Overview of origin ports and international transport corridors in North-East Asia

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Sung-Woo Lee
Director of Korea Maritime Institute
(waterfront@kmi.re.kr)
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I. Changes in Global Logistics Market

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2. Asian Centering in Trade
3. Natural Resource Market Reform & Growth in Logistics Services Demand
4. Growth in New Logistics Markets
1. Asian Centering in Economics

Economic & Population Growth in Asia

✓ Asia’s GDP in 2050 would reach $65 trillion (52% of World GDP)
✓ Countries including China, India, Indonesia, Japan, South Korea, Thailand and Malaysia will take a bigger part in the future

Source: ADB, Asia 2050: Realizing the Asian century, 2011

Source: KIET, 2012, 2020 무역발전 비전과 전망 (Originally from OECD Stats.)
Fast-growing Economy: Abundant Resources and Labor

Annual GDP growth rate (2000-2011)

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>ROK</th>
<th>Japan</th>
<th>Mongolia</th>
<th>Russia</th>
<th>OECD</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.88%</td>
<td>6.94%</td>
<td>1.98%</td>
<td>20.40%</td>
<td>19.59%</td>
<td>5.25%</td>
<td>7.27%</td>
<td></td>
</tr>
</tbody>
</table>

Source: World Bank
**Trade in Northeast Asia**

- NEA trade mostly rely on T&L (Transport & Logistics) sector
- Increase in logistics efficiency will lead to economic growth
- Trade in 5 NEA countries (China, Japan, ROK, Russia, Mongolia) show higher growth rate (12.2%) than the world

### Trade in Northeast Asia and World (Billion USD)

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>244,052</td>
<td>281,821</td>
<td>325,272</td>
<td>250,466</td>
<td>302,464</td>
<td>361,577</td>
<td>8.2%</td>
</tr>
<tr>
<td>China</td>
<td>17,615</td>
<td>21,750</td>
<td>25,613</td>
<td>22,073</td>
<td>29,743</td>
<td>36,429</td>
<td>15.6%</td>
</tr>
<tr>
<td>Japan</td>
<td>12,259</td>
<td>13,368</td>
<td>15,453</td>
<td>11,335</td>
<td>14,657</td>
<td>16,791</td>
<td>6.5%</td>
</tr>
<tr>
<td>ROK</td>
<td>6,357</td>
<td>7,306</td>
<td>8,620</td>
<td>6,963</td>
<td>8,963</td>
<td>10,869</td>
<td>11.3%</td>
</tr>
<tr>
<td>Russia</td>
<td>4,244</td>
<td>5,524</td>
<td>7,268</td>
<td>4,458</td>
<td>5,911</td>
<td>7,913</td>
<td>13.3%</td>
</tr>
<tr>
<td>Mongolia</td>
<td>30</td>
<td>40</td>
<td>58</td>
<td>40</td>
<td>66</td>
<td>108</td>
<td>29.2%</td>
</tr>
<tr>
<td><strong>Total (5)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Trade</strong></td>
<td>40,505</td>
<td>47,988</td>
<td>57,012</td>
<td>44,869</td>
<td>59,340</td>
<td>72,110</td>
<td>12.2%</td>
</tr>
<tr>
<td><strong>Share</strong></td>
<td>17%</td>
<td>17%</td>
<td>18%</td>
<td>18%</td>
<td>20%</td>
<td>20%</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: KITA, n.d.
2. Asian Centralization in Trade

Asian-centered Logistics Flow

- NEA share in world cargo traffic is expected to reach **40.7%** in 2015
3. Natural Resource Market Reform & Growth in Logistics Services Demand

**Seller-centered Reformation**

- Rising economies including China, India and Russia are starting to participate in natural resource market
- T&L infrastructure improvement and development are necessary for inland region (ex) landlocked countries (Mongolia)

**Possible transport routes for landlocked countries in NEA**
Abundant Natural Resources: Promoting Economic Growth

Mongolia

- 4th largest Coal reserves (175 billion tons)
- 2nd largest Copper Concentrate (55 million tons)
- 11th largest Molybdenum (30,000 tons)
- 4.5 billion barrels of Crude Oil reserves
- 1.5 billion tons of Ironstone reserves
- 3,000 tons of Gold reserves

Far-East Russia

- 75.9 billion barrels of Crude Oil reserves (16% of Russia’s total production)
- 47 trillion of Natural Gas reserves (21.7% of Russia's total production)
- 157 billion tons of Coal reserves

Kazakhstan

- Major Export Items: Oil, Minerals, Steel
- 6th largest Grain exporter
- 10th biggest Oil producer
- Export takes about 49% of the Country's GDP

North Eastern China

- Major Export Items: Crude Oil, Lumbers
- Minerals: Coal, Ironstone, Diamonds, Magnesium, Gold, Silver
- China’s food production base: Maze, Beans, Wheat

Source: BP Statistical Review of World Energy, World Bank
Growth in Natural Resources Market: Increase in trade between Inland countries

**Kazakhstan**
- **CAGR**
  - Export: 18.55%
  - Import: 19.18%
  - Trade: 18.76%

**Mongolia**
- **CAGR**
  - Export: 19.69%
  - Import: 24.57%
  - Trade: 22.54%

**Russia**
- **CAGR**
  - Export: 15.36%
  - Import: 21.77%
  - Trade: 17.29%

**China**
- **CAGR**
  - Export: 20.29%
  - Import: 20.44%
  - Trade: 20.36%

*출처: 무역협회*
Lacking in Logistics Efficiency

Logistics Performance Index

<table>
<thead>
<tr>
<th>Country</th>
<th>Customs</th>
<th>Infrastructure</th>
<th>International Shipments</th>
<th>Logistics Competence</th>
<th>Tracking &amp; Tracing</th>
<th>Timeliness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kazakhstan</td>
<td>2.38</td>
<td>2.66</td>
<td>3.29</td>
<td>2.6</td>
<td>2.7</td>
<td>3.25</td>
</tr>
<tr>
<td>Mongolia</td>
<td>1.81</td>
<td>1.94</td>
<td>2.46</td>
<td>2.24</td>
<td>2.42</td>
<td>2.55</td>
</tr>
<tr>
<td>China</td>
<td>3.16</td>
<td>3.54</td>
<td>3.31</td>
<td>3.49</td>
<td>3.55</td>
<td>3.91</td>
</tr>
<tr>
<td>Russia</td>
<td>2.15</td>
<td>2.38</td>
<td>2.72</td>
<td>2.51</td>
<td>2.6</td>
<td>3.23</td>
</tr>
<tr>
<td>Korea</td>
<td>3.33</td>
<td>3.62</td>
<td>3.47</td>
<td>3.64</td>
<td>3.83</td>
<td>3.97</td>
</tr>
<tr>
<td>Japan</td>
<td>3.79</td>
<td>4.19</td>
<td>3.55</td>
<td>4.00</td>
<td>4.13</td>
<td>4.26</td>
</tr>
<tr>
<td>Top 20 average</td>
<td>3.76</td>
<td>4.03</td>
<td>3.55</td>
<td>3.94</td>
<td>4.07</td>
<td>4.28</td>
</tr>
</tbody>
</table>

4. Growth in New Logistics Markets

**Northern Logistics Market**

- **Greater Tumen Initiative (GTI):**
  - T&L infrastructure development and improvements
  - Environment protection programmes
  - Energy security programmes
  - Trade facilitation programmes
  - Cross-border tourism facilitation

- **Chinese government is very much interested in investing T&L infrastructure development project in order to connect and develop China-Russia-North Korea region**

- **Neighboring countries of Arctic region are eager to invest on NSR T&L infrastructure development**
II. Status of Origin Ports in NEA

1. Introduction to Starting Ports
2. Port Facilities and Cargo Traffics
1. Introduction to Starting Points

Tianjin Port (China), Lianyungang Port (China), Vladivostok Port (Russia), Vostochny Port (Russia)
2. Port Facilities and Cargo Traffics

**Tianjin Port (China)**

- **Tianjin**: Port City
- **Qingdao**: Port City
- **Busan**: Port City
- **Nagoya**: Port City
- **Tokyo**: Port City
- **Osaka**: Port City
- **Shanghai**: Port City
- **Shenzhen**: Port City
- **Ningbo**: Port City
- **Vostochny**: Port City

### Tianjin Port Cargo Traffics (TEU)

- **Total terminal area**: 30km²
- **Container berth**: 16
- **Berth length**: 4,200m
- **Annual volume**: 11 million TEU

### Port Traffic Analysis

<table>
<thead>
<tr>
<th>Region</th>
<th>Volume (TEU)</th>
<th>Growth</th>
<th>Share (%)</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ge</td>
<td>649</td>
<td>12.8%</td>
<td>100%</td>
<td>0</td>
</tr>
<tr>
<td>Asia</td>
<td>298.7</td>
<td>17.0%</td>
<td>46.0%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Europe</td>
<td>174.5</td>
<td>-10.0%</td>
<td>26.9%</td>
<td>-6.8%</td>
</tr>
<tr>
<td>North America</td>
<td>99.9</td>
<td>50.5%</td>
<td>15.4%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Others</td>
<td>54.4</td>
<td>60.5%</td>
<td>8.4%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Coastal</td>
<td>21.5</td>
<td>-16.7%</td>
<td>3.3%</td>
<td>-1.2%</td>
</tr>
</tbody>
</table>

**Note:** All data presented in thousand TEU (TEU).
2. Port Facilities and Cargo Traffics

Lianyungang Port (China)

Total terminal area: 300,000 m²
Berths with total length: 3.5 km
Container berth: 4
Annual volume: 4 million TEU

New Oriental CNTR Terminal
Terminal area: 160,000
CNTR space: 7,000 TEU
Turn out: 200,000 TEU/Y
Equipment: 100 sets
2. Port Facilities and Cargo Traffics

Vladivostok Port (Russia)

- Total berths: 17EA
- Berth Length: 4,200m
- Passenger terminal: 1, 2
- Container terminal: 14, 15
- Bulk terminal: 3~13
- Outdoor warehouse area: 177,414 m²
- Indoor warehouse area: 49,763 m²
Total terminal area: 73.4 ha
Four berths with total length: 1,284m
EQUIPMENT:
- Ship to Shore Cranes: 6 units
- Rail Transtainers: 6 units
- RMG Yard Cranes: 5 units
- Straddle Carriers: 15 units
III. Status of NEA Transport Corridors

1. TMGR (China-Mongolia)
2. TCR (ROK-China-Kazakhstan)
3. TSR (ROK-Russia)
1. TMGR (China-Mongolia)

Trans-Mongolian Railway

<table>
<thead>
<tr>
<th>Distance</th>
<th>Travel Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tianjin-Erliaan</td>
<td>1,000km / 2~3 days</td>
</tr>
<tr>
<td>Erlian-Zamyn-uud</td>
<td>9km</td>
</tr>
<tr>
<td>Zamyn-uud-Ulaan baatar</td>
<td>704km / 1~2 days</td>
</tr>
<tr>
<td>Ulaan baatar-Naushki</td>
<td>407km / 1~2 days</td>
</tr>
</tbody>
</table>

TMGR
Incheon, Busan(ROK) → Tianjin(China) → Erlian(Chinese Border) → Zamynuud (Mongolian Border) → Ulaanbaatar (Mongolia) → Sukhbaatar (Mongolian Border) → Russian Border → Naushki → ULAN-UD(E SR connection)
TMGR(China-Mongolia): Maritime Transport

Mongolia Port Maritime Transport

1) Bulk Cargo
   - Jincheon Ferry Service:
     Liner/Every 2 weeks
   - HOEGH: Tramper/ Every 1 month

2) CONTAINER Cargo
   - Shipped Ports: Busan, Incheon, Pyeongtaek, Gwangyang
   - COC & SOC
Details and Present Condition of TMGR

### Railway Transport and Trucking
- **Railway Transport**: Loading cargos on Express train from Tianjin (China) to Mongolian border
- **Trucking**: Containers and heavy equipments for construction are fine to get transport-Pave roads (Chinese section)

### Railway Transport
- **Zaminuud** (Mongolia) - **Ulaanbaatar** (Mongolia)
  - **For about 500km**, trucking is impossible considering the non-paved road condition
  - **Railway Transport**: from Mongolia, about 92% is transported through Railway
  - **Trucking (Paved road)**: Choir ~ UB (200km)
  - * Choir-Zaminuud section is to be paved after 2013

---

**Tianjin (China)** - **Zaminuud** (Mongolia)

- **Railway Transport and Trucking**
  - **Railway Transport**: Loading cargos on Express train from Tianjin (China) to Mongolian border
  - **Trucking**: Containers and heavy equipments for construction are fine to get transport-Pave roads (Chinese section)

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**Zaminuud** (Mongolia) - **Ulaanbaatar** (Mongolia)

- **Railway Transport**
  - **For about 500km**, trucking is impossible considering the non-paved road condition
  - **Railway Transport**: from Mongolia, about 92% is transported through Railway
  - **Trucking (Paved road)**: Choir ~ UB (200km)
  - * Choir-Zaminuud section is to be paved after 2013
### General Information
- Almost 80% of the China-Mongolia Export/Import cargos go through Zaminuud region
- Shortage of trains and disconnected railroads create congestion and bottle-necks in Zaminuud CY
- Among 100 Mongolian Forwarding companies, 15 companies are mostly involved with the project
  ※ UB Railway possess 600 trucks and it does not need government permissions
- Currently, regarding Coal transportation, Chinese and Mongolian Railroad Administration are on discussions
  ※ Railway transport(Mongolia)-Trucking(China)

### Cargo handling (Erlian - Zaminuud)

<table>
<thead>
<tr>
<th>Period</th>
<th>Trucking</th>
<th>Railway Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>150 Truck / Day</td>
<td>60 Wagon / Day</td>
</tr>
<tr>
<td>Congestion</td>
<td>700 Truck / Day</td>
<td>120 Wagon / Day</td>
</tr>
</tbody>
</table>

### Mongolian Railway
- There are 2 Railway operators in Mongolia:
  1) UB Railway : Mongolian Railroad Administration(51%), Russian Railways(49%); Mostly use North-South transport routes
  2) Mongolia Railway : Mongolian Railroad Administration (100%)
    Mostly use East-West transport routes

Trucking is more efficient in China side(low numbers of trains), however, it is better to use railway transport in Mongolia side.
TMGR: Mongolian-Chinese Border Transshipment System
2. TCR (ROK-China-Kazakhstan)

TCR: Kazakhstan-China Feeder System

- Lianyungang-Alashankou: 4,158 km / 5 days

SILK ROAD – Railway
- Lianyungang, China - Rotterdam, Netherlands
- 10,870 km (Lianyungang-Alashankou 4,158 km)

TCR (Trans China Railway)
Railway which links from Eastern China (Lianyungang) and Alashankou (China) to Dostyk (Kazakhstan)

<table>
<thead>
<tr>
<th>Location</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alashankou</td>
<td></td>
</tr>
<tr>
<td>Caro Traffic</td>
<td>20.3 million tons</td>
</tr>
<tr>
<td>Trade</td>
<td>17.3 billion USD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huoerguosi</td>
<td></td>
</tr>
<tr>
<td>Cargo Traffic</td>
<td>10.9 million tons</td>
</tr>
<tr>
<td>Trade</td>
<td>7.8 billion USD</td>
</tr>
</tbody>
</table>

Chinese (Border) Logistics Hub

Kazakhstan (Border) Logistics Hub

Rotterdam
Moscow
Brest
Ozinki
Aktogai
Almaty
Dostyk
Urumqi
Tianjin
Xian
Lianyungang
Busan

Huoerguosi

TCR (ROK-China-Kazakhstan)

Trans China Railway (TCR)

Huoerguosi (Korea)

Chinese Logistics Hub
TCR: Kazakhstan-China Feeder System Process (1)

Lianyungang (China) Transshipment Process

- Arrival at Lianyungang
- Cargos transported to CY
- Customs (Headquarter) – Document Screening (B/L & CI & PL)
- Block train dispatched from Lianyungang
- Cargo loading – Confirmation
- Customs (Port) – Seal Inspection
**TCR: Kazakhstan-China Feeder System Process (2)**

**Distances and Transit time from Kazakhstan to main Destination**

<table>
<thead>
<tr>
<th>Destination</th>
<th>Distance</th>
<th>Transit Time</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astana</td>
<td>5,767km</td>
<td>25~32 days</td>
<td>• Busan – Lianyungang: 3 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Lianyungang Customs and waiting time: 5~10 days</td>
</tr>
<tr>
<td>Almaty</td>
<td>5,531km</td>
<td>23~30 days</td>
<td></td>
</tr>
</tbody>
</table>

Cargos will be appointed to a destination CY and transported by railway.
3. TSR(ROK-Russia)

**TSR: Kazakhstan-Russia Feeder System**

### Distances and Transit time from Kazakhstan to main Destination

<table>
<thead>
<tr>
<th>Destination</th>
<th>Distance</th>
<th>Transit time</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astana</td>
<td>7,189km</td>
<td>18~32 days</td>
<td>Busan-Vostochny : 3 days Vostochny Customs and waiting time: 7~14 days</td>
</tr>
<tr>
<td>Almaty</td>
<td>7,730km</td>
<td>20~27 days</td>
<td></td>
</tr>
</tbody>
</table>
TSR: Kazakhstan-Russia Feeder System Process

- **Loading PORT**
  - 3 days (From Busan)
- **Vostochny (VSC)**
  - 7~14 days
  - Railway Bill issued
  - C/L, P/L, B/L need to be given to Customs
- **Nahodkaya Vostochny Station**
  - Block train dispatched (40’x55EA)
- **Almaty**
  - 10 days
  - Cargos will be appointed to a destination CY and transported by railway

※ VSC : Vostochny Stevedoring Container Service
IV. Problems on NEA Transport Corridors

1. TMGR
2. TCR
3. TSR
4. TCR vs TSR
1. TMGR

Problems on Mongolia-China Feeder System

✓ 85mm difference between the Mongolian Railway (uses Russian Gauge) and Chinese Railway (uses standard gauge)
  - Transshipment process in Zaminuud CY or Erlian CY
  - 92.5% of Mongolian cargos uses railway transport

✓ Serious shortage of the number of trains and long waiting time
  - Only 16 trains are dispatched and transited at Zaminuud per day (Freight train: 12, Passenger train: 4)
  - Possible to use 700 trains (50% of them are Russian trains)
  - If the transshipment waiting time is long, sometimes it even takes 7-8 days

✓ Low efficiency due to lacking transshipment facilities
  - Manual labour at Erlian and Zaminuud CY

✓ Mongolian railway system still uses single tracked railroad (Double track railroad will be completed in 2015 if it is on schedule)
  - Shortage in Trail facilities
  - Waiting points are installed in every 100km
  - Currently transportation ability of Zaminuud-UB (Mongolia) Railway is 2 million tons/yr
  - If narrow gauge system is implemented, it is expected to reach 4 million tons/yr
  - If broad gauge system is implemented, transportation ability will reach up to 3 million tons/yr
2. TCR

Problems on China-Kazakhstan Feeder System

**Railway**

- Lianyungag port – Xian – Alashankou/Dostyk
- **Problems**: Poor traffic flows (despite the railroads are connected from East to West), Excessive customs inspection and security checks
- **Causes**: (1) Transshipment of cargos needed (China uses standard gauge (1,453mm), Kazakhstan uses Russian gauge (1,520mm)), (2) Complicated customs policies, (3) Shortage of kinds and numbers of trains, (4) Empty container issues, (5) Imbalance between In/Out-Bound

**Road**

- Only few truckers possess international Driving Permits (IDP)
- Relatively expensive transport costs
- Chinese operators refuse to return the empty trucks back to Kazakhstan
- Non-paved/ poor conditioned roads in Kazakhstan
- Excessive customs inspection and security checks
- long transit (waiting) time
3. TSR

**Problems on Kazakhstan-Russia Feeder System**

- **Price competitiveness**
  - TSR is higher than the Deep Sea from Japan to St. Petersburg and Moscow

- **Seamless service**
  - Need to simplify customs clearances and introduce EDI

- **Service for small and medium-sized consignors**
  - “Project Cargo” model is focused on large consignors

- **Infrastructure**
  - Port facilities, capacities of forming block trains

- **Risk management**
  - Hyundai uses alternative route (Deep Sea) in parallel to pitch the two routes into competition and also offset the risks
### 4. TCR vs TSR

#### Comparison between TCR(Kazakhstan) and TSR(Russia)

<table>
<thead>
<tr>
<th></th>
<th>TCR</th>
<th>TSR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transport Cost</strong></td>
<td>▪ Relatively low</td>
<td>▪ Relatively high</td>
</tr>
<tr>
<td><strong>Transit time</strong></td>
<td>▪ 23~30 days (to Almaty)</td>
<td>▪ 20~27 days (to Almaty)</td>
</tr>
</tbody>
</table>
| **Transshipment**   | ▪ Congestion during Alashankou/Dostyk transshipment process | ▪ Possible for some congestion during the transshipment process  
▪ Possible to relieve the congestion |
| **Rail Gauge**      | ▪ Standard gauge (Chinese section 1,435mm)  
▪ Broad gauge (Russian section 1,520mm) | ▪ Broad gauge(1,520mm)                   |
| **Features**        | ▪ Cargos are missing or robbed during the transshipment process  
▪ “Railroad Restricted Period” for Grain priority transportation/ Strategic goods transport (Chinese government intervention)  
▪ Foggy weather often delays arrival of ships | ▪ Expensive transportation fee  
▪ Unstable carriage fee and transit time due to congestion at Vostochny Port  
▪ Complicated and excessive requirements for transshipment process at Vostochny Port  
▪ Monopolistic structure at Vostochny Container Terminal/Port |
Thank You