

# A Study on Logistics Development in Mongolia

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**Abstract :** This study aims to present about current status of logistics in Mongolia. As a landlocked country have limited the role of a maritime transportation is a very poor country. However, Mongolia is a rich country in mineral resources in the world and became a center of increasing international trade. Therefore, Mongolia wants to develop logistics as other developed countries using a strategic location. Mongolia uses international port for transit China and Russia by railway. First, this paper focuses on discussing the current situation of logistics. Second it points out some issues currently facing by the governmental policy to promote. Finally, this paper presents some recommendations for developing logistics in Mongolia. The geographical remoteness of Mongolia which results in high cost of transport causes problems for trade relations with the rest of the world to grow.

**Key words :** Development, Landlocked, Maritime Transportation, Mongolia, Logistics

## 1. Introduction

Historically Mongolia has been a north-south landbridge for goods and people moving between the China and the Russian Federation and on to Europe. (USGS, 2009)

Mongolia possesses significant reserves of coal, copper, gold, tin and uranium. Short-term economic relief, any increases in revenue to the government from resources will likely come from logistics. Mongolian government is at a point at which it is trying to protect itself from losses that could incurred by creating logistics policies and strategies that are excessively lucrative, but could bring rapid development while it evaluates how to move forward to develop a sustainable logistics industry.

A study purposes to develop and present logistics as a critical support pillar in nationwide logistics development efforts. The study first delivers key findings on existing logistics status. Then, it analyzed the problems and trends on logistics of Mongolia. It also points out the policy direction and after all it concludes strategic plan of logistics in order to figure out and enhance Mongolia's all around of logistics.

## 2. Current Status of Logistics and Literature Reviews

The following analysis provides a summary of the Mongolian logistics in terms of its strengths, weaknesses,

opportunities and threats. This analysis set based on the current status and recommendation for Mongolia's logistics development.

Table 1 SWOT Analysis

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> <li>* Excellent mineral resources of coal,copper, gold and energy related products</li> <li>* Trans-Mongolian Railway</li> <li>* Strong transit logistics industry with successful transport corridors via dedicated express container block train services</li> <li>* Strong animal husbandry and cashmere production</li> <li>* Young and highly literate population</li> <li>* Integrated Customs Information Systems</li> </ul>	<ul style="list-style-type: none"> <li>* Dependent on China and Russia for energy and minerals exports</li> <li>* Dependent on foreign direct investment</li> <li>* Huge land with low population density</li> <li>* Generally poor accessibility (marked by low road and rail density)</li> <li>* Underdeveloped infrastructure in power supply and water</li> <li>* High interest rate, resulting in high cost of borrowing and financing for business</li> <li>* Dependent on Trans-Siberian Highway for rail route</li> <li>* Relies on Tianjin ports in China for sea route</li> <li>* Lack of industry knowledge (on a company and individual level) in supply chain management or logistics management (e.g.Incoterns, FIATA)</li> </ul>
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>* Land link between two large economies</li> <li>* Potentially huge mineral resource market</li> <li>* Promising retail and commercial opportunities at Russian and China</li> <li>* Tax-free privileges for Made-in-Mongolia exports to EU (attracts foreign firms, including China firms, to set up manufacturing bases in Mongolia)</li> <li>* Development of free trade zones/special economic zone which invariably raises industry demand for logistics services</li> </ul>	<ul style="list-style-type: none"> <li>* New Euro-Asia Highway may result in trade diversion to the south for land transport</li> <li>* Development of ports, mega carriers and containerization reduce appeal of land transport (sea transport)</li> </ul>

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A study approach that primary research for a data gathering, site visits and interviews with government agencies, trade and forwarder associations and private sector enterprises. A difficulty encountered in literature review of the research was the lack of information, materials and published papers available to research, at present indicators and data for developments in maritime transportation and logistics are lacking.

### 2.1 Road Transport

For domestic transport, options are varied, which include road, railway and air modes. The Road Network, including both national and local roads, totals approximately 49,250 kilometers (km), connecting 21 major cities and towns and 160 smaller villages. At present, (92%) is low quality tracks and (8%) is paved roads. The paved roads are mainly located along the northern section of the north-south railway. The Mongolian government could accordingly explore obtaining concessionary loans from international organizations, strengthening the tax environment and efficiency, as well as identifying a more effective model for allocating state and provincial budgets to the road transport development. It is important that the gaps in Mongolia's road transport system are quickly addressed. (TTL, 2010) Roads are critical in lowering the country's typically high land transportation costs and in providing distribution services.

### 2.2 Water Transport

Mongolia has 580 kilometers of waterway. It offers navigable routes but carry little traffic. Most rivers and lakes freeze over the winter sea son, so these are only operable from May to September. As such, waterway transport makes virtually no contribution to the overall transport industry.

### 2.3 Air Transport

Mongolian airlines provide services to 22 domestic destinations and the following international destinations such as Beijing, Berlin, Irkutsk, Osaka, Moscow, Seoul and Tokyo. Chinggis Khaan international airport is located 18 km away from the southwest of downtown. New international airport will be held on 2016. Passenger traffic has steadily increased over the years, and the airport authority is now planning to expand the airport capacity.

### 2.4 Rail Transport

At present, Mongolia has 1,810km of railways of

1,520mm broad gauge width. Entire railway system is under the control of Mongolian Railways (MTZ) which is the 50-50 joint venture between the Mongolian and Russian governments. Due to the huge land mass that needs to be traversed, the railway mode has invariably become the essential backbone of Mongolia's land transportation. It carries over 90% of the country's freight.(ADB, 2010) The main line connects the China rail system in the South with the Russian Trans-Siberian line in the north. Rail transport is the effective link between Zamyn-Uud and Ulaanbaatar but a number of infrastructure projects are currently being studied and implemented in order to pave roads in Mongolia and in particular on this route from Zamyn-Uud to Ulaanbaatar, which is on Asian Highway route No.AH3. Mongolia will build a 1,000 km (620 mile) railway to enable it to export its vast but largely untapped mineral wealth via a Russian port. Construction of the rail link will begin in the first half of this year and take 2-3 years, at a cost of \$2-2.5 billion. It will connect Dalanzadgad in the southern province of Omnogobi with Choibalsan in Dornod province in the east.

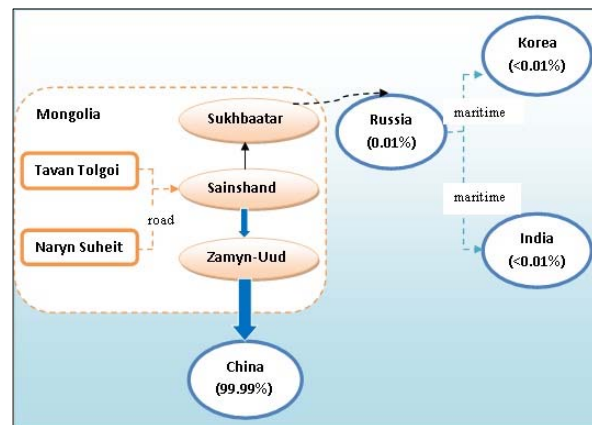


Fig. 1. Logistics flow of coal exports from Mongolia (source: Shipping and Management, 2011.05) Note: The road transport and transit (maritime transfer) estimates by weight ratio (<0.01% is 0.01% less than). It is analyzed that plans to build the Russian route because it is worried about overdependence on China its southern neighbor and a huge market for resources. But plan to diversify its exports will also incur significant costs that will cut into its export earnings.

### 2.5 Logistics Industry

In general, the key logistics players provide a more complete range of logistics services such as multi-modal

transport, import and export documentation, customs brokerage and other value added services. Also, provide better and bigger facilities like cargo terminals and warehouses. It is studied that Mongolia's logistics industry is still underdeveloped. There is also lack of electronic fund transfer (ETF) systems which requires freight forwarders to pay cash for rail reservations and transactions. Overall, contemplated about freight forwarders in Mongolia currently face several issues including:

1. Lowering of tariff discounts for transit freight; In acknowledgement of this, The Mongolian government usually offer a 15-30% discount for rail freight from Russia to China through Mongolia and a 30-50% rate cut in the opposite route. (ADB, 2010)

2. Restricted access to Ulaanbaatar; With a population of close to one million people and increasing due to rural-to urban migration, traffic jams are very common in Ulaanbaatar during peak hours. As such, cargo trucks are not allowed to enter the city centre during working hours. This forces logistics companies to operate for long hours (sometimes 24 hours) which add to their operation costs.

3. Lack of consolidation in logistics facilities; This results in a loss of economies-of-scale and thus higher unit costs for the local logistics providers. The government should look into centralizing storage facilities into one zone earmarked for industrial and logistics development, and building a large-scale modern integrated logistics centre to house the smaller players.

4. High costs of information technology systems; It typically costs companies about US\$500 for the purchase of networking equipment, US\$50 for monthly broadband access and an average of US\$650 per user licence. Smaller logistics players thus find it hard to adopt IT improvements even if they are beneficial to their operations.

5. Inconsistent performances and poor service quality; Surveys have shown that the knowledge and service level of freight forwarders are generally low. It is hoped that with a service grading system in place, companies may take more initiatives in improving their service quality and human resources.

6. Equipment deterioration; 40% of the vehicles are more than 10 years old and showing signs of wear and tear. Such old vehicles are more expensive to maintain and add to the variable costs of running the operations. However, most freight forwarders continue to employ them due to the high costs (high interest rates) of upgrading.

### 3. Problems and Issues of Logistics

Even though some change and innovation occurs late five years within the logistics, there are still many problems currently facing by the governmental policy to promote. It founded that there are common problems:

1. The mining industry and the development of the secondary and tertiary sector are dependent on efficient transportation and logistics. Most of the mining products are expected to be exported to the China to international markets through Tianjin port in the China. These shipments will have to go through Zamyn Uud, the only gateway to the south.

2. In recent years, trade flows have been reoriented from the Russia and most imports (80%) now come from the China, through the Zamyn Uud border point in the southeast of Mongolia. The bulk of Mongolia's exports also travel through Zamyn Uud route to Tianjin port, the only port in the China available to Mongolia for international trade. As a consequence, the handled at Zamyn Uud has expanded rapidly in recent years, to the point where Zamyn Uud is now badly, congested, which affects imports, exports, and transit traffic. Although delays have several causes (such as nonavailability of rolling stock, change of rail gauge, and delays at customs), the main one is the grossly inadequate logistics capability in Mongolia in general and at Zamyn Uud in particular.

3. Mongolia has ranked overall LPI (logistics performance index). That's ranking of 141-155 (1 is the best and 155 is the worst). LPI is 2.25 that ranking clearly indicates serious issues in logistics development. This situation is hurting the country's competitiveness and has serious repercussions for its economic performance(WBG, 2010)

4. Due to the limited logistics facilities available at Zamyn Uud, it can sometimes take 50-60 days to get shipments into Ulaanbaatar, which adversely affects the Mongolian people.

5. Under the underdeveloped logistics network and inefficient cross-border transport as major transport sector issues.

Figure 2 is analysed of major mineral resource imports in logistics path and related problems. Erdenet mine production of molybdenum shipped at least 15 days up to 25 days is required that to be transported via Tianjin, China to Busan, Gwangyang and Incheon port. Molybdenum transports from Mongolia will be in charge of reseller partner companies and suppliers in Korean Agent. Mongolian company loads from Erdenet molybdenum

station in DAF (Delivered at Frontier) condition to Erlian China when packaging and transporting takes about 1-3 days. Transshipment takes 2-3 days at Chinese customs and border inspection for transportation from Chinese Erlian station to Korea under the Korean company responsibility.

If cranes and container handlers facility break down it takes up to one week. And due to the transportation by one vessel from Tianjin to Korea that time may be kept waiting. In average 4 days if need to depart right away is 2-3 working days. Other produced resources from Choir are that shipped to Korea after gathered around the station to the Container Yard. Likewise, molybdenum at least 15 days should take up to 25 days. Shipping delays occur frequently despite the completion of container operations in China Erlian can not be transported by wagon to Korea. (KMI, 2011)

of imports from Korea to Mongolia through Tianjin port usually use COC. (KMI, 2011) Thereby suffering the inconvenience to return freight container to Tianjin port within 45 days after the international multimodal transport companies transport from Tianjin Port to Ulaanbaatar again that deliver a container to rent in Tianjin Port (COC rental terms).

Secondly, due to lack of logistics facilities is difficult to procure transportation visibility. Logistics companies are struggling with not scheduled time to import mineral resources from Mongolia. Queueing time required to import due to lack of wagon and container facilities in container yard. Products produced in Korea are being shipped to Ulaanbaatar takes a certain for an average of 15 days, whereas period is not constant that produced molybdenum and fluorite from Mongolia to Korea it takes to import a minimum of 15 days up to 25 days. The reason for working in CY around Choir station the time delay is occurring and lack of container handling facilities and wagons at transit station in Erlian.

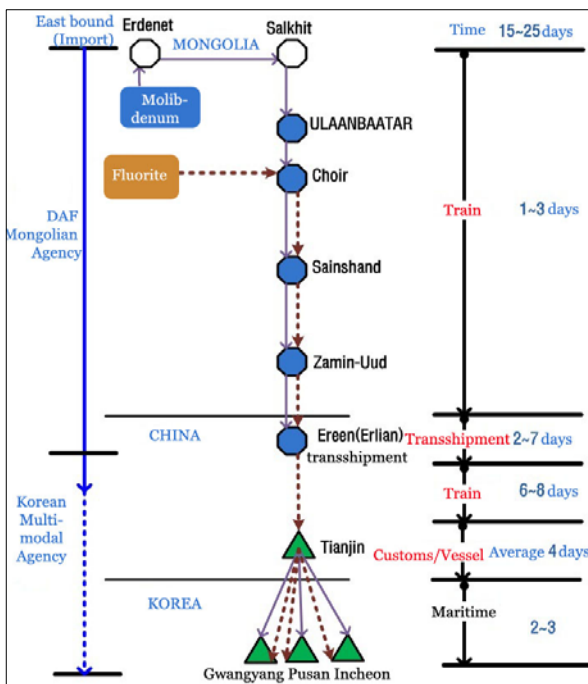


Fig. 2 Paths and time distribution

The following two problems found. Firstly, there is problem with container supply and demand due to throughput difference in eastbound (Mongolia to Tianjin port) and westbound (Tianjin to Mongolia). There are no empty container depot that international multimodal transportation agency and logistics agencies are facing difficulties for container supply and demand. Transportation from Tianjin port to Mongolia has two type container which are Shipper's Own Container (SOC) and Carrier's Own Container (COC). Useful one is SOC that reason of throughput difference in eastbound and westbound. In case

#### 4. Strategic Plan of Logistics

Mongolian government entered the field of logistics and maritime transportation. From 2010 to present the government officials visited to Korea. The first Mongolia-Korea maritime cooperation meeting held in Mongolia. Maritime and logistics experts of Korea dispatched for three months. In addition, the following works are continued in Mongolia. A master plan for the establishment of the logistics policy and the sailor crew training program in Mongolia and establishment 'Sammok' joint venture company. (MRTCUD, 2011) For the purpose of developing maritime transportation, Mongolia should plan systematically in terms of country's features. The plan will be greatly boost the economic development of Mongolia. Strategic plan is difficult to set but the following plans are needed.

1. To minimize risk for optimal transportation through scenario development.
2. In the mid to long term perspective of logistics, shipping, transportation manpower systematically for competitiveness.
3. To develop policy and strategic plans of logistics, shipping and transportation through comparative research.
4. To raise up benefit for finance investment plan in infrastructure utilization.
5. To prepare and educate human resources.

6. To expand foreign cooperation and share knowledge.

Main key components of logistics capacity building in which are institutional plan for supporting logistics network development, capacity development for managing logistics centers and financing strategy for attracting private sector participation in logistics development.

Mongolia’s “Logistics Human Resources Development Plan” is set from 2011 to 2013. Vessel operating a joint venture with the government of Korea is set for basis on long-term export contracts, stable marine mineral resources for export. (MRTCUD, 2011)

Table 2 Ship purchase and operating joint ventures

(source: by author from MLTM, 2011)

Target	Bulk Carrier	Containership
Usage	Mineral resources (coal, copper, etc.), dedicated to transporting cement	Third countries (Japan, Korea, Taiwan, United States) and Mongolia, between the building materials, supplies, and container transport
Scale	2.5 ten thousand tons to 4.5 tons (small used vessel)	TBD
Business sectors	Russian port (Vostochny, etc.) China (Qinhuangdao, Dandong, etc.)	China (Tianjin, Dandong, etc.)
Time	-Joint Venture Agreement signed in 2010 -Mineral exports in 2011 a pilot project -2011 purchased the ship operating	2011 feasibility study and a joint venture company structure as the ship purchase agreement
Investment	20million USD	50million USD
Financing	Associated mineral resources	Associated mineral resources, such as the introduction of loans

Mongolia’s mineral resources harbors a stable base for the export of marine which has development on these places. (Russian 6 Ports, Tianjin, Dandong, Qinhuangdao, Jinzhou, etc.) Just behind the development of major ports in conjunction seeking opportunities to expand( MLTM, 2011). Railway transport infrastructure will be expand in 2013, copper mineral resource exports through Mongolia is expected to be activated in stages in accordance to buy small and medium-sized vessels of the professional workforce by operating the Mongolian nationality, logistics, strengthening capacity to pursue a systematic plan.

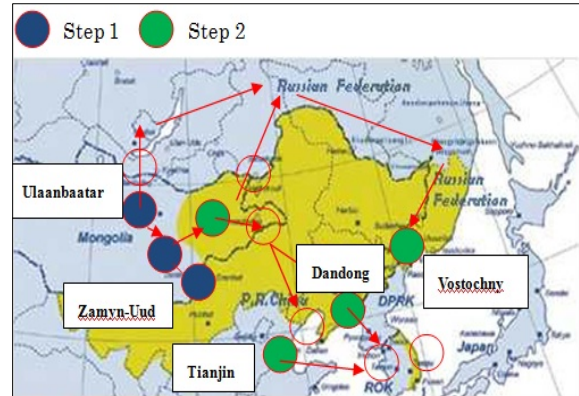


Fig. 3 Major logistics hub by building extensions (source: by author from MLTM)

Figure 3 shows Mongolian logistics trends in Northeast Asia. In the first step, currently the government is developing new routes to Russia’s railway link to the Tavan-Tolgoi, Sainshand, Khuut, Choibalsan route connections to build ties with Solovevsk to Vostochny of Russia to promote border. Sainshand is likely to perform the role of intersection hub in transportation as a coal in the current and future rail lines to be built. In the second step, new routes to China’s Dandong port link to the Bichigt route connections to build ties with South Korea.

Foreign technical and financial assistance and close cooperation from international organizations and donor countries will be of great importance to develop logistics.

The strategic plan is facing Mongolian transport infrastructure in delivering coal exports across the border into China’s burgeoning steel industry and power sector. The key notable conclusions from logistics and transportation’s study may be summarised as below:

- a. Transit trade essentially becomes critical to the country’s future economic progress.
- b. Investment in infrastructure is necessary to increase intra-country connectivity and inter-country linkages as well as to raise overall transportation efficiency. An example of a relevant project is the planned road construction from Choir to Zamyn-Uud which will help to provide a potentially beneficial multimodal transportation option in this economic cluster area.
- c. The construction of railways in the Omnogovi region is also recommended due to its strong economic potential. The railway should link the area to Inner Mongolia to facilitate the commodity flow for China’s growing markets. An issue an that could arise however is that of the current differing rail gauge widths between Mongolia and China.
- d. Private enterprises have commented that

communication from the government could be improved. For instance, the companies felt that details of the national transport plan are important to their operations but not made available to them.

New strategic uses of logistics will continually alter the nature and culture of operations in companies, thus Mongolian government should match these changes.

e. The number of mineral resources in Mongolia in order to facilitate the logistics of the Choir, Sainshand surrounding the construction of dry port will be needed. If build dry port near the CY in Choir will avoid the tyranny of a monopoly and prevent delays due to lack of empty container and logistics facilities. Produced large quantities of coal from Mongolia exported to other countries in order to not only through China, export through Russia is necessary. However, there is no railway lines from Tavan-Tolgoi which is current major coal mine areas that directly relates to Russia. Mongolia should consider railroad plan and review to build Dry Port construction near the Sainshand station.

Developing a modern and efficient dry port will reduce costs for exporters and importers and promote international and regional trade. Mongolian government to investigate dry port construction and to determine validity. If there is validity decide construction time, fund rising plan, cooperation with relevant countries and problem solving with policy and more systematic research should be done first.

development. Mongolian government need to develop an integrated policy framework to achieve broader socio-economic objectives.

Mongolian logistics can develop through four kind of strategy which are optimization, stabilization, specialization and globalization. Therefore, it can be divided into adoption, growth, advance and expectation that Mongolian logistics development can progress steadily which in figure 4.

Scenario based on mineral resources exports by port of Dandong, Tianjin, Vostochny and Zamyn-Uud that are strategies can pursuit changes in per year three to five thousand ton scale's mineral resources export to China and other third nations.

1. Zamyn-Uud to Tianjin. Tianjin line is overload the current cargo reception facilities, equipment shortages, uncertain the Chinese government's plan to expanding this line. According to this route which is expected to 5-7 million tons per year.

2. Bichigt to Dandong, Now capacity is 50 million tons but after providing processing facility which is expected increase two times until 2015.

3. Ereentsav to Vanino and Vladivostok

Also, find requirement on east and west railway network establishment by adding Russian route expanding rather than second country of China route. This route is expected to increase by cargo volume which is 60 million tons per year. New route launching for Mongolian coal by Russian railways takes 6 days to reach eastern seaports compared to estimate of 22 days.

Section	Adoption	Growth	Advance	Expectation
Optimization	Facility Integration	Point Alignment		Resource Based Logistics System
	Joint & Standard	Logistics Joint & Standard		
Stabilization	Clean Consulting System	Public Tender System Improvement		Logistics Cost Reduction Improvement
	Value Added Based Production	Business Model Establishment		
Specialization	High Personnel Education	Education Program & Establishment		Consolidation Domestic Fair Competition
	Logistics Technology	Logistics Business R&D Support		
Globalization	Investment Analysis	New Market Strategy Support		Vitalization Overseas Advancement
	Make Large Corporation	Multinational Corporation		
	Business Network	Global network enhancement		

Fig. 4 International logistics development strategy roadmap

The strategic advantage of logistics is likely to be most pronounced in terms of improvements in coordination and planning resulting in transport efficiency gains. However, it is important for government to fully understand concepts of logistics and the maritime transportation and to stimulate economic competitiveness to achieve positive economic

## 5. Conclusion

This paper is to suggest the way of developing the logistics sector represented in the current status of Mongolia. As a result, it was concluded as follows. Some problems to the development of logistics can be determined by this study. It is studied that the development of logistics should be rapidly when the policies are applied to the government and agency. Mongolia also need to comply with differing transit formalities for imports and exports including additional controls and checks as well as excessive security measures applied on goods in transit with the two neighboring countries-Russia and China. The traders are faced with unreasonably high transit charges in neighboring countries.

Reducing transit costs and simplifying customs procedures, while improving national trade environment are of particular importance.

The range of policy issues affecting the efficiency and sustainability of Mongolian logistics system. Mongolia has a very limited understanding of logistics and maritime transportation. Mongolia suffers from insufficient specialised logistics knowledge as well as lack of more general awareness of the importance of transportation, therefore unable to formulate cohesive policies to manage logistics. The effectiveness and efficiency of policy actions could be analysed through comparative study in the future.

The development of freight transport infrastructure is a key issue in Mongolia. Also, financial instruments available to government for the development of infrastructure are still not sufficiently flexible, prevalent, or transparent to cover and serve current needs.

The potential for innovative financing arrangements, including public-private sector partnerships, should be explored. Logistics and the maritime transportation developments necessitate changes in the demand for education. Improved training and qualification systems are needed to respond to these developments. Since the level of education differs across countries, developing countries may need assistance in establishing training courses.

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**Received** 2 May 2012

**Revised** 4 June 2012

**Accepted** 11 June 2012