

Mongolia

Rail Sector Profile

Population (2023)
3.4 Million

Gross domestic product (GDP), PPP (2022)
48.4 Billion USD

(1,2)

PPP = Purchasing power parity

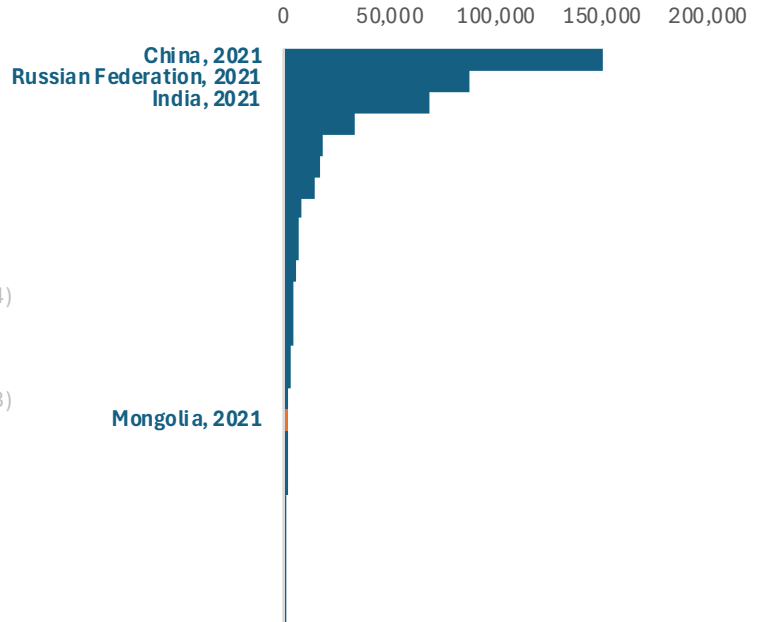
Heavy Railway

Heavy rail route length (2021)
1,821 km

(3,6)

Heavy railway route lengths in Asia-Pacific (kilometers)

(3,6)



Between 2000 to 2021, Mongolia added 11.0 kilometers of heavy railway routes, expanding 0.0% annually

Single-track routes (2012)
100.0%

Double-track routes (2020)
37.9%

(4)

Electrified routes
n.d.

(3)

Availability per capita
543.9 kilometers per million population

(3,6)

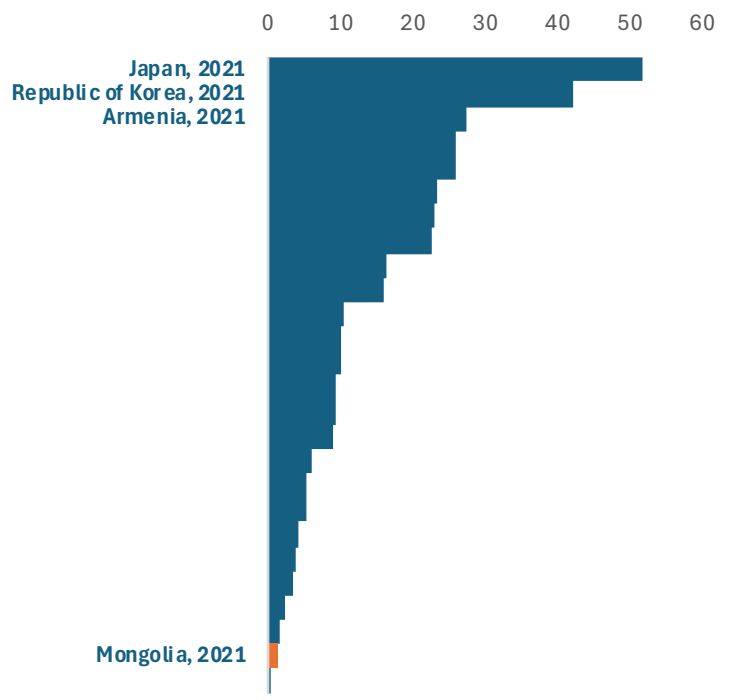
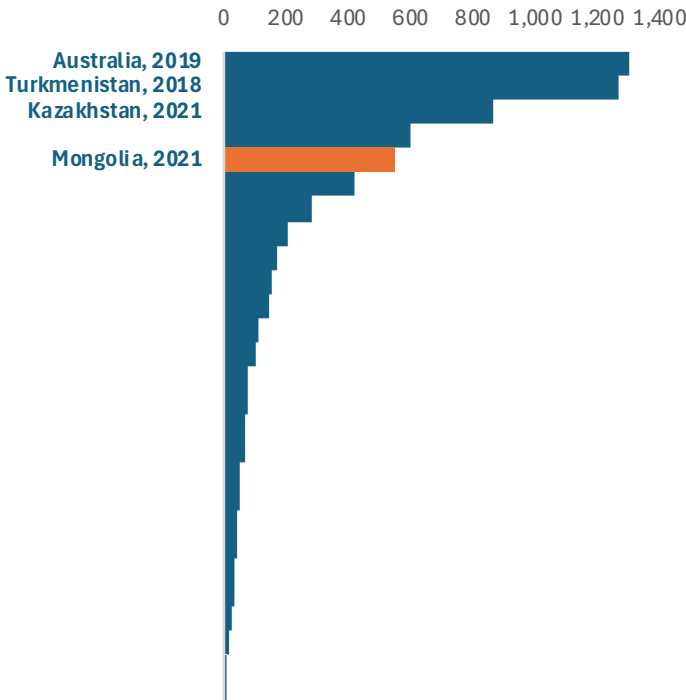
Density per sqkm
1.2 kilometers per thousand sqkm

(3,6)

sqkm = square kilometer

Availability per capita in Asia-Pacific

Density per sqkm in Asia-Pacific



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Urban Railway

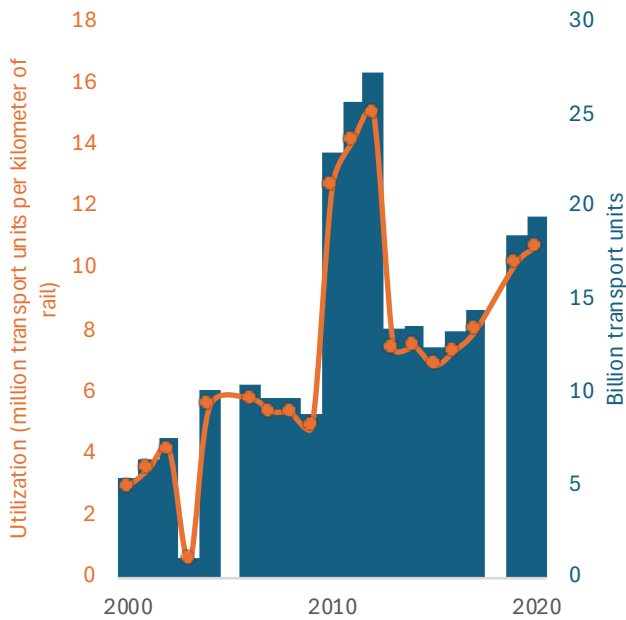
Metro length (2021) n.d.	Light rail transit (LRT) length n.d.	Urban rail availability per capita in Asia-Pacific (4)
Number of cities with urban rail systems (2021) 0		(4)
Urban rail availability per capita (2021) n.d.		(4)

Activity

Passenger-kilometers (PKM) (2020) 580 million	Tonne-kilometers (TKM) (2020) 19.0 billion	(3)
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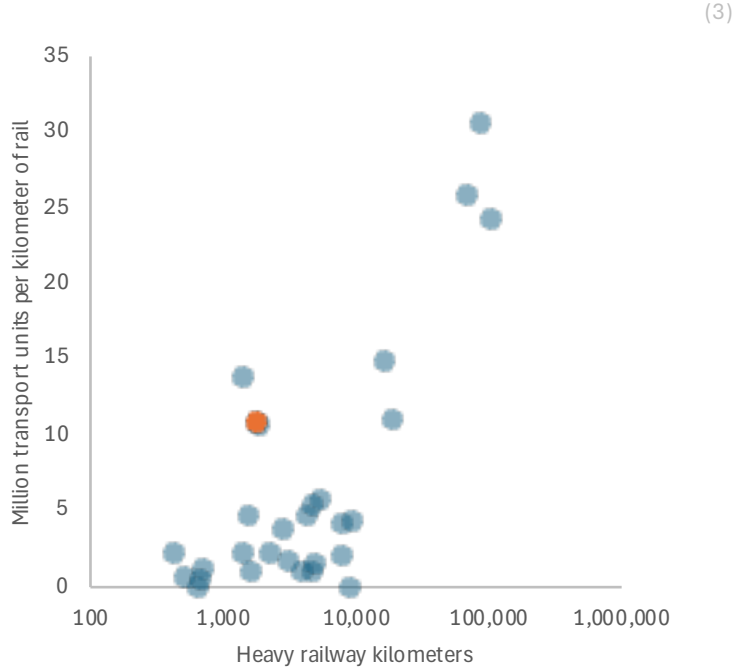
Between 2000 to 2020, PKM decreased annually by -3.0%. Between 2000 to 2020, TKM increased annually by 7.7%

Transport units and utilization trend



Transport units = passenger-kilometers + tonne-kilometers

Utilization of railways in Asia-Pacific

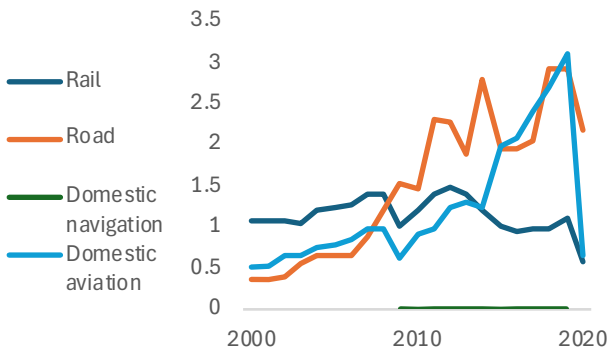


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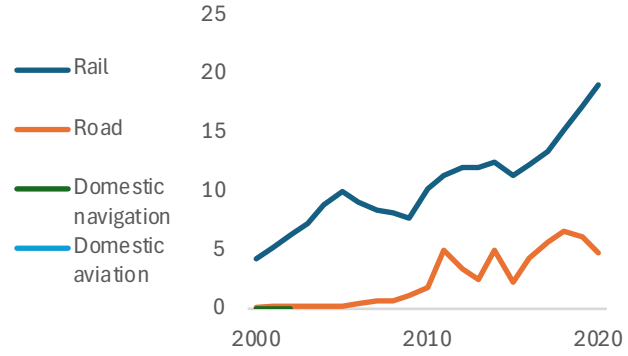
Mode Share

Passenger transport activity (billion passenger-km)



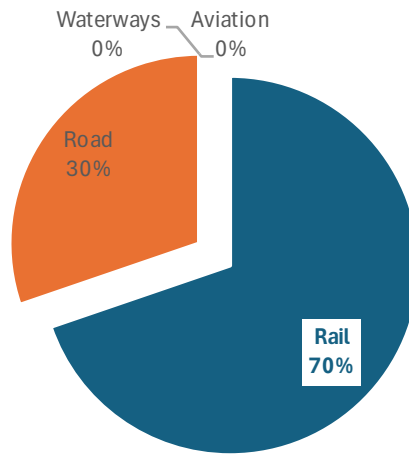
Freight transport activity (billion tonne-km)

(6)



Freight transport mode share (2018)

(6)



Energy

Rail diesel consumption (2021)
n.d.

Rail electricity consumption (2021)
n.d.

Rail energy intensity with GDP (MJ per USD, PPP)

(2,5)

Rail energy consumption (PJ)

Share of electricity in rail energy consumption

(5)

kWh = kiloWatt-hour

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Energy

Share of rail in total transport energy consumption

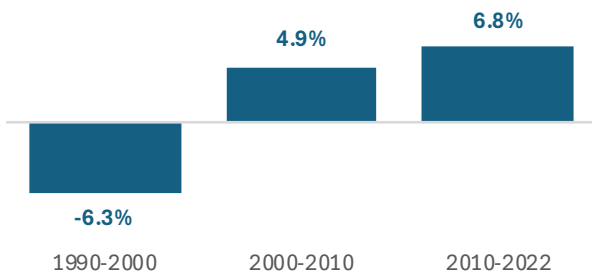
Rail energy intensity with GDP in Asia-Pacific (MJ per USD, PPP, 2020)

(5)

(2,5)

Rail CO2 emissions (2022)
788 thousand tonnes

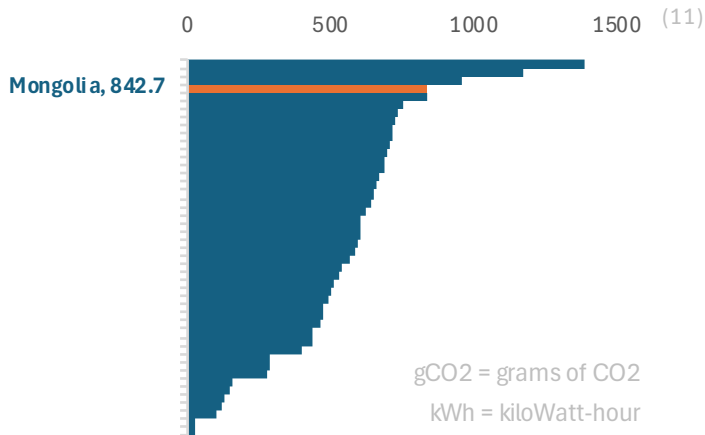
Rail CO2 emissions annual average growth



Share of rail in transport CO2 emissions (1990-2022)

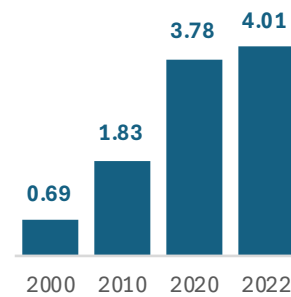


Grid emission factors (gCO2/kWh, 2022)



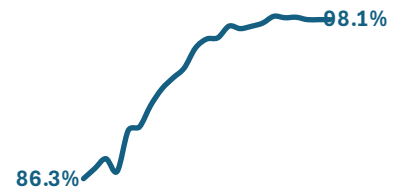
PM 10

(10) Rail air pollutant emissions (thousand tonnes)



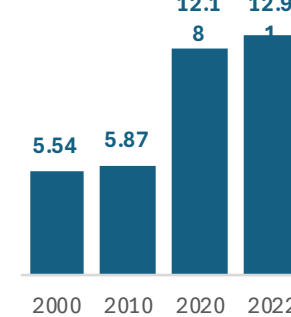
Share of rail in transport air pollutant emissions (2000-2022)

(10)



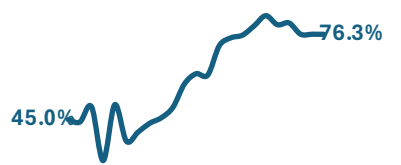
NOx

(10) Rail air pollutant emissions (thousand tonnes)



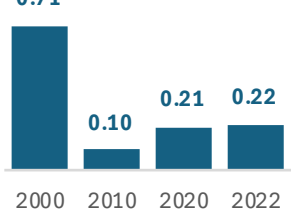
Share of rail in transport air pollutant emissions (2000-2022)

(10)



SOx

Rail air pollutant emissions (thousand tonnes)



Share of rail in transport air pollutant emissions (2000-2022)

(10)



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Investment

Public-private partnership (PPP) investments in rail (Million USD)

(17)

Official development assistance (ODA) in rail (Million USD)

(18)

2002-2015

15

2016-2021

3

Share of rail in transport PPP

| Between 2000-2015

n.d.

| Between 2016-2022

n.d.

Share of rail in transport ODA

| Between 2002-2015

(17)

2%

| Between 2016-2021

1%

(18)

Import value (Million USD)

2003-2012

460

2013-2022

680

National investment in rail - capital expenditure (0)

(20)

n.d.

(19)

Includes locomotives, railcars, passenger coaches, freight wagons, rail fixtures, rolling stock parts, and containers

Digitalisation

Internet speed (2022)

| Broadband

54 Mbps

| Mobile

21 Mbps

Mbps = Megabits per second

(8)

Digital readiness index (2021)

0.0/2.5

(9)

Others

Share of transport in gross value added (GVA) (2022)

7.4%

(12)

Average annual losses to rail infrastructure due to all potential hazards (2023)

0.19 mln. USD

(21)

Quality of railway infrastructure (2017)

2.8/7

(13)

Share of rail infrastructure in multihazard average annual loss to transport infrastructure (2023)

21.2%

(21)

Percent of firms identifying transportation as a major constraint - services (2015)

15.3%

(14)

Efficiency of train services (2019)

3.5/7

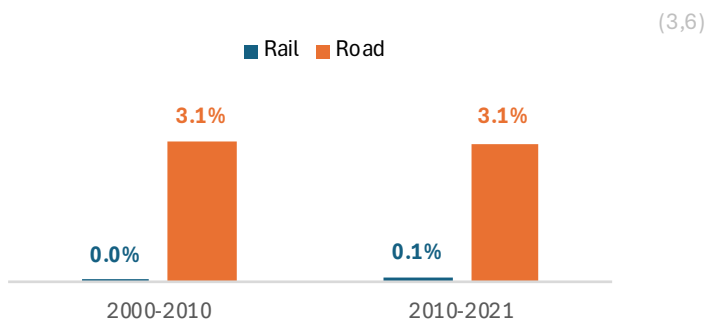
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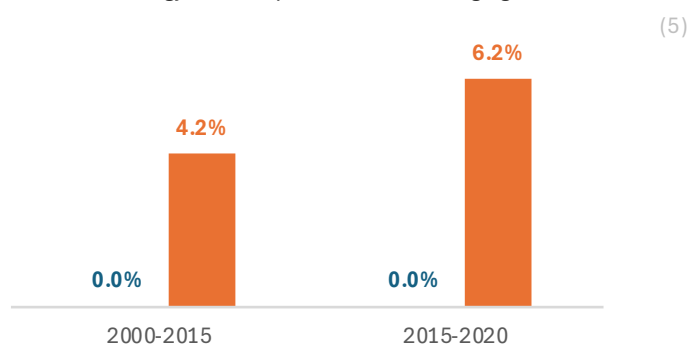
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Benchmarking Rail and Road Sectors

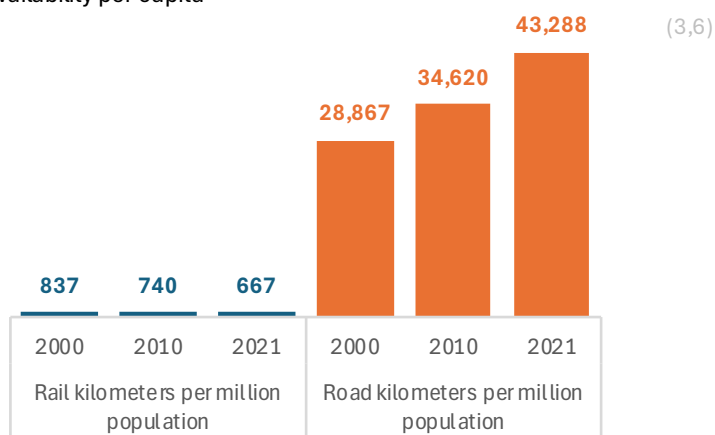
Infrastructure annual average growth of rail (including HSR, LRT, and metro) vs. road



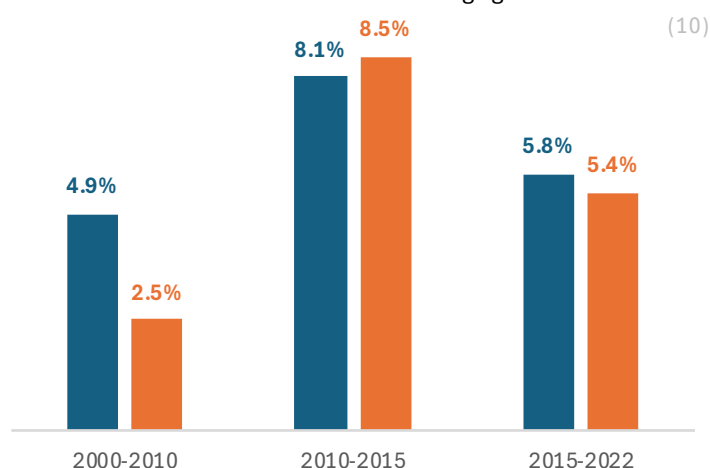
Rail vs. road energy consumption annual average growth rate



Rail (including HSR, LRT, and metro) vs. road infrastructure availability per capita



Rail vs. road CO2 emissions annual average growth rate



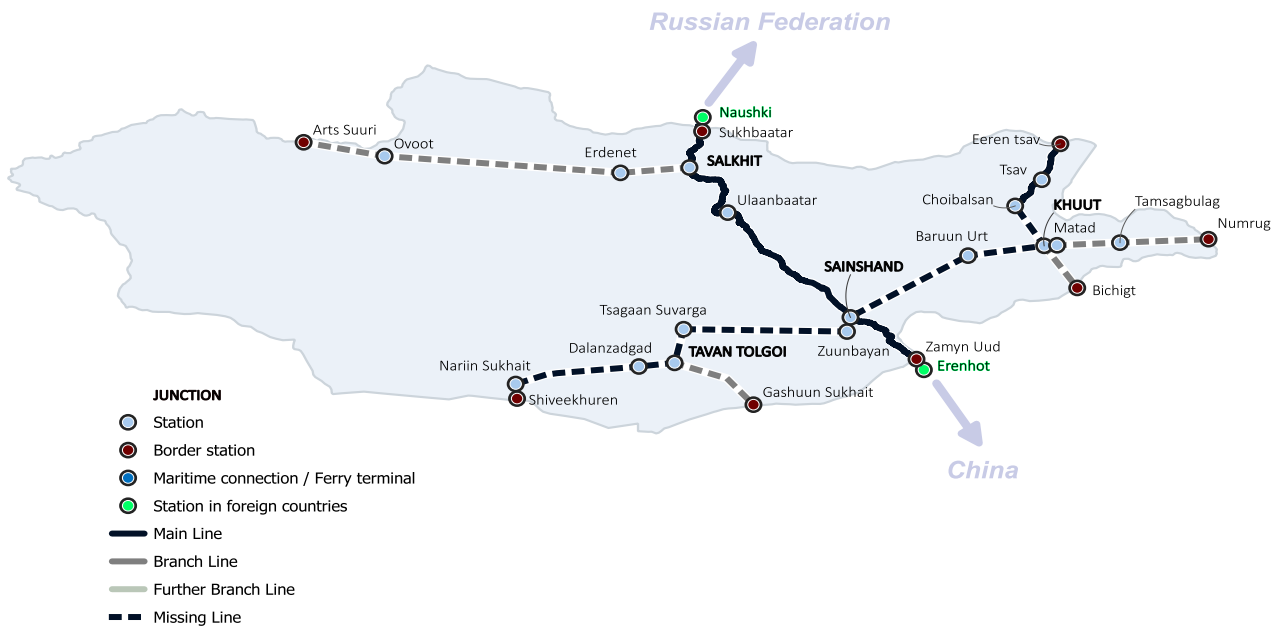
Sources

- (1) UN Population Database (2022), <https://population.un.org/wpp/>
- (2) World Bank (2022), <https://data.worldbank.org/indicator/NY.GDP.MKTP.PP.CD>
- (3) International Union of Railways (2021), <https://uic-stats.uic.org/>
- (4) Rapid Transit Database (ITDP, 2022), <https://www.itdp.org/rapid-transit-database/>
- (5) UN Energy Statistics (2021), <https://unstats.un.org/unsd/energystats/dataPortal/>
- (6) Country Official Statistics
- (7) Rail Company
- (8) OOKLA (2023), <https://worldpopulationreview.com/countries/internet-speeds-by-country/>
- (9) CISCO (2022), <https://www.cisco.com/c/en/us/about/csr/research-resources/digital-readiness.html>
- (10) Emissions Database for Global Atmospheric Research (EC, 2023), <https://edgar.jrc.ec.europa.eu/>
- (11) Ember (2023), <https://ember-climate.org/data-catalogue/yearly-electricity-data/>
- (12) UN Statistics (2022), <https://unstats.un.org/unsd/snaama/Downloads>
- (13) World Economic Forum (2019), http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf
- (14) World Bank (2020), <https://datacatalog.worldbank.org/dataset/enterprise-surveys>
- (15) Koks, et al. (2019), <https://www.nature.com/articles/s41467-019-10442-3>
- (16) World Economic Forum (2019), https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf
- (17) PPI Database (World Bank, 2023), <https://ppi.worldbank.org/en/ppi>
- (18) Organisation for Economic Co-operation and Development (OECD) (2022), <https://stats.oecd.org/Index.aspx?DataSetCode=CRS1#>
- (19) Country Data
- (20) Trademap (ITC, 2024), <https://www.trademap.org/>
- (21) Global Infrastructure Risk Model and Resilience Index (CDRI, 2023), <https://giri.unepgrid.ch/>

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Mongolia Rail Network



Border Crossings to/from Mongolia

Source: UNESCAP

Country	Border Crossing
Mongolia - Russian Federation	Sukhbaatar-Naushki
Mongolia - China	Zamyn Uud-Erenhot

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Trans-Asian Railway Lines in Mongolia

Source: UNESCAP

Line	Length (km)
Sukhbaatar – Zamyun Uud	1,235
Choibalsan – Ereen Tsav	270
Nariin Sukhait – Khuut (missing link)	1,404
Nariin Sukhait – Shiveekhuren (missing link)	52
Tavantolgoi – Gashuun Sukhait (missing link)	246
Khuut – Bichigt (missing link)	177
Khuut – Numrug (missing link)	433
Salkhit – Arts Suuri (missing link)	1,037

Total distance 4,854 km

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Policy Measures and Targets

Policy document	Year	Rail-related measures
Transit Mongolia National Program	2008	Rail infrastructure expansion, General rail improvement, Railway electrification, Intermodality measures, Logistics hub
State Policy on Automobile Sector	2018	Logistics hub
Three Pillar Development Policy	2018	Rail infrastructure expansion, Reduction of transport/ logistics costs, Logistics hub
First Submission of Mongolia's NDC	2020	Railway electrification, Freight transport shifting to rail or inland waterways (IWT)
Technology Needs Assessment - Climate Change Mitigation in Mongolia	2013	Rail infrastructure expansion
Action Plan of the Government of Mongolia 2020-2024	2020	Rail infrastructure expansion, Logistics hub
Mongolia Sustainable Development Vision 2030	2016	Rail infrastructure expansion, General public transport, Reduction of transport/ logistics costs, Logistics hub
Voluntary National Review 2023	2023	
Mongolia Green Development Policy	2014	Urban passenger rail infrastructure improvement, Railway electrification, Technical standards for rail infrastructure
Third National Communication of Mongolia	2018	Urban passenger rail infrastructure improvement
State Policy on Railway Transportation	2010	Rail infrastructure expansion, General rail improvement, Logistics hub
Transport Strategy of Mongolia	n.d.	Rail infrastructure expansion, General rail improvement, Logistics hub
Mongolia's Initial Biennial Update Report	2017	Rail infrastructure expansion, Urban passenger rail infrastructure improvement, Railway electrification, General transport target - Modal shift, Logistics hub
Road, Transport Sector of Mongolia Vision 2050	2008	Rail infrastructure expansion, Railway electrification, Logistics hub
	2021	Rail infrastructure expansion, Logistics hub
National Action Programme on Climate change (NAPCC)	2011	Rail infrastructure expansion, Railway electrification
National Program on Energy Saving	2017	Railway electrification

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Policy Measures and Targets

Policy document	Target year	Rail-related targets
State Policy on Automobile Sector	2026	Cargo terminal = 21
State Policy on Automobile Sector	2026	Infrastructure Quality in Global Competitiveness Indicators = 74
State Policy on Automobile Sector	2026	Logistics center = 6
Vision 2050	2025	Number of new regional transport and logistic centers = 4
Vision 2050	2030	Number of new regional transport and logistic centers = 7
Vision 2050	2050	Number of new regional transport and logistic centers = 11
Vision 2050	2025	The length of newly built railroads = 1174
Vision 2050	2030	The length of newly built railroads = 1960
Vision 2050	2050	The length of newly built railroads = 4838
Mongolia's Initial Biennial Update Report	2030	Increase share of public transportation 13% by 2030



Policy measures and targets were extracted from policy documents as listed in the ATO National Transport Policies Database
<https://bit.ly/ATOpolicyrepository>

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Current State of the Railways

- **Infrastructure:** Mongolia has a substantial heavy rail network spanning 1,821 kilometers, primarily single-track, with limited double-track routes. While growth has been slow, its rail density per land area is noteworthy.
- **Activity:** Passenger transport activity has declined, but freight transport, notably fueled by freight exports, has grown considerably, increasing pressure on the existing infrastructure.
- **Energy & Emissions:** While the exact energy consumption data is unavailable, the rail sector's CO2 emissions have steadily risen, accounting for a significant portion of transport-related emissions.
- **Investments:** While PPP and ODA investments have fluctuated, they remain crucial for infrastructure development and modernization.
- **Digitalization & Efficiency:** Mongolia lags in digital readiness, and the quality and efficiency of its rail services have room for improvement.
- **Resilience:** Climate change risks the rail infrastructure, highlighting the need for adaptation measures.

Policy Landscape & NDC Alignment

- **Key Policies:** Documents like the "Transit Mongolia National Program" and the "State Policy on Railway Transportation" outline goals for infrastructure expansion, electrification, and efficiency improvements.
- **NDC Gaps:** While Mongolia's NDCs include targets for increasing public transport and reducing emissions, the specific measures and investments for the rail sector remain unclear.
- **Alignment & Priorities:** There is a general alignment between the NDCs and existing policies, with both emphasizing the importance of rail development. However, there's a need for more concrete action plans and investment strategies to achieve the ambitious NDC targets.

Opportunities:

- **Electrification** of the rail network, coupled with renewable energy sourcing, can significantly reduce emissions.
- **Modernization and expansion** of the infrastructure can enhance capacity and efficiency.
- **Improved digitalization** can lead to better service quality and operational efficiency.
- **Climate resilience measures** can ensure the long-term sustainability of the rail network.

Summary

Mongolia's railways have a vital role to play in the country's sustainable development. By strategically investing in infrastructure, technology, and resilience and aligning policy priorities with the NDCs, Mongolia can build a modern and efficient rail network that contributes to economic growth and climate action. The rail sector has the potential to not only mitigate its own emissions but also support a broader shift towards sustainable transport in the country.

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