A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania - AECOM.
A significant proportion of the freight flows on the north-south axis are wood and paper products, which are predominantly transported by sea.

However the paper industry sees possible that a large part of their products originating from Finland and going to the Central and Eastern European markets would switch to train transportation because the new Rail Baltica line would allow fewer handlings.

Majority of the freight flows on the north-south axis of the Baltic Sea region are between Germany and the Gulf of Finland, more precisely Finland and St Petersburg. Freight flows between Germany and Gulf of Finland are predominantly transported by sea.

Potential in change of transport

The Finnish forestry industry has already demonstrated some interest towards Rail Baltica.

“Paper is a very sensitive product. It gets easily damaged during transportation and reloading at ports. By rail, paper can be transported closer to the consumer with fewer handlings.” - Jyrki Ovaska, President of the Paper Business Group at UPM.

With Rail Baltica, it is likely that a large part of our shipments leaving Finland towards Central and Eastern Europe would switch to rail transport.”

Sources:
A feasibility study for a standard gauge separate railway line in Estonia, Latvia and Lithuania – AECOM, AmCham Finland news releases.

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Helsinki-Tampere Growth Zone

RBGC freight on the north-south axis in Finland 2(2)

modal split of bulk freight in 2008

<table>
<thead>
<tr>
<th>Route</th>
<th>Finland - Germany</th>
<th>Estonia - Finland</th>
<th>Latvia - Finland</th>
<th>Finland - Estonia</th>
<th>Germany - Finland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road</td>
<td>0 %</td>
<td>0 %</td>
<td>0 %</td>
<td>0 %</td>
<td>0 %</td>
</tr>
<tr>
<td>Rail</td>
<td>100 %</td>
<td>95 %</td>
<td>99 %</td>
<td>99 %</td>
<td>99 %</td>
</tr>
<tr>
<td>Sea</td>
<td>0 %</td>
<td>5 %</td>
<td>1 %</td>
<td>1 %</td>
<td>1 %</td>
</tr>
</tbody>
</table>

modal split of non bulk freight in 2008

<table>
<thead>
<tr>
<th>Route</th>
<th>Finland-Germany</th>
<th>Germany-Finland</th>
<th>Poland - Finland</th>
<th>Lithuania - Finland</th>
<th>Finland - Poland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road</td>
<td>0 %</td>
<td>0 %</td>
<td>33 %</td>
<td>0 %</td>
<td>26 %</td>
</tr>
<tr>
<td>Rail</td>
<td>100 %</td>
<td>100 %</td>
<td>67 %</td>
<td>100 %</td>
<td>74 %</td>
</tr>
<tr>
<td>Sea</td>
<td>0 %</td>
<td>0 %</td>
<td>0 %</td>
<td>0 %</td>
<td>0 %</td>
</tr>
</tbody>
</table>

Finland-Germany freight by route and commodity in 2008

- Paper
- Wood Products
- Iron and steel
- Mineral fuels and oils
Helsinki-Tampere Growth Zone has the highest concentration of logistic centres in Finland.

Helsinki-Tampere Growth Zone has higher concentration of logistic centres than elsewhere in Finland.

Source: Logistikakeskusten sijainti-ja verkostoselvitys, 2011 - ESLogC
The Helsinki-Vantaa Airport and Vuosaari Port within an easy reach of Helsinki as a major population centre makes the Ring Road III a competitive base for logistics businesses in Finland. The development of the RBGC infrastructure can further enhance this competitiveness.

Concentration of logistic centres
- In the Greater Helsinki area the logistic centres are concentrated in the northeastern corner of the Ring Road III in the City of Vantaa.
- The location is well connected to Helsinki-Vantaa Airport, the main freight port at Vuosaari and the motorway network.
- A potential switch from sea transport to rail transport to the European markets would occur through taking freight over by ro-ro from Vuosaari in Helsinki to Muuga in Tallinn. This would further increase the attractiveness of the Ring Road III as base for logistics businesses.

Source: Logistiikkakeskusten sijainti- ja verkostoselvitys, 2011 - ESLogC
Analysis of growth potential and governance model

Contents

1. Executive summary
2. Warsaw-Lodz-Poznan-Berlin
3. Kaunas-Bialystok-Warsaw
4. Baltic Capitals
5. Gulf of Finland Triangle
6. Helsinki-Tampere Growth Zone
7. RBGC Governance Model
Rail Baltica Growth Governance Model

Janne Antikainen & Satu Tolonen
10 RULES FOR GOOD GOVERNANCE

Governance is nowadays horizontally defined, characterised by cooperation and constant negotiation procedure between stakeholders. Public sector and political institutions have become more dependent on other societal actors (private sector, interest organisations) and international organisations. The policy arena has become ever more complex and fragmented.

The preparation and decision-making processes themselves have become crucial for the implementation of development initiatives. Multi-level governance is a way to improve the quality of preparation and understanding of decision-making concerning initiative. Multi-level governance is networked and open by nature: a tolerant and inviting attitude characterises a multi-level governance culture.

However, networks – more than hierarchies – require new capability for co-operation and also new form of leadership: who is characteristic and powerful enough to gain respect from other participants in the network, is the one who will lead the swarm.

After studying number of governance models for corridors mainly in Europe, following 10 rules for good governance model could be summarised:

1) Form network (alliance/community) of actors, both public and private
2) Create dialogue forums for stakeholders, ‘Clubs’
3) Set up clear vision, communicate and market clearly
4) Design platform, i.e. formal structure (A membership agreement, cooperation contract, formal executive positions (board, commission, secretary, director etc.)) for those sharing the vision
5) Get strong personalized leadership, ‘one carrying flag’
6) Gain lobbying power, get political support, remember access routes & points
7) Make clear action plan/strategy
8) Operationalize task forces, secure resources
9) Form solid information basis, study regional economic benefits, monitor development
10) Use best practice examples - praise power of piers

And when analysing state of the art in the Rail Baltica Growth Corridor step by step, following remarks could be made:

1) Network of cities has been created, but some important nodes (such as Riga) are not fully committed. Private actors are not yet part of the network.
2) Dialogue between cities is active, but there should be forums for businesses (Baltic Chamber of Commerce) and higher education institutions (Baltic University), and one general forum for all of them.
3) There is not clear vision that could be communicated.
4) Platform is under construction.
5) There is no one person that could be named Mr/Ms Baltic Growth Corridor.
6) Lobbying power is weak, especially due to lack of vision, access routes and points have been analysed
7) No action plan or strategy drafted
8) Operationalisation of development has been based on projects, more institutional basis is required.
9) Information has been produced, but in order to promote growth, more studies in economic benefits should be done.
10) Cities are actively communicating, but no systematic exchange of information and experiences.
As ideological model, Growth Corridor Governance Model could look like this:

A clear and inspiring vision of Rail Baltica growth should be formulated by core group of cities, together with private sector representatives. After vision is formed, the action plan or action strategy – a (rail)road map, should be drawn. The financial plan and ideas about possible founding sources should also be framed. In early stages, politically heavy player should be nominated to steer development. He or she must have helping hands (secretariat), and task forces on substantial work.

In the core of the Growth Corridor Governance model is the operational project organisation model, which is formed by six working packages (model follows RBGC II working paper dated 22 May 2013). WP 1 is the general management of the project. WPs 2-4 are substantial packages, dealing with multimodality, strategic planning and green growth, respectively (see working paper for more details). WP 5 is focusing on general marketing and communications, and WP 6 is Growth Forum, which actually is the test bed for governance model. Growth forum core group is formulated by the most active cities (namely Berlin, Poznan, Lodz, Warsaw, Kaunas, Riga, Tallinn and Helsinki). Open Forum is open to all interested cities and regions. Growth Forum is place for exchange of information and experiences to relevant stakeholders and end users. In addition to politicians and civil servants, business and higher education institutions can utilise this platform for discussion. DGMoves Rail Baltic Corridor Forum and ministries’ Rail Baltic Joint Venture are counterparts of this bottom-up Growth Forum. Rail Baltica should have lobbying power also to influence on counterparts. Knowledge and competence based growth corridor development should rely on solid knowledge and competence basis, skills development, intelligence and monitoring, which should be carried on at least yearly basis (WP 7).
### Appendix 1

**Classification of the commodity types**

<table>
<thead>
<tr>
<th>Product</th>
<th>Bulk or Non Bulk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Products of agriculture, hunting, and forestry; fish and other fishing products</td>
<td>Bulk</td>
</tr>
<tr>
<td>Coal and lignite; crude petroleum and natural gas</td>
<td>Bulk</td>
</tr>
<tr>
<td>Metal ores and other mining and quarrying products; peat; uranium and thorium</td>
<td>Bulk</td>
</tr>
<tr>
<td>Food products, beverages and tobacco</td>
<td>Non Bulk</td>
</tr>
<tr>
<td>Textiles and textile products; leather and leather products</td>
<td>Non Bulk</td>
</tr>
<tr>
<td>Wood and products of wood and cork (except furniture); articles of straw and plaiting materials; pulp, paper and paper products; printed matter and recorded media</td>
<td>Bulk</td>
</tr>
<tr>
<td>Coke and refined petroleum products</td>
<td>Bulk</td>
</tr>
<tr>
<td>Chemicals, chemical products, and man-made fibers; rubber and plastic products; nuclear fuel</td>
<td>Bulk</td>
</tr>
<tr>
<td>Other non metallic mineral products</td>
<td>Bulk</td>
</tr>
<tr>
<td>Basic metals; fabricated metal products, except machinery and equipment</td>
<td>Bulk</td>
</tr>
<tr>
<td>Machinery and equipment n.e.c.; office machinery and computers; electrical machinery and apparatus n.e.c.; radio, television and communication equipment and apparatus; medical, precision and optical instruments; watches and clocks</td>
<td>Non Bulk</td>
</tr>
<tr>
<td>Transport equipment</td>
<td>Non Bulk</td>
</tr>
<tr>
<td>Furniture; other manufactured goods n.e.c.</td>
<td>Non Bulk</td>
</tr>
<tr>
<td>Secondary raw materials; municipal wastes and other wastes</td>
<td>Non Bulk</td>
</tr>
<tr>
<td>Mail, parcels</td>
<td>Non Bulk</td>
</tr>
<tr>
<td>Equipment and material utilized in the transport of goods</td>
<td>Non Bulk</td>
</tr>
<tr>
<td>Goods moved in the course of household and office removals; baggage and articles accompanying travellers; motor vehicles being moved for repair; other non market goods n.e.c.</td>
<td>Non Bulk</td>
</tr>
<tr>
<td>Grouped goods: a mixture of types of goods which are transported together</td>
<td>Non Bulk</td>
</tr>
<tr>
<td>Unidentifiable goods: goods which for any reason cannot be identified and therefore cannot be assigned to groups 01-16.</td>
<td>Non Bulk</td>
</tr>
<tr>
<td>Other goods n.e.c.</td>
<td>Non Bulk</td>
</tr>
</tbody>
</table>