Rail Freight Corridor Developments and the New Silk Roads

Development of volumes and potential

Andreas Schwilling, Roland Berger
Eurasian rail cargo grew significantly, yet has a low intermodal market share

- Improvements driving volume development on Eurasian rail routes
  - Reduction of transit time and increased punctuality
  - Increase of destinations to 15 in Europe and 16+ in China
  - Reduction of freight rates, subsidies from China’s OBOR initiative
  - Targeting of suitable customers and regions e.g. Western China
  - Ease of border crossings through common consignment note, Eurasian Customs Union and local improvements
  - Upgrading and extension of infrastructure, e.g. in Kazakhstan

- However, market development and competition from other transport modes prevent rail transport from reaching higher market share
  - Freight rates for container shipping have fallen significantly since 2011. Price level of rail transport is now 3 to 4+ times higher than shipping
  - Economic growth rates in China cooled down. Trade between Asia and Europe stagnated
  - Still room for efficiency and quality gains.
  - Constraints of reliability and transport time

Source: UIC Silk Road Study, Roland Berger
Railway infrastructure is stretched to its limits and endangers future growth

<table>
<thead>
<tr>
<th>Europe</th>
<th>Border terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction works on main railway lines in Poland for several years</td>
<td>Border terminal Brest/Malaszewicze is congested due to growing volumes and insufficient infrastructure</td>
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<tr>
<td>Growing Eurasian transport flows are concentrating on railway lines from/to Brest with resulting capacity constraints</td>
<td>Conflict in Ukraine makes it impossible to use alternative routes and terminals with sufficient capacity</td>
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<td>In general too many locomotive changes and resulting waiting times for drivers at national borders</td>
<td>Terminal of Zabaykalsk at the Russian/Chinese border with insufficient capacity</td>
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<td>Low and changing prioritization of rail freight when passing through countries</td>
<td>Development of border terminals towards intermodal hubs is lagging behind the needs of operators</td>
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Source: UIC Silk Road Study conducted by Roland Berger

26-28 June 2018, Genoa, Italy
High growth in past and future—Southern route so far not important

Past development [k TEU]

- 2014: 25
- 2017: 240

Forecast 2027 [k TEU]

- Total rail potential includes
  - Existing rail volumes increasing over time
  - Shift from sea to rail, including growth of sea transport
- Improvements driving volume development on Eurasian rail routes required
- Southern route insignificant in status quo, growth potential depending a lot on infrastructure improvements and trade between EU and Asia to Iran and Turkey

Past development

<table>
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<tr>
<th>Year</th>
<th>TEU</th>
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<td>2014</td>
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<tr>
<td>2017</td>
<td>240</td>
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Forecast 2027

<table>
<thead>
<tr>
<th>Route</th>
<th>TEU</th>
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<tr>
<td>China-Europe</td>
<td>19,000</td>
</tr>
<tr>
<td>Southern routes, incl. China-Iran, China-Turkey, Europe-Iran etc.</td>
<td>390,000</td>
</tr>
</tbody>
</table>

1) 19,000 TEU for China-Europe only / 390,000 TEU for all transports on Southern routes, incl. China-Iran, China-Turkey, Europe-Iran etc.

Source: UIC Silk Road Study conducted by Roland Berger

26-28 June 2018, Genoa, Italy
Four key factors determine the future volume – some with high uncertainty

Main factors driving growth

1. Growth of trade and demand for freight transportation in relevant goods
2. Efficiency gains along the whole transportation chain
3. Improvements of infrastructure and elimination of existing bottlenecks
4. Development of Chinese subsidies

Degree of uncertainty

Source: Roland Berger