



## **Logistic performance development of the countries on the path along the new silk road**

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### **Abstract**

The one of the connections between Asia and Europe leads along the path throughout countries: Kazakhstan, Azerbaijan, Georgia, and Turkey. The changing economic environment creates different local strategies to elicit the development of logistical infrastructure in those countries. The purpose of this paper is to present the changes over time measured by the logistic performance index. Thanks to that it is possible to create the path of progress in achieving the desired performance. As a result of the common effort of countries increasing the efficiency of logistic operations, the realization of reliable Euro-Asian interconnections may become reality.

*Keywords:* International logistics, Transportation, LPI index.

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### **1. Introduction**

The choice to connect Europe and Asia lies in the efficiency of the logistic processes needed. Nowadays Europe and China seen as main production and consumption points need to be connected. Existing maritime connection lack speed which is an important factor in the term or modern economy. Today it takes 45-60 days for transport operation from Shanghai to Hamburg . The plan to revive the ancient Silk Road is an answer for the need of fast land connection in Eurasia. The course of the new Silk Route depends on many factors. As Golembaska reassumed: there are political, infrastructural, and industrial factors pointing that evolving trade may occur in the support of international logistics (Golembaska, 2014). Since the project expand across many countries it is important to realize past development in logistic performance because it may produce an adaptive conclusion for the future. The infrastructure is one of the key parts of the new project. Building track for rail in the new high speed standard could improve the tempo of transport and reliability of connections. The investment in the nod infrastructure as ports and intermodal reloading stations is also needed as partially the route will have to cross the Caspian Sea. The other nevertheless important factors as

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logistic competence and timeliness mentioned in the report of the World Bank may be an issue for some of the countries. To increase the level of involvement of the particular region in improving the logistic performance it is necessary to present the outcome available by the data collected thanks to independent report. Moreover the comparison of the evolution in the components of the logistic performance index between the countries along the route make it possible to point out the most critical aspect for the evolution of the performance in the whole path. The understanding for the countries of interest that they may be observed and helped to achieve a common goal may be also an important effect for such comparison. To observe the development of logistic performance there is a need for repetitive comparisons. That allows drawing a trend in development and helps to promote the successful strategies along the route.

## 2.Euro-Asian cooperation

The two regions European and Asian thanks to trade exchange created a unique connection. The global supply chain helped to develop a specialization and to deliver desired value to the market. Unlocking the economic potential of both regions has contributed to achieve an exponential growth in Asia and simultaneously change the profile of export in Europe. The scale of importance in trade between two regions underlines the fact that it represents the interest of 60 % of the world's population. Additionally over 50% of the world's GDP is created in 60 countries involved in Eurasian exchange. First in the row partner for European export is Asia. After the share of developing Asia in Union exports jumped from 15 billion ECU in 1980 to 93 billion ECU in 1993 the level of trade is maintained (EU Commission, 2015).

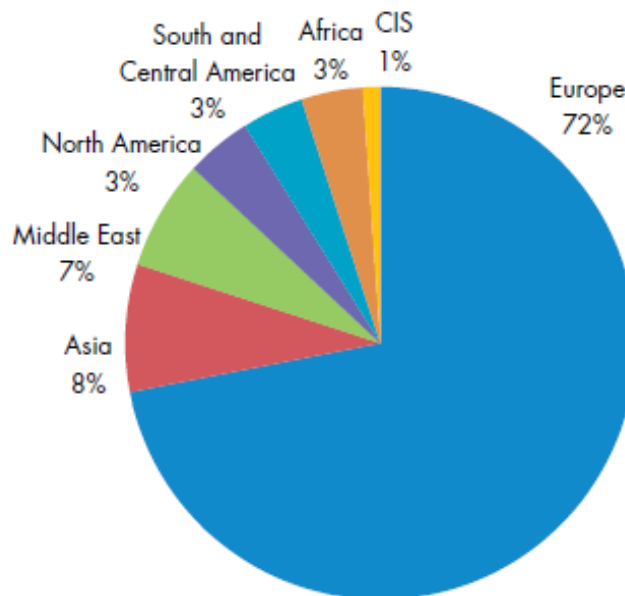


Figure 1 European export by destination in the Year 2009.

Source: Alkalay S., 2012.

The cooperation of this scale showed that the two zones are becoming ever more interdependent since the EU's main exports to ASEAN are chemical products,

machinery and transport equipment. Other increasingly important trade partner from Asia, China is the EU's biggest source of imports by far, and has also become one of the EU's fastest growing export markets. Thanks to development and recovery after financial crisis, China and Europe now trade well over €1 billion a day (EU Commission, 2015). From other side of the equation the most important partner for Asia is Europe. Holding 18% of share in export the Europe plays an critical role for Asian industry. The development of the Asian economy and foremost industry relies on maintaining deliveries to Europe. The financial crisis provoked a disturbance which explained the instant reaction of Asian authorities offering help in maintaining achieved trade level. The Europe as a developed distribution center plays a key role for potential Asian and mostly Chinese industry. This cooperation allows to Asia plays the role of world's best production center. Moreover the China market changes in a way that every year, 20 million Chinese households pass the threshold of household income of USD13,500. That fact builds an internal market and translates into extraordinary growth opportunities for European businesses. This is one of the reasons why China will be responsible for a third of 90 % of global economic growth over the next years, generated outside of Europe (EU Commission, 2014).

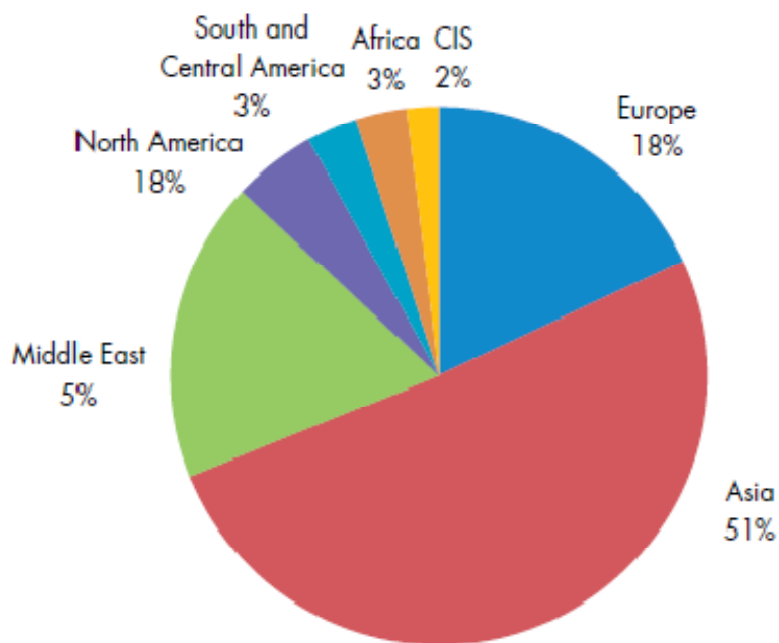


Figure 2 Asian export by destination in the Year 2009.  
Source: Alkalay S., 2012.

The initiative for revival of the Silk Route is to maintain an easy access to the markets along the path like Middle East, Eurasia and finally Europe. Support for the development of logistical infrastructure may decrease logistic costs for operators and increase the timeliness of deliveries. That would trigger the economical impulses for future investments in Asia and mostly in China (Fedorenko, 2013, p.13)

### 3. Countries along the New Silk Road

Along the land path from Asia to Europe the cargo will be transported through the following countries Kazakhstan, Azerbaijan, Georgia, and Turkey. The route passes through Caspian Sea as Middle Corridor. It is one of the main routes of the New Silk Road and TRACECA. The logistic performance of the named countries vary. It is important to observe and improve it to maintain a more balanced level along the route. The historical data shows the evolution in LPI index. It may help to see the future perspective in developing logistic conditions. Additionally thanks to analysis of the six components providing the data for overall LPI index it is possible to point out a weak spots as an area for future improvements.

The country where the route begins just after leaving China is Kazakhstan. The effort to increase the efficiency of the junction station in Horgos on the China–Kazakhstan border allows to assume the beginning of the course of the New Silk Road. China's rapid economic development had caused economic clusters spatially concentrated mainly along the east coast of the Asian continent. Development in this shape was caused by easy access to sea ports and associated with population density in this region. As a result, there is a large concentration of industry and the problems related to unbalanced of spatial development in China. A partial answer to this problem is to build the inland section of the Silk Road aiming through increased availability of logistics solutions to energize the western part of the country. An example of the development of logistics infrastructure in this region is the investments in Horgos, a village located on the border with Kazakhstan. In this area a special economic zone containing a cross-border transport hub is located (Jia C., Urumqi B., 2014). The project is financed by Kazakhstan government. The total project cost is 1249 million \$ including infrastructure 200 million \$, dry port 226 million \$ and private investments 823 million \$. It is expected that traffic volume by 2020 rise up to 4,4 million tons (Alpysbayev, 2015). Thanks to connection to Europe the existing logistics base undergoes a rapid development. Further plans for its expansion involving the construction of highways, railways, passenger terminals and logistics centers are linked to the success of reviving the Silk Road Project (Liu B., Lee S., 2012). From that point of view another effect of the merger between China and Europe through the inner part of mentioned pathway is to intensify the development of slower-growing industrial clusters located in Hohhot, Lanzhou and Urumqi.

Table 1 Development in Kazakhstan LPI index 2014-2007.

<i>Kazakhstan</i>	<i>LPI Rank</i>	<i>LPI Score</i>	<i>Customs</i>	<i>Infrastructure</i>	<i>International shipments</i>	<i>Logistic competence</i>	<i>Tracking &amp; tracing</i>	<i>Timeliness</i>
2014	88	2,7	2,33	2,38	2,68	2,72	2,83	3,24
2007	133	2,12	1,91	1,86	2,1	2,05	2,19	2,65
$\Delta$ lpi	-45	<b>0,58</b>	<b>0,42</b>	<b>0,52</b>	<b>0,58</b>	<b>0,67</b>	<b>0,64</b>	<b>0,59</b>

Source: lpi.worldbank.org.

The economy of Kazakhstan is adjusting to the Eurasia Customs Union which it joined in 2010. Forthcoming integration into the Eurasian Economic Union by 2015 help to improve its logistic performance. The main increase over period of seven years is noted in logistic competence. The smallest increase in score shows in customs. That may be changing thanks to advances in the process of joining WTO (Rajabova S., 2015).

However the progress made in the researched period is impressive. Kazakhstan jumped over 45 places in the global ranking by improving the performance across all components of LPI index.

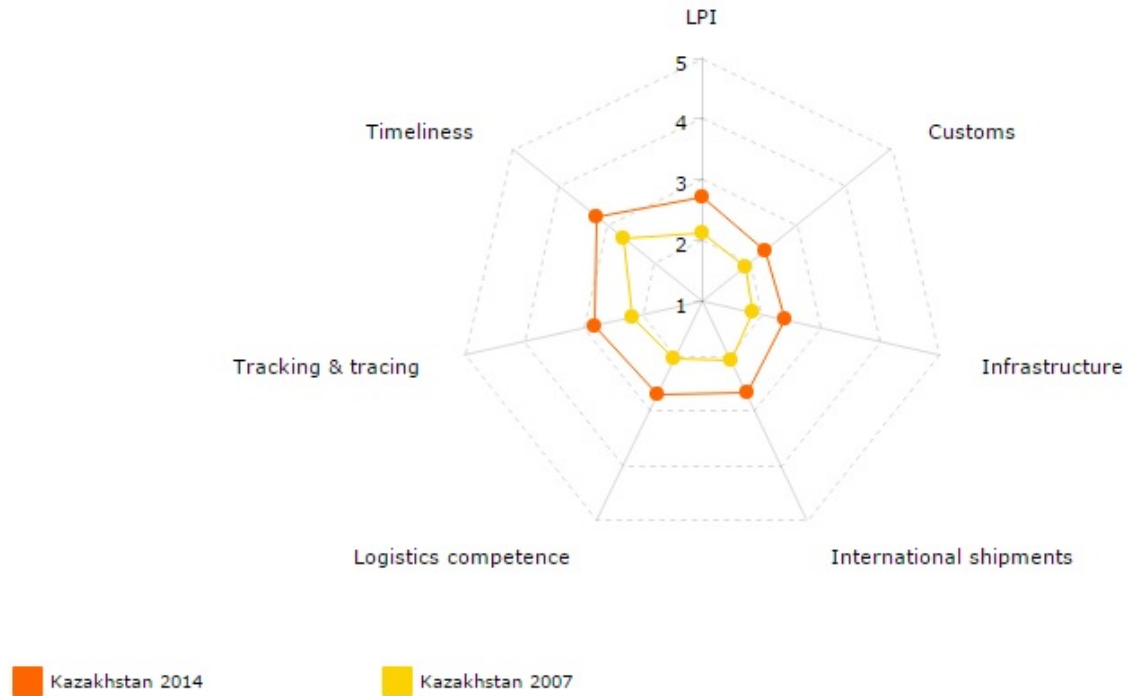


Figure 3 Development in Kazakhstan LPI index 2014-2007.  
Source: lpi.worldbank.org.

The second country in the path is Azerbaijan. Improving the infrastructure is a critical task in Azerbaijan. Its geographical position makes it an important link between the Black and Caspian Seas. Moreover the link south-north from Iran to Russia is a strategic route for trade in this area. Achieving Azerbaijan's potential as a transit economy is essential for the stimulation of economic growth. Additional non-oil economic development may bring the reduction of poverty and create a basis for the more balanced economy. Improvement of the road network has been identified as one of the priorities for production diversification for the country (www.worldbank.org, 2015). As stresses the head of Transport Policy and Economic Department from the Ministry of Transport in Azerbaijan the finishing the railway project connecting cities Baku-Tbilisi-Kars is crucial for the increase the trade in the region and for promoting the rail transportation for future Euro-Asian corridor (Aliyev, 2015). The biggest part of BTK railway, exactly 502 km of 838 km is running through Azerbaijan from Baku to the Georgian border. When finished this project would provide uninterrupted railway transport from Baku to Istanbul and further. It is expected that the line will be mostly carrying general freight and will reach 17 million tons of cargo transportation capacity by the end of construction of new rail roads and renovation of existing ones.(Acar, 2015) Moreover Azerbaijan invested on a new port at Alat which is located 75 km south of Baku on 400 ha area. At the end of first phase, new port had a capacity to handle 10

million ton cargo and 50,000 TEU. The total cost of the three phases will be 736 million \$ (STFA-ECAP, 2015).

Table 2 Development in Azerbaijan LPI index 2014-2007.

<i>Azerbaijan</i>	<i>LPI Rank</i>	<i>LPI Score</i>	<i>Customs</i>	<i>Infrastructure</i>	<i>International shipments</i>	<i>Logistic competence</i>	<i>Tracking &amp; tracing</i>	<i>Timeliness</i>
2014	125	2,45	2,57	2,71	2,57	2,14	2,14	2,57
2007	111	2,29	2,23	2	2,5	2	2,38	2,62
<b>Δ lpi</b>	<b>14</b>	<b>0,16</b>	<b>0,34</b>	<b>0,71</b>	<b>0,07</b>	<b>0,14</b>	<b>-0,24</b>	<b>-0,05</b>

Source: lpi.worldbank.org.

The LPI index shows how much is still to do. Especially in the segments of tracking & tracing and timeliness. This sections show drawback since the 2007 research. However the greatest improvement is visible in the infrastructure segment. The new operating Zhezkazgan-Beineu rail line which leads to Aktau port in conjunction with the BTK rail line may create an efficient corridor for the trade route (Daly, 2015). It's very important infrastructure project that shorten the railway route approximately 1000 km. An overall output in lpi index is rather poor. The fall over 14 places proves the urgent measures must be undertaken mostly in areas where logistic competence matters.

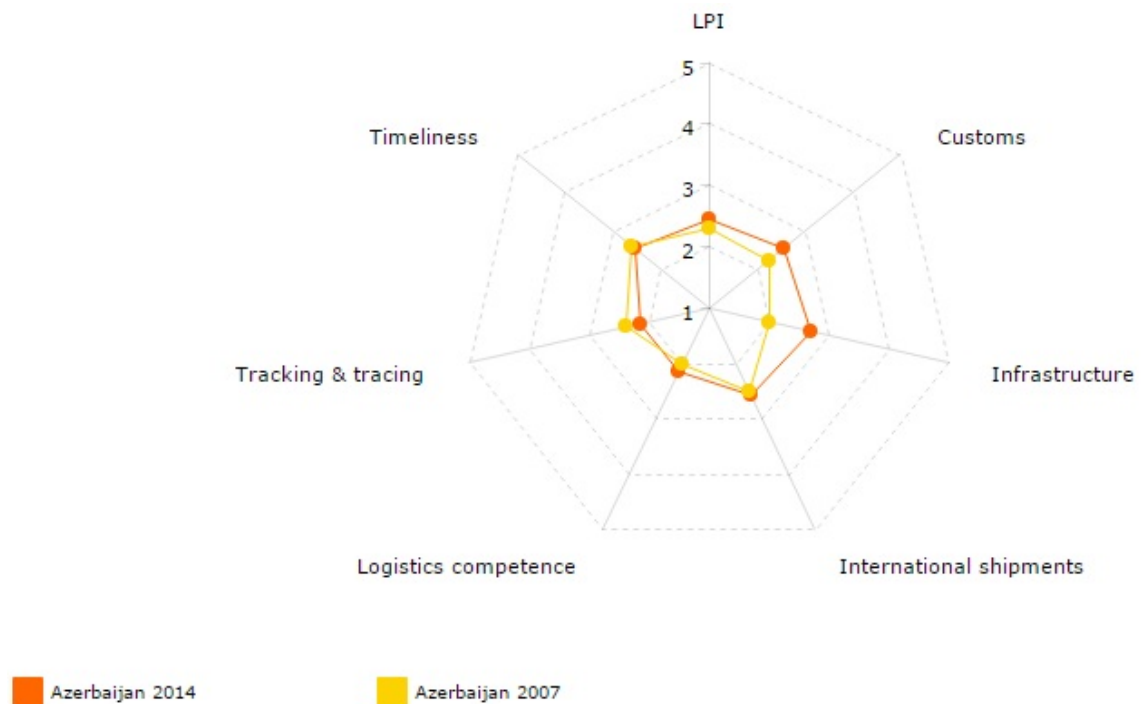


Figure 4 Development in Azerbaijan LPI index 2014-2007.

Source: lpi.worldbank.org.

The next after Azerbaijan along the route is Georgia. The available data (from 2010) for this region shows some drawbacks. The greatest decrease is connected to international shipments. Then comes worse situation in customs, logistic competence and tracking & tracing. All of that set back Georgia over 23 ranking places in the 4

years' time. Noticeable is also that this country as only one from the path which show worse LPI index. That may be caused by the unviability of the data from 2007 ranking which probably would show more tolerance for the overall outcome in increase of LPI index.

Table 3 Development in Georgia LPI index 2014-2010.

<i>Georgia</i>	<i>LPI Rank</i>	<i>LPI Score</i>	<i>Customs</i>	<i>Infrastructure</i>	<i>International shipments</i>	<i>Logistic competence</i>	<i>Tracking &amp; tracing</i>	<i>Timeliness</i>
2014	116	2,51	2,21	2,42	2,32	2,44	2,59	3,09
2010	93	2,61	2,37	2,17	2,73	2,57	2,67	3,08
<b>Δ lpi</b>	<b>23</b>	<b>-0,1</b>	<b>-0,16</b>	<b>0,25</b>	<b>-0,41</b>	<b>-0,13</b>	<b>-0,08</b>	<b>0,01</b>

Source: lpi.worldbank.org

The development of the line the Baku-Tbilisi-Kars project with Silk Wind multimodal block train along the path of mentioned countries may influence the logistic performance in the region. The importance of railway connection is stressed as a niche critical for reliability of international transportation system (Badridze, 2013). Moreover fast connection may be vital for the fast and reliable deliveries necessary in modern e-economy. Additional to that the West –East Highways projects: Poti-Tibilisi-Red Bridge and Poti-Batumi-Sarp may also increase intermodalism and capacity for future increase in trade in this region and along the route.

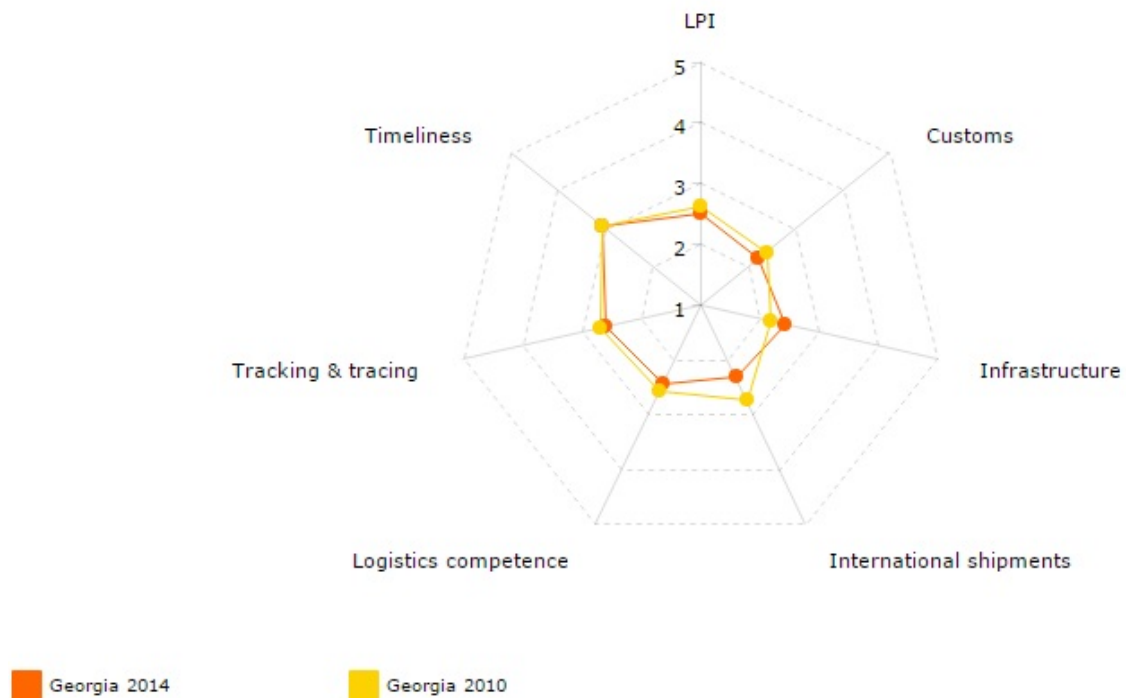


Figure 5 Development in Georgia LPI index 2014-2010.

Source: lpi.worldbank.org.

Significant progress is visible in the infrastructure section. This is an vital part of improving the performance since the East-West Highway carries over 60 percent of the total foreign trade. This route is seen as a central piece in the Government's strategy of transforming Georgia into a transport and logistics hub. Completing the East West Highway Corridor project is expected by 2020. Till today a section of 130 kilometers of

the East-West highway corridor have already been upgraded. Additional to that completing the second section in length 177 km must be finished by 2016 (Benmaamar, Keou, Saslavsky, 2015)

The last but not least Turkey; country closing the path from China to EU, and the final link to TEN-T corridors. The efforts of the state intends to take advantage of attractive geographical location for economic development focused on modernization and construction of modern transport infrastructure allowing in the future to play an important role in connecting continents. The most important investments made in the course of the New Silk Road should include investment in transport infrastructure to allow collision-free crossing of the Straits of Bosphorus. Due to the location of Turkey and a significant obstacle to transport in the form of the Bosphorus Strait is very important is to enable a fast passage for the smooth movement of goods. Situation complicates by 12 million inhabitants of Istanbul located in this place. The city separated by the Strait is a difficult to pass during peak hours. Currently ended project in this regard is the Marmaray tunnel used to connect underground urban routes. That part of Marmaray Project is marked BC1. The continuation of this project will also include modernization of the railway infrastructure in both directions from the tunnel and is marked with CR1. On the European continent from Sirkeci to Halkali and in Asia from Haydarpaşa to Gebze. The implementation of the second part of this construction is scheduled for 2015. This combination will enable the routing of high-speed route through the Bosphorus on the European continent. Currently, such a connection connects Ankara with the station Istanbul Pendik on the Asian side.

Another investment which is already in its final stages is a third bridge over the Bosphorus, Yavuz Sultan Selim. Once completed it will be the longest hanging structure in the world, which enables rail tracks. In addition through the bridge will lead the Northern Marmara Highway Motorway. The planned 260 km stretch of the highway leading to Ankara will allow trucks to access the highest standard road and pass the third Bosphorus bridge (www.3kopru.com, 2015). The other critical projects already in phase of realization are: Baku-Tbilisi-Kars Railway, Pakistan-Iran-Turkey Railway, Istanbul- Izmir Highway. The cooperation with China indicated in growing volume of trade increase pressure for developing transportation routes, logistic services and customs regulations. The need to build or modernize existing transport routes to link north-western China and Europe via Turkey, may open more transportation alternatives. To cross planned distance and increase interoperability it is safer to link through a number of corridors including Iran and Kazakhstan (Fedorenko, 2013, p.33)

Table 4 Development in Turkey LPI index 2014-2010.

<i>Turkey</i>	<i>LPI</i>		<i>International</i>					
	<i>Rank</i>	<i>Score</i>	<i>Customs</i>	<i>Infrastructure</i>	<i>shipments</i>	<i>Logisticcompetence</i>	<i>Tracking&amp;tracing</i>	<i>Timeliness</i>
2014	30	3,5	3,23	3,53	3,18	3,64	3,77	3,68
2007	34	3,15	3	2,94	3,07	3,29	3,27	3,38
$\Delta$ lpi	<b>-4</b>	<b>0,35</b>	<b>0,23</b>	<b>0,59</b>	<b>0,11</b>	<b>0,35</b>	<b>0,5</b>	<b>0,3</b>
$\Delta$ lpi	<b>-4</b>	<b>0,35</b>	<b>0,23</b>	<b>0,59</b>	<b>0,11</b>	<b>0,35</b>	<b>0,5</b>	<b>0,3</b>

Source: lpi.worldbank.org

The advance in the global ranking does not illustrate the effort made to improve logistic performance. In this part of ranking (160 countries) the 30th place means that Turkey already belongs among other EU counties. Improvement in all categories shows



a constant evolution with a clear purpose ahead. Turkey as a distribution hub may be very flexible to connect Europe, Asia, Middle East, Africa, and Russia. The development shows the greatest advantage in the infrastructural component of LPI. This is caused by the already mentioned ambitious projects in the transportation construction. The level on which is placed Turkey (30th place in 2014 World Bank Ranking) is a goal for a most of the others countries along the path China – Europe. For sure it may play a leading role in the common effort to improve existing connections and to help other countries to improve on the basis of its experience in the field.

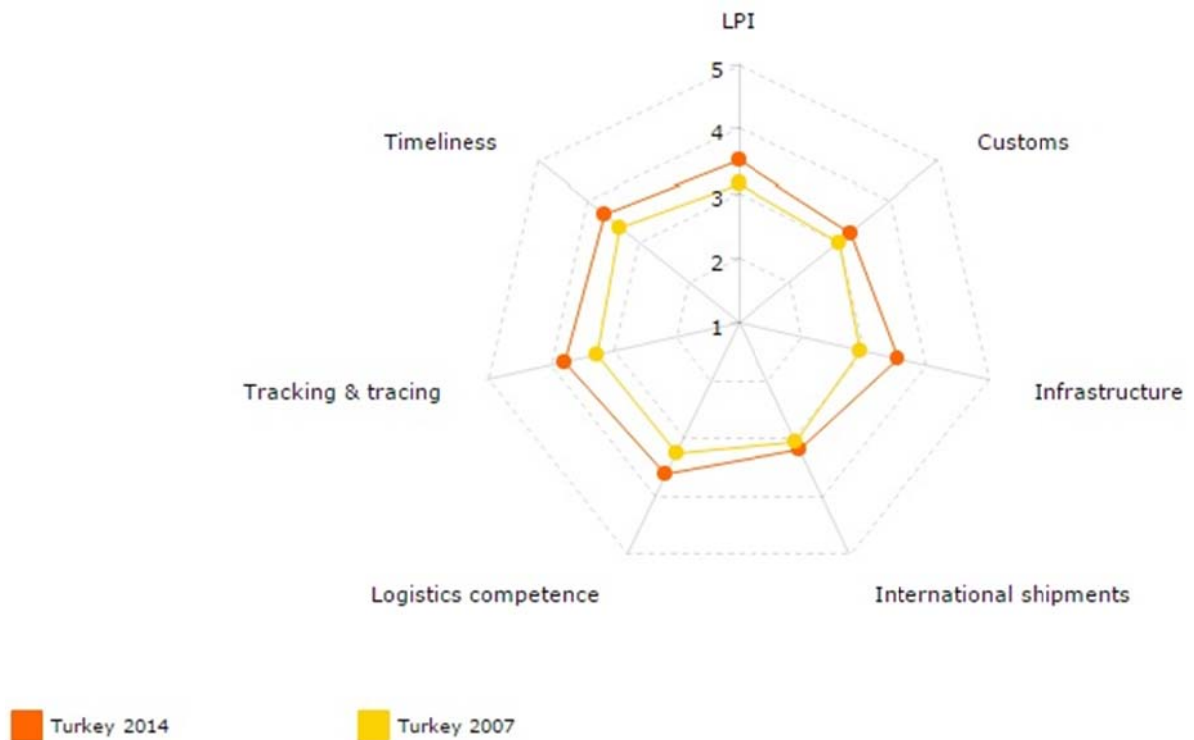


Figure 6 Development in Turkey LPI index 2014-2010.  
Source: lpi.worldbank.org.

### 3. Increase in the LPI performance of the route countries.

The overall achievement of the countries along the path from China to Europe makes realization of the project of the New Silk Road possible. Without an effort of particular countries it would difficult to increase the logistical performance in this region of the world. The collaboration among the countries creates an understanding for the higher goal which is equally important for the combined nations.

The comparison of the LPI increase in the time period from 2007 (except Georgia 2010) to 2014 explains the main improvement and the potential to change for the future. The Fig. 7 presents rather an effort during mentioned time period than the actual position of the country in LPI index ranking. Although it is difficult to compare an effort in increasing LPI between the countries and needs additional qualitative approach, the general remark concludes that it is much more problematic to increase the level of

LPI for those who already had a high ranking position in year 2007. The general leader of change is Kazakhstan. An impressive increase in logistic performance gives this country a serious advantage in the process of building the New Silk Road. The influence of China as a neighboring country may also play an important role in improving the infrastructure of the region and cross border cooperation. The advances in logistic competences and tracking & tracing mean that there is a qualified staff knowing how to use available infrastructure. The second best change in LPI belongs to Turkey. Impressive effort in the mostly infrastructural field brings viable results in this comparison. The projects focusing on Bosphorus Strait and those along the West – East line mean much for realization of efficient corridor passage throughout this country. The development at the ports and logistic centers (villages) strengthen the Turkey's role in order to be a regional logistics hub. In this case the neighboring EU countries may also play an important role mostly in helping Turkey to ease the customs requirements or by engagement in the TRACECA know-how exchange and infrastructural projects.

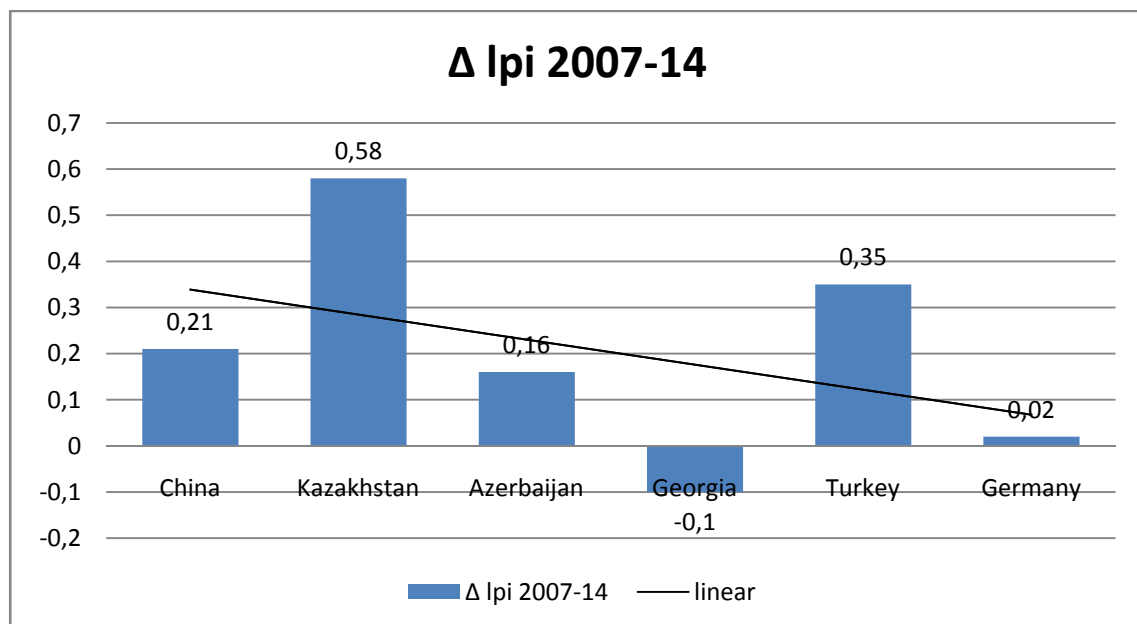


Figure 7 Development in increase of LPI index 2014-2010 along the path Kazakhstan, Azerbaijan, Georgia, Turkey, Germany.

Source: own composition.

The European Union as an entity supporting trade growth policy in Europe in the latest plan of building the core network transport on the European continent will be routed transport corridor reaching the borders of Turkey. It is an East-Mediterranean corridor. Begins from the North Sea and the Baltic Sea then reaches the Black Sea and the Mediterranean region. This combination allows the use existing maritime links “motorways of the sea” in intermodal transport. At the same time it facilitates this type of transport thanks to planned infrastructure in the area of the river Elbe as a connection between Germany, the Czech Republic, and south-eastern region of Europe. Furthermore it passes through Greece and by combining sea link to Cyprus. The corridor ends its run on the borderline town located in Edirne Turkey. The construction of this TEN-T corridor gives the possibility of using the infrastructure built by the Bosphorus crossings in both road and rail. Not without significance is the fact that the

construction of railway lines is maintained to technical European standards and is also respected by the Turkish side. Normative spacing of the tracks in Europe and Turkey will allow for faster and cheaper transportation of goods using this connection.

#### 4. Conclusion.

Thanks to presenting the comparison of increase in LPI ranking it is possible to point out the critical nod along the route from China to Europe. From that perspective it is Georgia. The delay in effort to improve the logistic performance is visible by the decrease in LPI over measured 4 year period. Interesting is the fact that problem lies not in the infrastructure where it is recorded a small advance. The real delay is caused by managing international shipments which translate rather for procedures, know-how and logistic competence. These are areas for potential improvement. When the analyzing the trend line it is noticeable that the Asian end of the route tries harder to achieve its goals. That may change over next period of time, mostly because finishing of the projects already under construction. Further comparison may be useful as long as the efficient Euro-Asian path will become reality. During observation of LPI development in China and Germany as representing both regions Asia and EU and countries along the path between them, there is a visible delay in performance. However that shouldn't discourage the countries creating passage route the Silk Route. The economic potential and development of China and Germany is far ahead their neighbors. The comparison is rather a reality check serving for conclusions in the possible future development. The logistic performance is a complex achievement. It takes investment, know-how, competence of human resources and time to make a tangible effect. To conclude this research it is worth saying that the connection of such importance in the middle of Eurasia is essential for the future development of trade and economies of the Europe and Asia. Therefore the realization of this route is only the matter of time.

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