New Railway Project
Mongolian Railway State Owned Shareholding Company

Mongolian Railway State Owned Shareholding Company ("MTZ") was founded on March 20th, 2008 according to the Order No.189 of State Property Committee and the Resolution No.82 of March 8th, 2008 of the Mongolian Government. MTZ has the following main roles:

- Construction and operation of railway infrastructure;
- Railway transportation services;
- Manufacture, assembly and maintenance of railway infrastructure and rolling stock;
- Own and manage railway sector property created by the state and foreign investment;
- Acquisition of locomotives, wagons and other rolling stock;
- Renting service of railway machineries and properties.

As of now, MTZ is carrying out the following projects and business activities:

- New Railway Project;
- Renting service of rolling stocks;
- Logistics management;
- Tianjin Transport and Logistics Center Project;
- Freight Wagon Manufacturing Project.
The Policy On The Railway Transportation

- The Parliament of Mongolia ratified the State Policy on Railway Transportation ("Railway Policy") in June 2010, concluding to construct approximately 5,600 km of railway infrastructure in several phases in an effort to extend the unified railway network, utilize large mines, and export commodities from those mines.
- The purpose of the Railway Policy is to support in a cost efficient and environmentally friendly manner the intensive development of the mining sector in Mongolia, while coordinating actions for the development of infrastructure.

1. Railway Transportation and Mining Deposits,
2. Domestic Integrated Railway Network,
3. Railway Gauge,
4. Legislation of Railway Industry,
5. Implementation of the Railway Policy and Source of Finance,
An Approximately 5600 km New Railway Infrastructures To Be Built Pursuant the Railway Policy In 3 Phases
Pursuant to the Resolution No. 121 of the Government of Mongolia:

- Phase I and Phase II of the railway base infrastructure to be built in accordance with the Railway Policy shall be considered as the vital important railway base infrastructure for the economy, society and MTZ was granted the special license to build the these railway base infrastructures with the view of developing these railway base infrastructures in an integrated manner.

- MTZ was charged to implement the New Railway Project via special purpose vehicle in collaboration with the foreign and domestic investors.
Pursuant to the Resolution No. 28 of the Government of Mongolia:

The build-operate-transfer concession right of the Phase I and Phase II of the railway base infrastructure to be build in accordance with the Railway Policy was granted to the MTZ.
The New Railway Project

Location: as shown in the picture below, the Project consists of about 1,800 km of new railway base infrastructure running from:

- Tavantolgoi to Sainshand to Khuut to Choibalsan (about 1100 km)
- Tavan Tolgoi to Gashuun Sukhait (“South Line”) (~ 267 km),
- Nariinsukhait to Shiveekhuren (~ 45 km),
- Khuut to Numrug (~ 380 km),
- Khuut to Bichigt (~ 234 km)

Total Project Costs: estimated at c. US$ 8 - 9 billion

Include following areas of “New railway” project:

1. Tavantolgoi-Gashuunsukh (267 km) – to complete construction and start operation;
2. Khuut-Bichigt (234 km) – to complete construction and start operation;
3. Nariinsukhait-Shiveekhuren (45 km) – to complete construction;

The Mongolian Government ratified the National program “Development Route“ in May 2017

Include following areas of “New railway” project:

1. Tavantolgoi-Gashuunsukh (~267 km) – to complete;
2. Nariinsukhait-Shiveekhuren (45.3 km) – to complete;
3. Tavantolgoi-Sainshand-Khuut (892 km) – to Implement;
4. Khuut-Sumber (380 km) – to start construction;
5. Khuut-Bichigt (234 km) – to complete.
Progress of the New Railway Project

The eastern railway:
- FEED;
- Geodesy, Engineering geology, Environmental Impact Assessment
- Economic study – (PwC) Price Waterhouse & Coopers

Zuunbayan - Khangi:
- Preliminary Feasibility Study – Mongolian Railway SOSC
- Feasibility Study – China Railway Engineering Consulting Group Company

Tavantolgoi – Gashuunsukhait:
- Owner’s Engineer: Deutsche Bahn International
- All researches and design were conducted
- Construction work (Samsung C&T)

Nariinsukhait - Shiveekhuren:
- Feasibility study – China Railway Design Corporation
- All research and design were conducted

Khuut - Choibalsan:
- Feasibility study – China Railway Engineering and Consulting Group Corporation

Khuut - Bichigt:
- FEED
- Feasibility Study – China Railway Design Corporation

Khuut - Choibalsan: Feasibility study – China Railway Engineering and Consulting Group Corporation

Khuut - Bichigt: FEED
- Feasibility Study – China Railway Design Corporation

Zuunbayan - Khangi: Preliminary Feasibility Study – Mongolian Railway SOSC
- Feasibility Study – China Railway Engineering Consulting Group Company

Tavantolgoi – Gashuunsukhait:
- Owner’s Engineer: Deutsche Bahn International
- All researches and design were conducted
- Construction work (Samsung C&T)
The Tavantolgoi-Gashuunsukhait railway will be approximately 240 km long with 2 stations, 5 passing junction and will pass trough Tsogttsetsii, Bayan-Ovoo, Khanbodg soum of Umnugovi aimag. The starting point of the railway line is 570 kilometers from Ulaanbaatar and 100 kilometers from Dalanzadgad town of Umnugovi province, and connects to Gantsmod railway port (People’s Republic of China) through Gashuunsukhait port (Mongolia). With this railway built, our country can increase export capacity by 30 million tons of coking and energy coal annually. It is also possible that Mongolia's mining companies will be able to compete in the global market for cheaper exports, which will support coal exports and China's ports (Huanghua, Tianjin, Qingdao, and Jinzhou) and third-country markets.
### Tavantolgoi-Gasuunsukhait Railway Project

#### Project indicators:

<table>
<thead>
<tr>
<th>Project work</th>
<th>Main road</th>
<th>Borders</th>
<th>ETT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of main line</td>
<td>208.5 km</td>
<td>30 km</td>
<td>10 km</td>
</tr>
<tr>
<td>Construction start date</td>
<td>2019.04</td>
<td>2019.06</td>
<td>2019.04</td>
</tr>
<tr>
<td>Construction start date</td>
<td>2021.12</td>
<td>2021.06</td>
<td>2021.08</td>
</tr>
<tr>
<td>Construction of duration</td>
<td>30 month</td>
<td>24 month</td>
<td>26 month</td>
</tr>
<tr>
<td>Axle load</td>
<td>25 tone</td>
<td>25 tone</td>
<td>25 tone</td>
</tr>
</tbody>
</table>
| Main structure              | • 5 passing junction  
                              | • 16 bridge /1356 м/  
                              | • 126 culvert  
                              | • 8 animal underpass  
                              | • 1 station  
                              | • 1 bridge, 5.9km  
                              | • 2 bridge  |
| Transportation volume       | 30 million tone/year | 30 million tone/year | 30 million tone/year |
| Gauge                       | • 1435 mm  | • 1435 mm | • 1435 mm |
| Signaling communication     | • Semi automatic blocking system  
                              | • Semi automatic blocking system  
                              | • Semi automatic blocking system  |
| Border point                | • Port of 703-704  |
| Previous expenses           | • 279 million us dollar  |
| Main work (rolling stock not included) | • 375.3 million us dollar  
                              | • 116.8 million us dollar  
                              | • 24.3 million us dollar  |
| Remaining investment (rolling stock not included) | • 531.3 million us dollar  |
| The budget cost (rolling stock not included) | • 826.8 million us dollar  |
| Rolling stock               | • 220 million us dollar (16 locomotives, 810 Wagons)  |
| **Total budget**            | • 1.03 billion us dollar  
                              | (Infrastructure + rolling stock)  |

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The table and map provide information on various aspects of the railway project, including specifications, infrastructure details, and budget costs.
“Energy Resource” LLC was granted to build the base structure.

Feasibility studies implemented by DBI, 1435мм. gauge.

State Policy on Railway Transportation" was ratified. The license to construct the iron base structure of the first stage of railway policy is granted to the "Mongolian Railway" SOSC.

The license to construct the iron base structure of the first stage of railway policy is granted to the "Mongolian Railway" SOSC.

Due to financial issues, construction has been suspended.

Construction of the civil and track works contract was signed with Samsung C & T.

The TT-GS railway gauge was set to be 1435mm.

Terminated the EPC contract with the general contractor.
RESEARCH STUDIES:

• **Feasibility Studies and research works:**
  2008 - General Feasibility study, Parsons Brinckerhoff Australia Pty Limited;
  2009 - Feasibility Study (narrow gauge) DBI
  2011 - Research for electrization, AECOM
  2012 - Engineering research for trans-load freight, Hua Tie
  2012 - Railway operations plan, Transportation simulation, Technical requirements of locomotives and wagons, Calibre
  2012 - Pre-Feasibility study (board gauge), AECOM
  2012 - DBI’s Detailed Feasibility study monitoring, ZAZA, CANARAIL
  2012 - Plan for free up land, ERR
  2013 - Feasibility study (board gauge), AECOM
  2013 - Financial Modeling, BNP Paribas

• **Field study:**
  2007 - Aerograph, Monmet Engineering Group
  2009 - Geotechnical study, Soil trade;
  2009 - Water and environment study, Aquaterra;
  2009 - Engineering-geology investigation, Tavan-Undes;
  2012 - Geodesy investigation, HBS, Air Survey;
  2013 - Archeology and paleontology research, Science Academy

• **Drawing:**
  2013 - Drawing of high and base infrastructure of board gauge /0-208+500/, Samsung C&T;
Current construction work process of base infrastructures is done about 51.84% (86.6% of earthwork, 52.76% of bridge, 52.06% of pipe culverts)
The parties shall build railway ports from Gashuunsukhait-Gantsmod, Shiveehuren-Sekhe, Bichigt-Zuunhatavch, Sumber-Rashaan.

By opening of these railway ports Party of China has agreed to provide 40% discount rate on one third of the total freight exported to third countries through the territory of the People's Republic of China.

The agreement was ratified by Mongolia, but China have not ratified it yet.
PROJECT BENEFITS: (COST STRUCTURE)

1. **Current vehicle transportation (Sold by mine condition)** – **Profit 47$**
   - Cost: 23$
   - Sold price: 70$
   - Profit: 47$

2. **Railway transportation (Sold by border condition)** – **Profit 89$**
   - Cost: 23$
   - Sold price: 8$
   - Profit: 89$

3. **Railway transportation (Sold by sea port condition)** – **Profit 145$**
   - Cost: 23$
   - Sold price: 8$
   - Profit: 145$

Cost          $23     $32
Sold price   70$           8$

Ports of China
- Huanghua
- Tianjin
- Third country

- Gantsmod station
- Gashuunsukhait station
- Third country

No rate discounts - 40$
With rate discounts - 24$

200-250$
• Supporting coal and copper exports will reduce transport costs within the territory of Mongolia and enhances the competitiveness of coal exports.
• Pasture degradation, dust, noise, soil and air pollution problems will be significantly reduced.
• Auto traffic accidents will decrease and traffic safety will increase.
• Tavantolgoi mines production capacity will be increased 2-3 times.
• Regularly, about 1200 job opportunities will be created. (about 1000 jobs in the construction phase, about 1200 jobs in operational phase)
• By making railway transport costs in the territory of Mongolia 8$ per tone, the current road transport price will be reduced 4 times from 32US dollars.
• Freight will be increased to 30 million tone annually.
• Annual corporate tax of 20-28 million USD will be paid to the state, During the 25 years of operation accumulated amount of dividend will be about 1 billion USD to the investors.
PROJECT FINANCIAL PERFORMANCES:

**Annually**
- 235-331 million US dollars
  - **Transport revenues**

**Accumulated over 20 years**
- 5.6 billion US dollars
- 84-180 million US dollars
  - **Operation expenses**
- 60-85 million US dollars
  - **Net profit after tax**
- 20-28 million US dollars
  - **Corporate income tax**

**Internally**
- 1.6 billion US dollars

**Debts repayments**
- 7.6 years (6% interest)

**Analysis**
- **Internal rate of return (IRR)**: 11.5%
- **Pay back period**: 12.8 years
- **Corporate income tax**: 537 million US dollars

**Profit-after-tax**
- 20-28 million US dollars
IMPLEMENTATION PLAN OF TAVANTOLGOI-GASHUUNSUKHAI PROJECT:

2019
- Get funding for the project
- The selection of PMC
- Finalize the border connection points and loading balloon loop
- Update the Feasibility study and environmental social impact assessment
- Update the Design
- Contractor selection
- Start construction work

2020
- Continue construction works
- Commission the Locomotives and freight car

2021
- Conclude the construction works through out the railway
- Receive locomotives and freight cars
- Handover railway infrastructure
- State Commission

2022
- Start operation
- Receive locomotives and freight cars

2023
- Continue operation
- Handover railway infrastructure
- State Commission
### Brief Information of the Tavantolgoi-Zuunbayan Railway Project

<table>
<thead>
<tr>
<th><strong>Tavantolgoi-Zuunbayan (414.6 km)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Required investment ~1 billion USD</td>
</tr>
<tr>
<td>Construction duration – 2019 - 2020</td>
</tr>
<tr>
<td><strong>Civil Work:</strong></td>
</tr>
<tr>
<td>Earthwork - 36,481,586 m³</td>
</tr>
<tr>
<td>Bridge – 32 (2,580 m)</td>
</tr>
<tr>
<td>Box culverts - 65</td>
</tr>
<tr>
<td>Pipe culverts - 461</td>
</tr>
<tr>
<td><strong>Track work:</strong></td>
</tr>
<tr>
<td>Main line - 414.6 km</td>
</tr>
<tr>
<td><strong>Axle load</strong> - 25 ton</td>
</tr>
<tr>
<td>Railway gauge: 1520 mm</td>
</tr>
<tr>
<td><strong>Major Connection Points:</strong></td>
</tr>
<tr>
<td>• Tavantolgoi coal mining</td>
</tr>
<tr>
<td>• Tsagaan Suvarga copper mining</td>
</tr>
<tr>
<td>• Kharmagtai copper mining etc.</td>
</tr>
<tr>
<td>• Sainshand Industrial Park</td>
</tr>
<tr>
<td><strong>Capacity</strong> – 15 Mtpa</td>
</tr>
</tbody>
</table>

All researches and design were conducted: 100%

“Mongolian Railways” SOSC developed the Feasibility study and Design of the Tavantolgoi–Zuunbayan Project in May, 2019.

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Tavantolgoi-Zuunbayan project civil and track works construction started in May, 2019.
Ereentsav-Choibalsan-Khuut-Bichigt: Eastern vertical corridor

- Within the 16th meeting of Heads of State Council of the Shanghai Cooperation Organization was held in Tashkent, capital of Uzbekistan, the third trilateral meeting of the heads of state of Mongolia, the People’s Republic of China and Russian Federation is held on June 23, 2016 and leaders negotiated that establishing eastern economic corridor will be implemented when there is an economic feasibility.

- Ereentsav-Khuut, Khuut-Bichigt railway projects implementing Mongolian railway SOSC are included in this eastern corridor of the Mongolian territory.

- Firstly, we are working on to implement Khuut-Bichigt railway project and feasibility study will be finished on 2017.


<table>
<thead>
<tr>
<th></th>
<th>Railway length</th>
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<tbody>
<tr>
<td>1</td>
<td>Khuut-Bichigt: 216 km</td>
<td>Ereentsav-Khuut: 414 km</td>
</tr>
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<table>
<thead>
<tr>
<th></th>
<th>The amount of investment</th>
<th></th>
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<tbody>
<tr>
<td>2</td>
<td>Khuut-Bichigt: ~1.05 billion dollar</td>
<td>Ereentsav-Khuut: ~1.98 billion dollar</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th></th>
<th>The amount of cargo to transport</th>
<th></th>
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<tbody>
<tr>
<td>3</td>
<td>Khuut-Bichigt: 15 million tons</td>
<td></td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th></th>
<th>Main facility</th>
<th></th>
</tr>
</thead>
</table>
| 4 | • 4 stations  
    • Transloading facility |

<table>
<thead>
<tr>
<th></th>
<th>Payback period</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>To be defined</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th></th>
<th>Internal rate of return (IRR)</th>
<th></th>
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<tbody>
<tr>
<td>6</td>
<td>To be defined</td>
<td></td>
</tr>
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<table>
<thead>
<tr>
<th></th>
<th>Main cargo</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Coal, zinc, petroleum, plumbum, tungsten, iron ore and rare-earth elements</td>
<td></td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th></th>
<th>Current situation</th>
<th></th>
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</table>
| 8 | • In the amount of Railway tracks on Ereentsav-Choibalsan-Khuut-Bichigt had its technical drawing made by Nippon-Koei, Japan company.  
  • Pre-feasibility study of Khuut-Choibalsan is being done by China Railway Engineering Corporation of PRC.  
  • Having pre-feasibility study of Khuut-Bichigt done by Third Railway Survey and Design Institute Group, China. |
Brief Information of Khuut-Bichigt Railway Project

- **Length of main line**: 234 km
- **Railway category**: I
- **Total investment required**: ~US$ 1.25 billion (preliminary)
- **Construction Duration**: 2020–2022
- **Main structures**:
  - 2 terminal station (Khuut and Bichigt)
  - 9 passing junctions
  - 13 bridges (10117 m)
- **Axle load**: 25 ton
- **Connection point**:
  - Khuut mine of Mongolia
  - Zuunkhatavch port PRC
- **Transportation volume**:
  - 12-15 Mtpa \(^1\)
- **IRR**: To be determined.

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1 – Preliminary calculation and can be varied due to market condition
Nariinsuhait-Shiveekhuren railway

By building this railway, it is possible to transport coal and coal enriched commodities through railway and would connect to Linxe-Sekhe railway of Chinese railway networks at the port of Sekhe.

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1</td>
<td>Railway length</td>
</tr>
<tr>
<td>2</td>
<td>The amount of investment</td>
</tr>
<tr>
<td>2</td>
<td>The amount of cargo to transport</td>
</tr>
<tr>
<td>3</td>
<td>The main capacity of railway</td>
</tr>
</tbody>
</table>
| 4 | Main facility | • 2 station  
     • 1 passing siding* |
| 5 | Payback period | 6 years* |
| 6 | Internal rate of return (IRR) | 14%* |
| 7 | Main freight | Coal |
| 8 | Current situation | • Pre-feasibility study of MTZ was done.  
     • Two countries negotiated the point to cross border into Sekhe Port, China.  
     • This railway included to construct and use in the Action plan of the Government of Mongolia for 2016-2020. |

* Pre-feasibility study done by MTZ
**Tianjin Transport and Logistics center**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shareholding and financing structure: Tianjin Port (Group) CO., LTD will own 51%, Mongolian side will own 49% of the logistics centers' share. &quot;MTZ&quot; SOSC will own 51% of Mongolian side.</td>
</tr>
<tr>
<td>2</td>
<td>Total estimated project cost</td>
</tr>
<tr>
<td>3</td>
<td>The development of the Tianjin Transport and Logistics Center infrastructure consists of the following main packages: - Industry (7236 m²); - Warehouse (11538 m²); - Temperature-controlled warehouse (6684 m²); - Container yard (13679 m²); - Mining products yard (5140 m²); - Inspection yard (7135 m²);</td>
</tr>
<tr>
<td>4</td>
<td>Payback period</td>
</tr>
<tr>
<td>5</td>
<td>Internal rate of return (IRR)</td>
</tr>
<tr>
<td>6</td>
<td>Current status of the project</td>
</tr>
</tbody>
</table>

**Project legal acts**

1. A Memorandum of Understanding between Ministry of Road, Transportation, Construction and Urban Development of Mongolia (former title) and People’s Government of Tianjin city of China, dated 15th of April, 2009.
2. The Government Resolution No.152, dated 27th of April, 2013, to lease and use 10-hectare land in the area of Dongjiang Free Trade Port Zone of Tianjin city of China for a period of 50 years.
Thank you!

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