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Mongolia:

Country Private Sector Diagnostic



SEPTEMBER 2026

About the Country Private Sector Diagnostic

The private sector is an engine of long-term economic growth and a catalyst for global social and economic development. When functioning well, it promotes innovation and entrepreneurship, improves access to and the quality of economic opportunities, and supports the sustainable use of natural resources. In developing economies, the private sector creates the vast majority of jobs, generates tax revenue, and accounts for significant investment.

The Country Private Sector Diagnostic (CPSD) reports seek to unlock private investment and job creation through policy action to remove impediments to private investment. Prepared jointly by the institutions of the World Bank Group, each report analyzes specific sectors of the economy in which increased private investment could accelerate growth if appropriate policy and regulatory issues are addressed.

Designed from the perspective of an investor or entrepreneur, CPSDs seek to identify untapped private investment opportunities and the barriers that stand in their way (earlier reports can be found [here](#)). Subsectors of the economy are chosen based on their potential to attract private investment, create more and better jobs, generate domestic revenue, and foster sustainable, inclusive growth in response to targeted policy action. The report aims to help policy makers prioritize impactful actions that can be taken in the near term to remove disincentives to private investment, while delivering on broader development goals.

The CPSD is a core country diagnostic of the World Bank Group produced to guide the design and implementation of country strategies, public and private investment projects, budget support operations, advisory services, and other analytical work. It is intended to be of interest to domestic and foreign investors, government officials, Bank Group staff and management, civil society, and other development partners.

CPSDs are a central instrument of the World Bank Group's jobs agenda as articulated in the 2025 Development Committee (DC) Paper on [Jobs: The Path to Prosperity](#), which emphasizes translating private sector development into large-scale employment opportunities. CPSDs support this agenda by providing country-level, sector-specific diagnostics that help identify systemic barriers to private investment critical to job creation. They also align with the DC's three-part approach to private sector development and job creation: investing in human capital and infrastructure to establish the basic preconditions for job, supporting business-enabling policies, and mobilizing private capital at scale to help firms create more and better jobs.

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Executive Summary

The Country Private Sector Diagnostic (CPSD) identifies sectors of the economy with the potential to attract significant private investment over the medium term if well-identified constraints can feasibly be addressed through public policy action. It takes an investor perspective to identify the constraints that currently discourage private investment. Sector selection follows a rigorous and systematic process that combines quantitative and qualitative analysis with stakeholder consultations, including interviews with private investors, companies, technical experts, policy makers, and development partners. Recognizing that this process involves an element of judgment, the selection is not intended to be exhaustive; rather, it aims to facilitate focused analysis and concrete recommendations.

Introduction

The private sector is central to Mongolia's long-term growth, job creation, and economic diversification. Yet private investment remains constrained by regulatory uncertainty, infrastructure gaps, and market distortions that limit firms' ability to enter, operate, and scale. This Country Private Sector Diagnostic (CPSD) focuses on three sectors—sustainable cashmere processing, solar and wind energy generation, and exploration of energy transition minerals (ETMs)—and provides a practical framework for leveraging Mongolia's resource endowments into bankable investment opportunities. It identifies areas where comparative advantages are strongest, as well as policy and institutional constraints that continue to create significant hurdles for investors.

Rather than advancing broad, long-horizon reforms, the CPSD prioritizes a limited set of actionable measures that can be implemented in the near term to unlock foreign and domestic investment over the medium term, accelerate economic growth, and support job creation. The proposed reforms in mineral exploration and renewable energy

are also designed to complement Mongolia's broader industrial development ambitions, particularly the government's vision of integrated clusters in which mineral extraction, processing, and renewable energy production are colocated to enable downstream metallurgical industries and high-tech manufacturing. While a full assessment of these industrialization pathways is beyond the scope of this diagnostic, the reforms proposed here are intended to lay the foundational conditions on which those longer-term objectives can credibly be built.

This approach is particularly relevant in Mongolia, where large-scale potential in sectors beyond traditional mining—including vast solar and wind resources, proximity to key mineral markets, and a globally recognized cashmere industry—has not yet resulted into sustained private investment at scale. The CPSD can help the government sequence reforms and align public initiatives with private investment decisions. It provides a bridge between high-level strategies, such as diversification and green growth, and concrete policy measures that directly influence investor behavior. By focusing on a small number of binding constraints in each sector, and by framing recommendations in terms of how they reduce risk, improve returns, or expand market access, the CPSD aims to enable more effective government engagement with domestic and international investors.

The CPSD should be regarded as an operational tool for implementation. It can inform the design of public investment, such as transmission infrastructure and geological surveys; policy reforms, including licensing, tariffs, and standards; and instruments to mobilize private capital, including guarantees, blended finance, and public-private partnerships. It also supports sustained dialogue between the government and the private sector, helping ensure that reforms are grounded in market realities and responsive to evolving investor needs. By translating Mongolia's sectoral opportunities into a prioritized set of near-term, investor-relevant actions, the CPSD can help the government move from potential to execution, unlocking private investment, bolstering job creation, and advancing a more diversified and sustainable growth model.

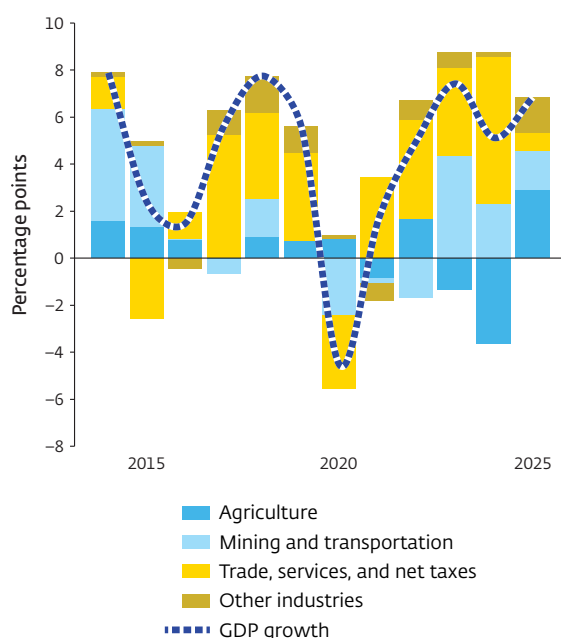
Country Context

Mongolia's economy has shifted from an agrarian base to one dominated by mining, which now anchors economic growth, fiscal revenues, and exports. Over 2015 to 2024, growth averaged 3.8 percent, largely driven by extractives, and the recent mining upswing helped Mongolia reach upper-middle-income status in 2024 (figure ES.1). However, heavy reliance on mining has made growth highly volatile, with repeated boom-and-bust cycles linked to commodity prices, external demand, and trade disruptions. Recent gains, supported by strong coal exports and improved debt management, have

Figure ES.1

Mining and Mining-Related Sectors Drive Mongolia's GDP Growth

Year-over-year GDP growth and sector contributions



Source: World Bank (2024g); data from the National Statistics Office.

Note: GDP = gross domestic product. Large contractions in agricultural production in 2023–24 reflect the impact of the *dzud*, a natural disaster involving harsh winter weather conditions that caused widespread livestock losses.

helped rebuild buffers, but these buffers remain partial and leave the economy exposed to future shocks.

This mining-driven vulnerability is reinforced by a narrow export base.

Minerals account for around 90 percent of export revenues, with coal and copper dominating, and exports are heavily concentrated in a single market, China. Mongolia's low economic complexity ranking underscores limited diversification into higher-value products. Efforts to broaden the economy have been constrained by structural bottlenecks, including gaps in trade facilitation, logistics, and standards compliance, particularly for processed agricultural goods. Addressing these constraints is critical to reducing external vulnerability and enabling more stable and diversified private sector-led growth.

Foreign direct investment (FDI) has been heavily concentrated in the mining sector, which has averaged more than 70 percent of total FDI. The government is seeking to attract FDI into other sectors, including renewable energy

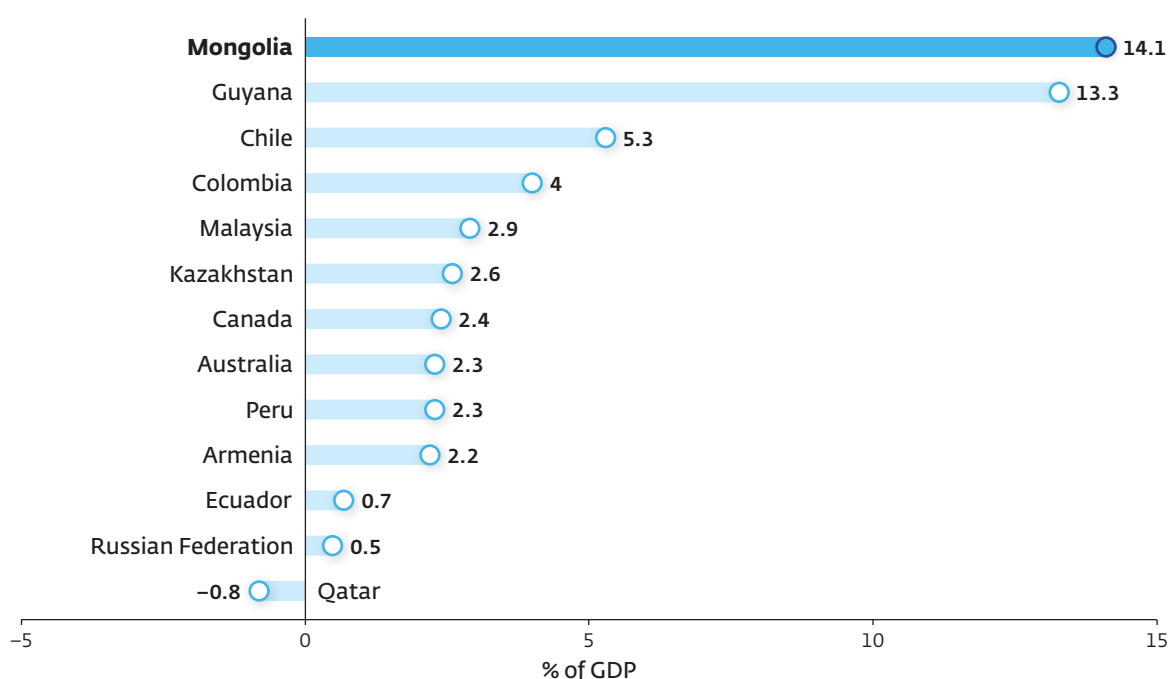
and agribusiness, particularly because the economy has created too few well-paying jobs. Between 2010 and 2020, nearly 60 percent of new jobs were in sectors paying below the median wage, rather than in higher-paying mining and construction. Recognizing these dynamics, the government has prioritized private sector-led economic and export diversification. Mongolia has attracted relatively high FDI as a share of gross domestic product (GDP) compared with many structural and aspirational peers, despite historical volatility, (figure ES.2), but this investment remains persistently concentrated in mining.

Mongolia presents diverse private investment opportunities in export-oriented sectors and sectors focused primarily on the domestic market. Its abundant natural resources support resource extraction, its climate conditions offer major opportunities

Figure ES.2

Mongolia Has Performed Well in Attracting FDI Inflows

FDI net inflow five-year average, 2019–23



Source: Calculations using data from World Development Indicators database.

Note: FDI = foreign direct investment; GDP = gross domestic product. Structural and aspirational peers are drawn from the *Mongolia Country Economic Memorandum* (World Bank 2020d) using filters that include GDP per capita, endowments, economic structure, and human capital. This approach benchmarks Mongolia against both similar economies, or structural, and more advanced but structurally comparable economies, or aspirational. Aspirational peers are Australia, Canada, Chile, Malaysia, and Qatar; all others are structural.

in renewable energy, and its geography supports livestock-based exports with significant demand regional and global demand. However, profitability often depends on cost efficiency and scale. The relatively small size of the domestic economy and its concentration in the capital city, Ulaanbaatar, may limit firms' ability to scale and invest.

Several cross-cutting constraints undermine Mongolia's diversification agenda and discourage private investment. Political instability and frequent policy changes create an unpredictable operating environment, while uncertainty around taxation, licensing, and regulatory requirements raises perceived risk and shortens investment horizons. These risks are compounded by governance and enforcement weaknesses, including uneven application of regulations and gaps in investor protection, which raise the cost of capital and favor short-term or relationship-based activities. Overlapping land tenure systems governing pasture use, administrative rights, and mining licenses add further uncertainty.

Labor market gaps also constrain growth: despite relatively strong education outcomes, the workforce lacks the technical and vocational skills demanded by the private sector, and labor force participation remains low at around 63.6 percent, with particularly weak engagement among women and youth. Finally, a bank-dominated financial system with limited competition and few alternative financing channels, such as venture capital, private equity, and longer-term corporate bonds, leaves smaller firms particularly severely underserved. Small and medium enterprises represent more than 90 percent of registered businesses but receive less than 20 percent of total bank lending.

The three sectors analyzed in this CPSD—sustainable cashmere processing, solar and wind power generation, and the exploration of ETMs—were selected based on Mongolia’s comparative advantages, global demand trends, and their potential to catalyze job creation, exports, and economic diversification (table ES.1).

Table ES.1

Selected Sectors Offer Significant Investment and Job Potential If Reforms Are Implemented

Subsector	Private investment potential if reforms are undertaken	Feasibility of implementing reforms in near term	Development impact	
			Job creation	Other development impact*
Sustainable cashmere processing	MEDIUM	HIGH	MEDIUM	HIGH
Solar and wind energy generation	HIGH	MEDIUM	MEDIUM	HIGH
Exploration of energy transition minerals	HIGH	MEDIUM	LOW	HIGH

*“Other development impact” refers to a sector’s potential to contribute to broader development objectives beyond job creation, including through export diversification, productivity growth, value addition, fiscal revenues, economic resilience, climate and environmental sustainability, inclusion, and stronger linkages with the wider economy.

Sustainable Cashmere Processing

Mongolia is well positioned to attract private investment in sustainable cashmere processing due to its large raw cashmere supply, low level of domestic processing, and strong export potential. The opportunity is driven by rising global demand for high-quality, responsibly sourced, and sustainable cashmere. Cashmere is one of the fastest-growing industries in Mongolia's agribusiness sector, and national production has increased by 60 percent over the last decade.

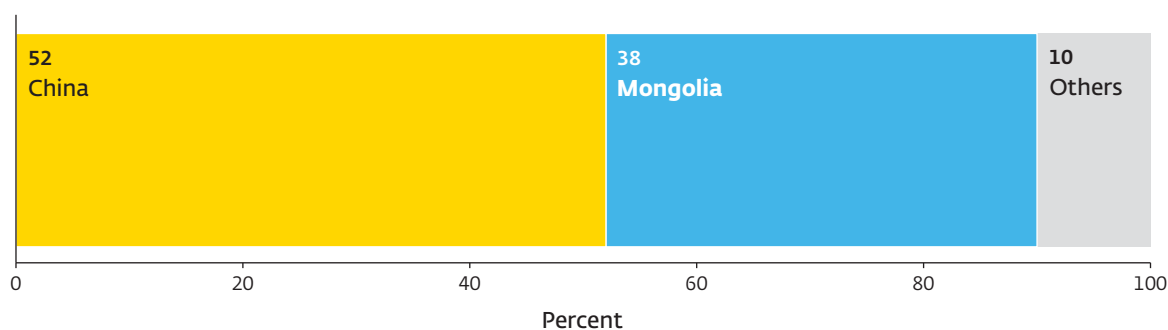
Mongolia supplies roughly 40 percent of the world's raw cashmere, second only to China (figure ES.3). The global cashmere clothing market is projected to grow significantly, creating strong demand for high-quality and responsibly sourced products. Valued at nearly US\$3 billion in 2023, the market is projected to reach approximately US\$3.5 billion by 2028.

Untapped opportunities exist to expand domestic processing, as only 20 percent of Mongolia's cashmere output is processed locally. The sector is central to the rural economy, providing income for 190,000 herder households, equivalent to about one-third of the population, while downstream processing employs roughly 7,600 workers.

Several constraints continue to discourage private investment, including declining fiber quality, weak recognition of sustainability and quality certification systems, electricity shortages, and regulatory uncertainty. Additional barriers include opaque pricing in raw fiber procurement and dehaired cashmere trading, limited access to affordable financing, overlapping standards, restricted access to animal-record data needed for traceability, and skilled labor shortages.

Figure ES.3

Mongolia Supplies a Large Share of Global Raw Cashmere



Source: MWCA (2023).

To unlock private investment, the government should shift support programs toward fiber quality, develop standardized breeding protocols, adopt pricing mechanisms based on established grading standards, adjust loan terms under the White Gold program for the wool, cashmere, and leather sectors, recognize domestic standards already met through international compliance, and strengthen traceability under existing standards.

Value addition along the cashmere value chain is critical to profitability. Washing the fiber increases its value by 10 percent, combing adds a further 13 percent, and spinning combed fiber into fabric generates a 33 percent increase. The largest increase occurs when fiber is transformed into finished garments, such as sweaters, raising value by 74 percent from the fiber stage.

The proposed reforms could help attract US\$150 million in private investment by addressing key constraints, including declining fiber quality, the absence of pricing mechanisms that reward grade, misaligned seasonal loan terms, and limited recognition of sustainability certifications. These measures would help unlock private investment opportunities in spinning and knitting, estimated at US\$115 million and US\$35 million, respectively, enabling a larger share of raw cashmere processed domestically. Increasing share of raw cashmere processed domestically from 20 percent to 70 percent by 2030 could generate up to 5,000 jobs, a nearly two-thirds increase.

Solar and Wind Energy Generation

Mongolia's untapped wind and solar energy resources offer potential generation capacity of about 700 gigawatts (GW) from solar and 400 GW from wind, equivalent to approximately 300 times current energy consumption.¹

Despite these vast resources, investment in wind and solar generation has been limited. In 2024, renewables accounted for only 10 percent of electricity generation, while coal-fired plants supplied roughly 90 percent. Mongolia imported around 25 percent of its electricity to bridge a growing supply gap, and demand is projected to increase nearly fivefold by 2050, driven mainly by industrial and mining sector growth.

Limited and outdated grid infrastructure is a major disincentive to private investment. Transmission constraints restrict renewable energy integration, particularly from resource-rich southern regions to energy demand centers. Most networks rely on aging transmission lines designed decades ago for lower power loads, making them unsuitable for integrating variable renewable energy output from remote regions. The absence of a clear long-term grid expansion plan further increases uncertainty around connection timelines and curtailment risks.

New developments are opening opportunities for wind and solar projects. Several major transmission projects are planned for completion by 2030, improving prospects for utility-scale, grid-connected projects. Rapidly rising demand and declining renewable technology costs are also improving project viability. The colocation of strong solar and wind resources with mining operations in the Gobi region presents an additional investment opportunity, as wind and solar power can provide cost-competitive and sustainable solutions for the fast-growing electricity demand of the mining sector.

However, several regulatory constraints continue to undermine investor confidence. Regulatory uncertainty, including uncertain auction schedules, protracted procurement processes, and retroactive technical requirements, has deterred investors. While the launch of Mongolia's first competitive renewable energy auction in June 2026 marked an important milestone toward operationalizing the auction mechanism introduced in 2019, further efforts are needed to institutionalize a predictable auction program and strengthen the supporting regulatory framework. In addition, the current power purchase agreement (PPA) template lacks key bankability provisions, and the single-buyer market model prevents developers from signing bilateral contracts with large commercial and industrial offtakers using the existing grid.

Targeted reforms are needed to unlock private investment. Priority actions include publishing a long-term transmission plan, establishing a rolling auction calendar, adopting new PPA templates to incorporate bankability provisions such as take-or-pay clauses, international arbitration, and transparency in contract terms, enabling third-party access to the transmission grid, and moving toward a competitive wholesale electricity market.

Implementation of these recommendations could increase electricity supply from domestic renewable sources and reduce reliance on carbon-intensive imports. These investments could avoid an estimated 5 million metric tons (MT) of carbon dioxide emissions over a modeled 27-year period, from 2028 to 2054, equivalent to an annual average of 190,000 MT of carbon dioxide.

The proposed reforms could help attract US\$230 million in medium-term investment in solar photovoltaic, wind power, and battery energy storage systems. This could generate approximately 1,700 jobs, comprising 900 direct jobs, 400 indirect jobs, and 400 induced jobs.

Exploration of Energy Transition Minerals

Mongolia is a geologically promising but underexplored source of ETMs.² The country is host to almost all major ETMs, including large copper and gold deposits, as well as geological formations favorable for rare earth elements, lithium, graphite, cobalt, and nickel. Proximity to China, the largest market for most ETMs, offers cost advantages and steady market demand, while efforts by governments and industry to diversify ETM supply chains are increasing interest in alternative upstream sources. With the right conditions, Mongolia could attract significantly more private exploration investment.

Increased mineral exploration is the foundation for unlocking the rest of the mining value chain and expanding resource extraction beyond coal. Although mining, primarily coal, already accounts for 25 percent of GDP, more than 90 percent of exports, and around 80,000 direct jobs, these benefits can be sustained and scaled only if new prospects and known deposits move from discovery into development and production. Exploration is therefore a binding constraint: without a stronger early-stage project pipeline, investment in new mines, processing, and related job creation will remain limited.

Projected long-term global demand growth for ETMs creates growing opportunities for private investment. Between 2021 and 2024, globally mined output of lithium, nickel, cobalt, and graphite increased rapidly.

Despite its resource endowment, Mongolia's exploration activity remains limited. Less than 15 percent of legally available land currently held under exploration licenses, leaving a large share of prospective territory unlicensed. Moreover, a significant portion of existing licenses are inactive.

Mongolia's ability to attract high-quality ETM explorers depends not only on geology but also on whether firms can enter, raise capital, operate, and exit predictably. Structural factors, including limited midstream processing, water constraints in the Gobi, and underdeveloped transport and energy infrastructure, also affect exploration investment.

Other significant constraints remain. Available geodata are outdated and insufficiently detailed. These gaps become more consequential under the bid-price tender system, which requires companies to bid competitively for exploration rights before sufficient geodata are available to assess risk or commercial viability. Once exploration rights are issued, firms also face delays and uncertainty in securing locally required permits. Even when rights are obtained lawfully, community opposition has led to protests and project delays, reinforcing perceptions of policy instability.

By reducing exploration risk and improving investment conditions, the proposed reforms could contribute between US\$200 million and US\$500 million in additional cumulative private exploration investment over the medium term.³

This increased activity could generate between 700 and 1,400 direct, indirect, and induced jobs through increased demand for local services, skills development, and technology transfer. Major discoveries could also help catalyze complementary investment in transport, power, and logistics infrastructure, with wider regional benefits.

Private exploration investment of around US\$500 million could plausibly support the discovery and development of one to two new mines, although this estimate is speculative and cannot be predicted with certainty given geological and commercial uncertainties. If successful, such discoveries could generate US\$1 billion–US\$2 billion in additional annual mining revenue and create 40,000–90,000 direct, indirect, and induced jobs across mining, processing, and related services. These impacts depend on successful project development and broader enabling conditions and reflect the potential effects of this specific increase in exploration activity rather than an upper ceiling on the long-term growth of the mining sector, which is likely to be substantially higher.

Summary of Recommendations

Sustainable Cashmere Processing

Table ES.2

Policy Recommendations to Remove Impediments to Private Investment in Sustainable Cashmere Processing

Constraints	Recommended actions
1. Declining fiber quality and consistency undermines Mongolia's reputation in premium global markets, reducing the potential profitability of private investment.	1A. Replace herd-size awards, such as the National Champion Herder Award, with competitive programs that recognize herders for producing high-quality cashmere.
	<i>Responsible public sector entities:</i> MOFALI
	1B. Consolidate existing breeding research initiatives into a unified national program with a focus on quality.
	<i>Responsible public sector entities:</i> MOFALI
	1C. Develop standardized breeding protocols to promote consistent genetic improvement.
	<i>Responsible public sector entities:</i> MOFALI
2. The current pricing system does not reward higher-quality fiber.	1D. Enforce the Law on Livestock and Animal Health to strengthen animal traceability and herd management, including through systematic livestock registration, migration control, and quarantine enforcement under articles 7.4.1, 7.4, 7.12, and 7.6.
	<i>Responsible public sector entities:</i> MOFALI and GAVS
	2A. Develop and adopt pricing mechanisms that reward quality based on established grading standards.
	2B. MCE should introduce premium contracts or specialty auctions for higher-quality cashmere, and allow greater scope for bilateral and contract-based transactions outside the exchange, creating formal market channels that reinforce and operationalize quality-based price differentiation.
	If MCE privatization is not feasible at this time, the following reforms should be implemented to help MCE operate as a market-oriented commodity exchange consistent with good international practice: ^a
	2C. Require that at least half of board members be independent and have relevant industry expertise.
	2D. Adopt a transparent and enforceable rulebook covering trading rules, membership and participation requirements,

(Table continues next page)

Table ES.2

Policy Recommendations to Remove Impediments to Private Investment in Sustainable Cashmere Processing (*continued*)

Constraints	Recommended actions
	disclosure and reporting obligations, conflict-of-interest provisions, and sanctions for noncompliance, supported by self-regulatory oversight and public reporting. 2E. Adopt and publish a quality-differentiated pricing methodology with full trade price and volume data, including grade-specific prices and auction outcomes, to ensure transparent price discovery. 2F. If MCE's service fee is maintained, (i) publicly disclose the legal basis for the fee and the rationale for rate setting, and (ii) explicitly earmark fee revenues for delivery of MCE's legally mandated core exchange services. <i>Responsible public sector entities:</i> MCE and MOFALI
3. Government-backed loan disbursement schedules do not reflect the seasonal nature of production and export cycles.	3. Extend the term of investment loans under the White Gold Program from the current maximum of 48 months to up to seven years, with a built-in sunset as processing capacity expands. <i>Responsible public sector entities:</i> MOFALI and MoF
4. Overlapping and duplicative sustainability standards increase compliance burdens for firms.	4. Recognize compliance with overlapping requirements in international standards as satisfying equivalent domestic standards. <i>Responsible public sector entities:</i> MOFALI
5. Limited access to government-owned GAVS-MAHIS data constrains traceability in the value chain.	5. Permit role-based, accredited access to MAHIS fields that directly support traceability and sustainability claims, including herder identification, vaccination and disease records, movement certificates, veterinary training, and processor intake data. <i>Responsible public sector entities:</i> GAVS
6. Skilled labor shortages hinder value addition higher in the value chain.	6. Lift the labor quota for the sector for up to three years to allow firms to hire needed expertise without restriction, and waive the labor tax under the Law on Migration of Workforce for foreign employees for up to three years to incentivize skills transfer. <i>Responsible public sector entities:</i> MSLP

Note: GAVS = General Authority for Veterinary Services; MAHIS = Mongolian Animal Health Information System; MCE = Mongolian Commodity Exchange; MOFALI = Ministry of Food, Agriculture and Light Industry; MSLP = Ministry of Family, Labor and Social Welfare.

a. International experience indicates that commodity exchanges operate most effectively when commercial operations are insulated from direct government influence and supported by independent governance and oversight, transparent and enforceable trading rules, robust disclosure, and market-based price-discovery mechanisms. Reforms can range from strengthened governance and operational autonomy—including greater board independence and clearer accountability arrangements—to broader ownership reforms, including privatization. The recommendations 2C through 2F identify minimum reforms to strengthen MCE's market orientation and operational autonomy.

Table ES.3

Policy Recommendations to Remove Impediments to Private Investment in Solar and Wind Energy Generation

Constraints	Recommended actions
Grid-connected utility-scale wind or solar PV power generation with NDC as offtaker	
1. Uncertainty around grid expansion plans undermines the commercial viability of projects.	1. Develop and publish a long-term transmission plan with clear timelines for expanding interconnection capacity.
	<i>Responsible public sector entities:</i> MoE, ERC, NDC, and NPTG
2. The lack of a sustained predictable auction pipeline and limited transparency reduce long-term predictability for investors.	2. Establish a 24-month rolling auction calendar.
	<i>Responsible public sector entities:</i> MoE and ERC
3. Insufficient bankability terms in the current PPA template and protracted negotiations undermine investor confidence.	3A. Develop new standardized, bankable PPA templates for utility-scale projects and publish price and curtailment rules.
	<i>Responsible public sector entities:</i> ERC and NDC
	3B. Establish and publish indicative timelines for key stages of PPA negotiations and approvals.
	<i>Responsible public sector entities:</i> ERC
C&I offtakers	
4. Lack of third-party access to NPTG's grid prevents prospective wind and solar power generators from supplying electricity directly to large C&I offtakers through the existing grid.	4A. Develop and adopt a third-party access code to allow IPPs to use NPTG's grids to deliver power directly to C&I offtakers under a single-buyer-plus model.
	<i>Responsible public sector entities:</i> MoE and ERC
	4B. Adopt and publish a transparent methodology to calculate system marginal price.
	<i>Responsible public sector entities:</i> NDC

Note: C&I = commercial and industrial; ERC = Energy Regulatory Commission; IPPs = independent power producers; MoE = Ministry of Energy; NDC = National Dispatching Center; NPTG = National Power Transmission Grid; PPA = power purchase agreements; PV = photovoltaic.

Table ES.4

Policy Recommendations to Remove Impediments to Private Investment in Exploration for ETMs

Constraints	Recommended actions
1. Limited availability and accessibility of modern geodata deter exploration.	1a. Establish a legal mandate requiring relevant agencies, including the Mineral Resources and Petroleum Authority of Mongolia (MRPAM), to transfer geological data to the National Geological Survey (NGS).
	<i>Responsible public sector entities:</i> MMHI, MRPAM, and NGS
	1b. Require exploration license holders to submit geological, geochemical, geophysical, and drilling data in standardized digital format quarterly, and establish clear confidentiality rules under which technical data become eligible for public release after a defined period.
	<i>Responsible public sector entities:</i> MMHI and MRPAM
2. The method for awarding exploration rights deters more qualified exploration firms.	2a. Introduce reconnaissance and prospecting licenses. ^a
	2b. Where exploration rights are tendered, introduce a two-stage tender methodology with clear prequalification requirements.
	<i>Responsible public sector entities:</i> MMHI and MRPAM
3. Overlapping land claims, local denial of environmental management plans, and community objections delay exploration after licenses are issued.	3a. Before tendering exploration rights, MRPAM should require <i>soum</i> -level confirmation of land availability and access conditions.
	3b. After license award and before exploration begins, require the <i>soum</i> governor to disseminate a short, standardized disclosure, based on an MRPAM template, summarizing license-related information.
	<i>Responsible public sector entities:</i> MMHI and MRPAM
4. Ambiguous criteria for classifying deposits of strategic importance, deterring early-stage investors.	4. Amend the Minerals Law to specify objective and transparent criteria for strategic deposit designation and clearly define the implications of designation.
	<i>Responsible public sector entities:</i> MMHI
5. Valuation rules for license transfers increase exit risk once a mineral discovery is made because transaction prices between unrelated parties are not treated as the primary basis for taxation.	5. The Ministry of Finance should adopt valuation principles that treat the observed transaction price as the primary basis for taxing transfers of exploration licenses between unrelated parties.
	<i>Responsible public sector entities:</i> MoF and MMHI

Note: MMHI = Ministry of Mining and Heavy Industry; MoF = Ministry of Finance; MRPAM = Mineral Resources and Petroleum Authority of Mongolia; NGS = National Geological Survey.

a. A draft Minerals Law amendment under parliamentary consideration as of mid-2026 could, if enacted and effectively implemented, create a new pathway for privately financed early-stage geological work in unlicensed areas, offering an alternative to the current tender-based system. Its final scope and practical effectiveness remain subject to the parliamentary process and subsequent implementation.

An aerial photograph of a densely populated city, likely Harbin, China, showing a mix of modern high-rise buildings and older residential blocks. In the background, there are green mountains under a cloudy sky. The text '1 Country Context and Business Environment' is overlaid on the image.

1

Country Context and Business Environment

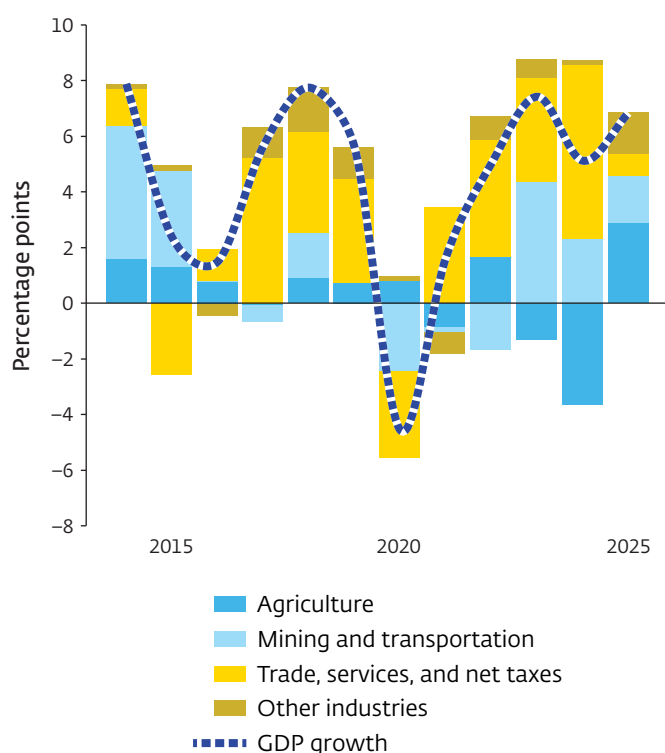
Traditionally agrarian, the Mongolian economy is now driven largely by mining and mining-related sectors.

A landlocked country of around 3.5 million,⁴ Mongolia experienced average annual growth of 3.8 percent over 2015–24. This performance is mainly attributable to expansion of the mining sector and associated services (figure 1.1). Mining-driven economic growth since 2023 helped lift the country to upper-middle-income status in 2024 (figure 1.2). While the share of agriculture in real gross domestic product (GDP) declined from 17.0 percent during 2005–14 to 13.7 percent during 2015–24, the share of extractive industries and

Figure 1.1

Mining and Mining-Related Sectors Drive Mongolia's GDP Growth

Year-over-year GDP growth and sector contributions

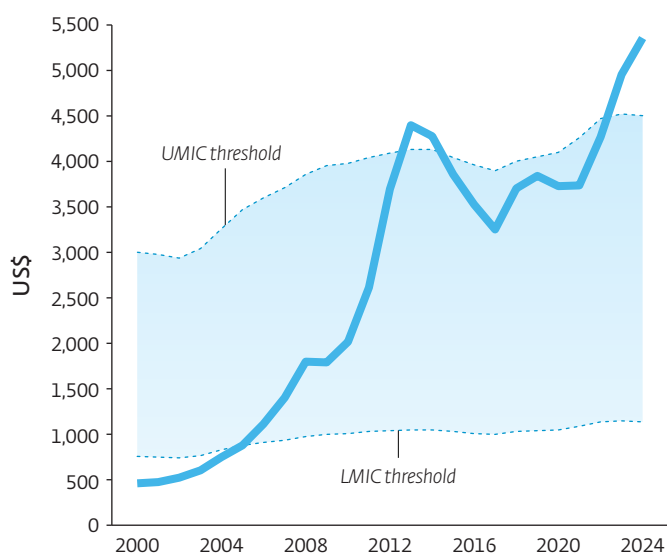


Source: World Bank (2024g); data from the National Statistics Office.
Note: GDP = gross domestic product. Large contractions in agricultural production in 2023–24 reflect the impact of the *dzud*, a natural disaster involving harsh winter weather conditions that caused widespread livestock losses.

Figure 1.2

In 2024, Mongolia Became an Upper-Middle-Income Country

Gross national income per capita



Source: World Development Indicators.
Note: LMIC = lower-middle-income country; UMIC = upper-middle-income country. Gross national income is calculated using the atlas method.

related services remained elevated at 24.8 percent. As of 2024, the extractives industry—dominated by coal and copper mining—accounted for 13 percent of real GDP.

Heavy dependence on commodity exports underpins macroeconomic volatility.

Mongolia has experienced repeated economic boom-and-bust cycles (figure 1.1 and table 1.1). Macroeconomic conditions have fluctuated with swings in global commodity prices, changes in demand, and COVID-19-related trade disruptions.⁵ Over the last decade, macroeconomic policies have exacerbated external shocks, with fiscal, monetary, and exchange rate policy decisions accounting for nearly 20 percent of output volatility.⁶ Since 2023, coal exports to China have underpinned growth, significant fiscal improvement, and a gradual rebuilding of external buffers. Proactive debt management has eased rollover risks and contributed to sovereign credit rating upgrades in 2024. Although public debt levels have fallen since 2020, the latest debt sustainability analysis highlights continued sensitivity to external shocks. With buffers only partly rebuilt, the country's capacity to respond effectively to future crises is constrained.⁷

Table 1.1

Mongolia Has Experienced Volatile Economic Conditions

	2010–19 average	2020	2021	2022	2023	2024
GDP (US\$, billions)	11.6	13.5	15.7	17.5	20.5	23.7
Real GDP growth (%)	7.9	–4.4	1.6	5.0	7.2	5.1
PPP GDP per capita (constant 2021 international US\$)	13,299	14,801	14,792	15,310	16,223	16,842
Investment (% of GDP)	30.5	25.7	29.8	32.2	31.6	36.8
Inflation (%; period average)	8.3	3.7	7.3	15.2	10.4	6.8
Fiscal balance (% of GDP)	–3.5	–9.1	–3.0	0.7	2.6	1.1
Public debt (% of GDP)	70.8	79.0	65.0	62.0	44.4	42.8
Current account balance (% of GDP)	–21.0	–5.0	–13.4	–13.2	0.6	–10.5
Gross reserves (US\$, billions)	2.6	4.5	4.4	3.6	4.4	4.9
Total reserves (in months of imports)	4.4	7.4	5.7	3.6	3.9	3.6
FDI, net inflows (% of GDP)	12.6	12.6	13.1	13.9	10.6	11.5

Sources: World Bank Macro Poverty Outlook database; World Development Indicators.

Note: FDI = foreign direct investment; GDP = gross domestic product; PPP = purchasing power parity. In 2024, Mongolia's population was 3.5 million.

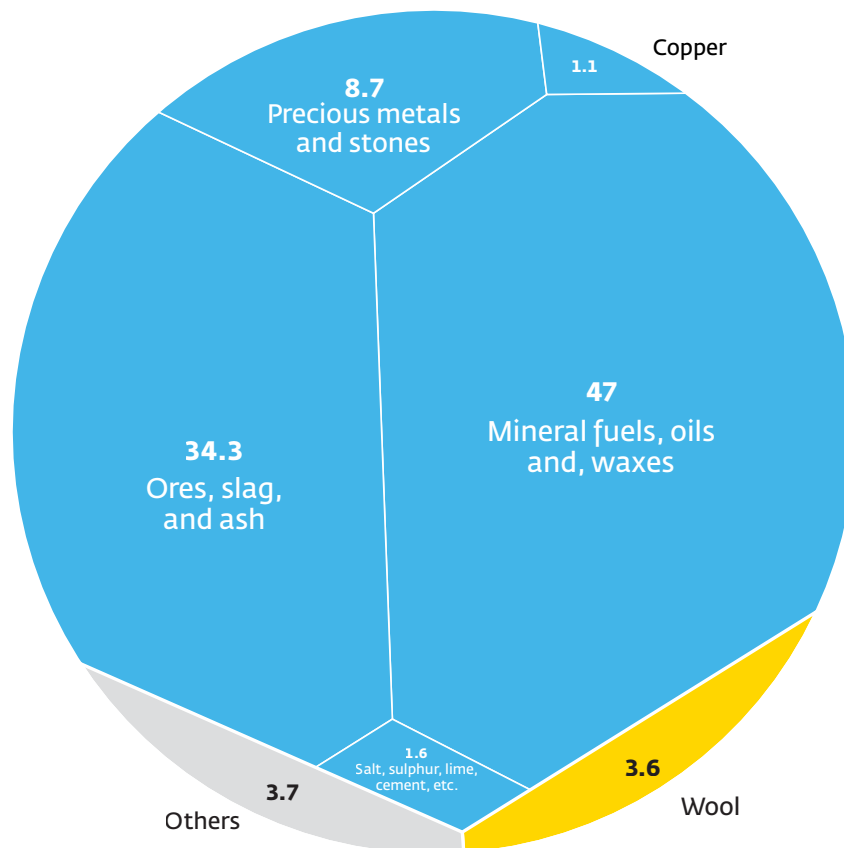
Around 90 percent of merchandise export revenue comes from mineral exports.⁸

Mongolia's mining sector is overwhelmingly concentrated in coal, which accounts for nearly 60 percent of total exports and the majority of production volume. Copper ore and concentrate, the country's second-largest export, accounts for more than 20 percent of total exports.⁹ Overall, Mongolia's export basket remains concentrated in less-sophisticated goods (figure 1.3) and directed primarily to a single market, China (figure 1.4). Reflecting limited export and product diversity, Mongolia ranked 139th out of 145 countries in the 2023 Economic Complexity Index.¹⁰ Efforts to expand and diversify the trade basket and destination markets have been constrained by weaknesses in trade facilitations, including external border agency cooperation, automation, and advance rulings; poor logistics performance, including infrastructure, timeliness, and tracking and tracing; and the inability to meet phytosanitary standards of trading partners, especially for processed agricultural goods such as meat.¹¹

Figure 1.3

Minerals Dominate Mongolia's Merchandise Exports...

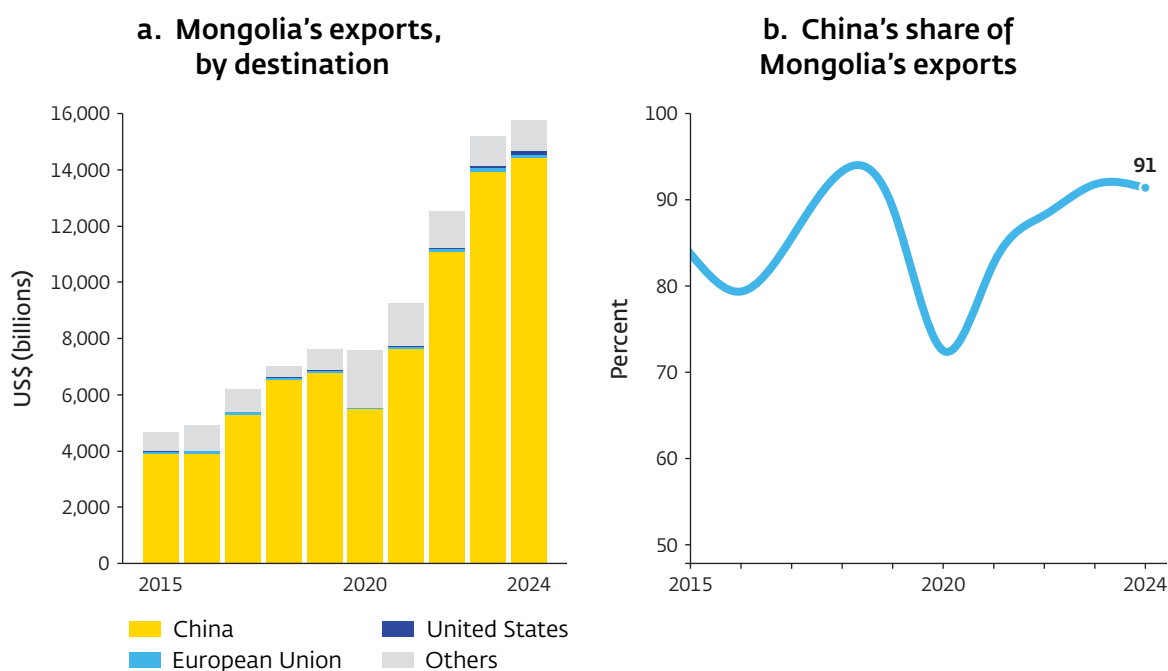
Share of five-year average annual exports, 2019–23



Source: Calculations based on data from the Atlas of Economic Complexity.

Figure 1.4

...Which Are Shipped Mostly to China



Source: National Statistics Office of Mongolia.

Foreign direct investment (FDI) has been heavily concentrated in the mining sector.

Mongolia has generally attracted high FDI over the years despite historical volatility (table 1.1).¹² FDI as a share of GDP has exceeded that of many structural and aspirational peers (figure 1.5).¹³ However, inflows have been concentrated in mining (figure 1.6), which has averaged more than 70 percent of total FDI.¹⁴ Large-scale projects, such as the Oyu Tolgoi copper and gold mine, have driven much of this investment. The government is seeking to attract FDI into other sectors, including renewable energy and agribusiness.

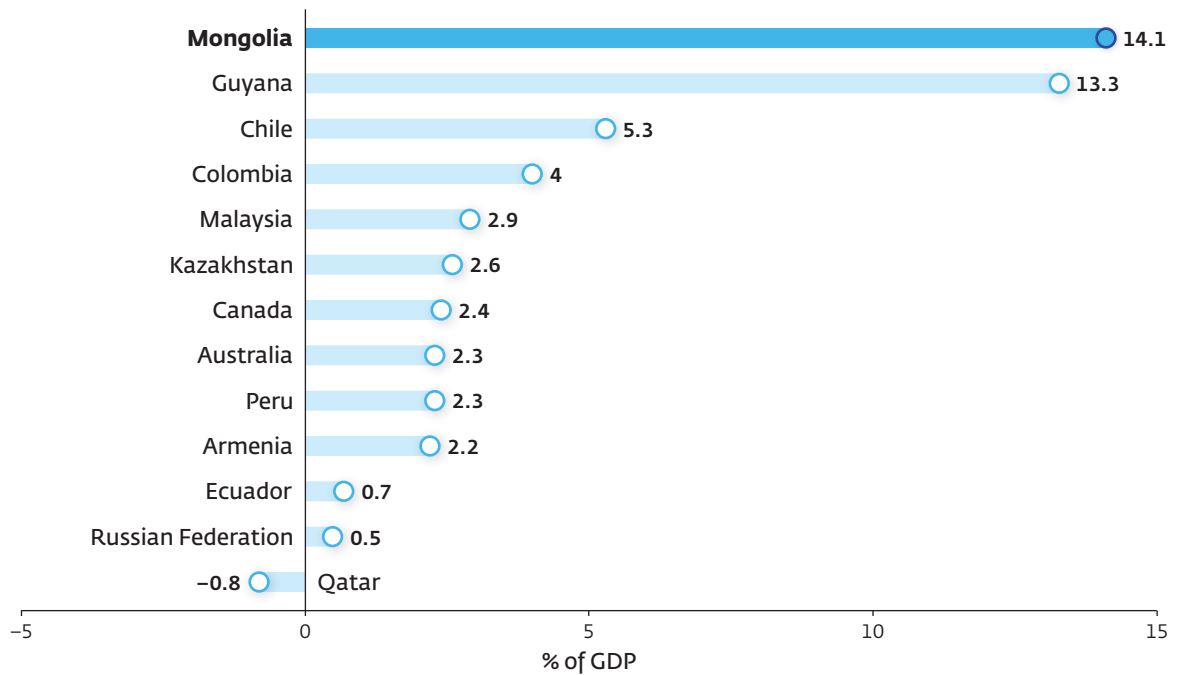
Mining dependency poses challenges for sustainable investment, productivity growth, and job creation. Economic growth has been driven mostly by capital accumulation and intensive use of natural capital rather than sustained productivity growth.¹⁵ Despite recent increases, labor productivity, measured by value added per worker, remains low outside of agriculture and relative to structural peers.¹⁶

Mongolia has struggled to create well-paying jobs. While capital has gone largely into mining, labor has moved toward lower-productivity, nontradable services. Most new jobs have emerged in lower-paying industries, particularly in small businesses and commerce, mainly in the capital city, Ulaanbaatar. Between 2010 and 2020, nearly 60 percent of new

Figure 1.5

Mongolia Has Performed Well in Attracting FDI Inflows

FDI net inflow five-year average, 2019–23

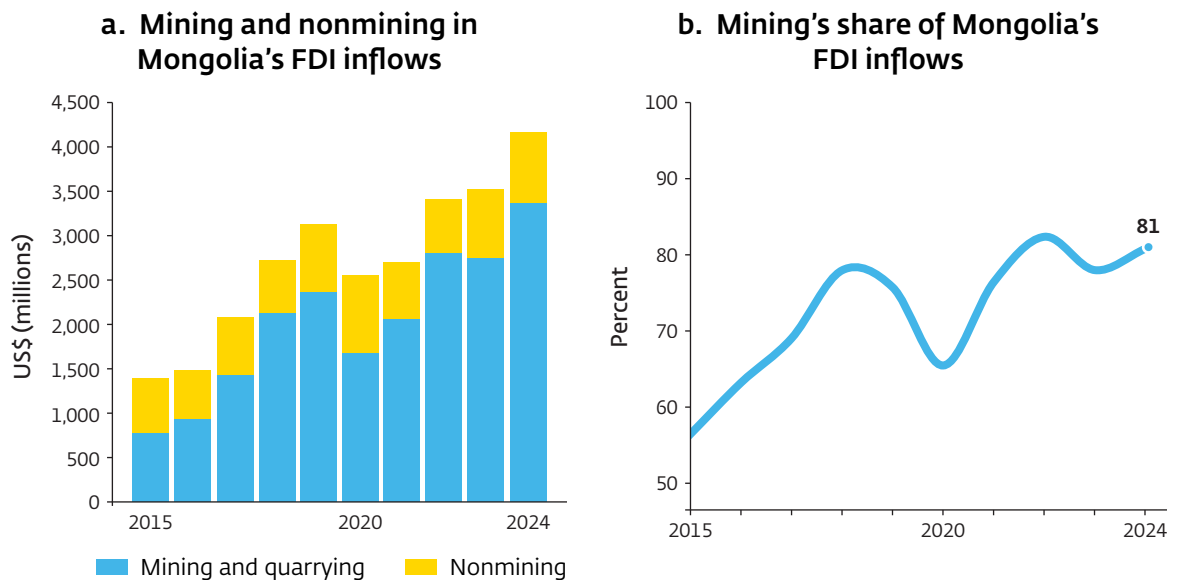


Source: Calculations using data from World Development Indicators database.

Note: FDI = foreign direct investment; GDP = gross domestic product.

Figure 1.6

FDI Inflows Remain Concentrated in Mining



Source: National Statistics Office of Mongolia.

jobs were in sectors paying below the median wage rather than in higher-paying mining and construction work.¹⁷

Recognizing these dynamics, the government has sought to prioritize private sector-led economic and export diversification. Its long- and medium-term strategies,¹⁸ as well as the government's 2024–28 action plan, have made economic and export diversification core policy objectives and outlined efforts to enhance the business environment, attract private investment, and improve infrastructure. The country is actively seeking to reform and promote higher-value production in sectors such as agribusiness and renewable energy, leveraging its strong livestock base and abundant wind and solar resources. These efforts, along with strategic infrastructure investment, may help create new opportunities for private investment.¹⁹

However, Mongolia faces several constraints that undermine its diversification agenda and discourage private investment. Political and regulatory instability, governance weaknesses, and land tenure uncertainty create an unpredictable operating environment and raise perceived risks for investors. At the same time, an underdeveloped and highly concentrated financial system, with limited access to credit and shallow capital markets, constrains firms' capacity to invest and scale. These challenges are compounded by persistent skills gaps that limit firm's ability to expand into higher-value activities. The sector analysis in this CPSD shows that these economy-wide constraints manifest consistently across the priority sectors, where they discourage private investment, slow firm expansion, and limit competitiveness.

The financial sector is dominated by commercial banks, which account for roughly 90 percent of domestic financial intermediation.²⁰ The top three commercial banks hold around 80 percent of total banking assets,²¹ reflecting a highly concentrated structure with limited competition and no foreign bank presence.²² At the same time, domestic credit to the private sector averaged 42.8 percent of GDP during 2020–24, roughly half of the East Asia and Pacific (EAP) average (table 1.2). High interest rates and limited access to credit pose significant barriers for businesses. Small and medium enterprises, which account for over 90 percent of registered businesses, receive less than 20 percent of total bank credit.²³ Limited access to alternative financing sources such as venture capital, private equity, and corporate bonds, further constrains investment.

Mongolia's capital market has expanded recently but remains at an early stage of development. The Mongolian Stock Exchange's market capitalization doubled to about US\$3 billion in 2023 after the listing of the five systemically important banks²⁴ and further expanded to US\$3.8 billion by July 2025. Despite this growth, stock market capitalization stood at 16.8 percent of GDP in 2024, well below the regional average. The 173 listed companies as of 2024 represent only a small share of the corporate sector, while daily

Table 1.2

The Financial System Remains Underdeveloped

	Most recent	Mongolia Five-year average, 2020–24	EAP comparator median	UMICs group median	EMDEs median
Domestic credit to the private sector (% of GDP)	41.4	42.8	89.6	39.6	33.9
Bank penetration (% of GDP)	41.4	42.8	76.2	38.9	31.8
Capital adequacy ratio (% of RWA)	n.a.	n.a.	20.2	18.9	18.9
NPLs (% of loans)	n.a.	n.a.	2.8	2.9	3.2
Provisioning rate for NPLs (%)	n.a.	n.a.	57.7	72.7	65.4
Loans in foreign currency (% of loans)	n.a.	n.a.	14.2	22.9	20.8
Government debt (% of assets)	n.a.	n.a.	11.6	11.8	11.9
Share of state-controlled banks (% of assets)	9.0	n.a.	n.a.	n.a.	n.a.
Share of foreign-owned banks (% of assets)	0.0	n.a.	n.a.	n.a.	n.a.

Source: Calculations based on data from World Bank World Development Indicators; International Monetary Fund International Financial Statistics; World Bank and Organisation for Economic Co-operation and Development GDP estimates; Bank for International Settlements domestic debt securities; and Fitch BMI.

Note: EAP = East Asia and Pacific; EMDEs = emerging markets and developing economies; GDP = gross domestic product; n.a. = not available; NPLs = nonperforming loans; RWA = risk-weighted assets; UMICs = upper-middle-income countries. Mongolia does not report supervisory-based financial soundness indicators for external publication. See International Monetary Fund, *Mongolia: 2023 Article IV Consultation—Staff Report*, Informational Annex: Statistical Issues, “Financial Sector Surveillance,” December 2023. Most recent data otherwise available.

trading remains thin, with turnover velocity at just 1.5 percent, reflecting the scarcity of active investors and funds (table 1.3). The government bond market was dormant until 2025,²⁵ when regular treasury issuance resumed and attracted institutional interest. Corporate bond issuance has grown rapidly, accounting for 60 percent of turnover in 2024,²⁶ but remains dominated by short-term, illiquid instruments. Institutional investors, such as pension funds and insurers, are still nascent, and strengthening financial literacy and household savings is widely recognized as a priority.

Mongolia’s financial system has been buttressed by sizable official financing from multilateral institutions and bilateral partners. These flows—often amounting to several percent of GDP during periods of stress or adjustment—have provided critical support and facilitated the country’s sovereign bond and Eurobond issuance.²⁷

Table 1.3

The Capital Market Is Still at an Early Stage of Development

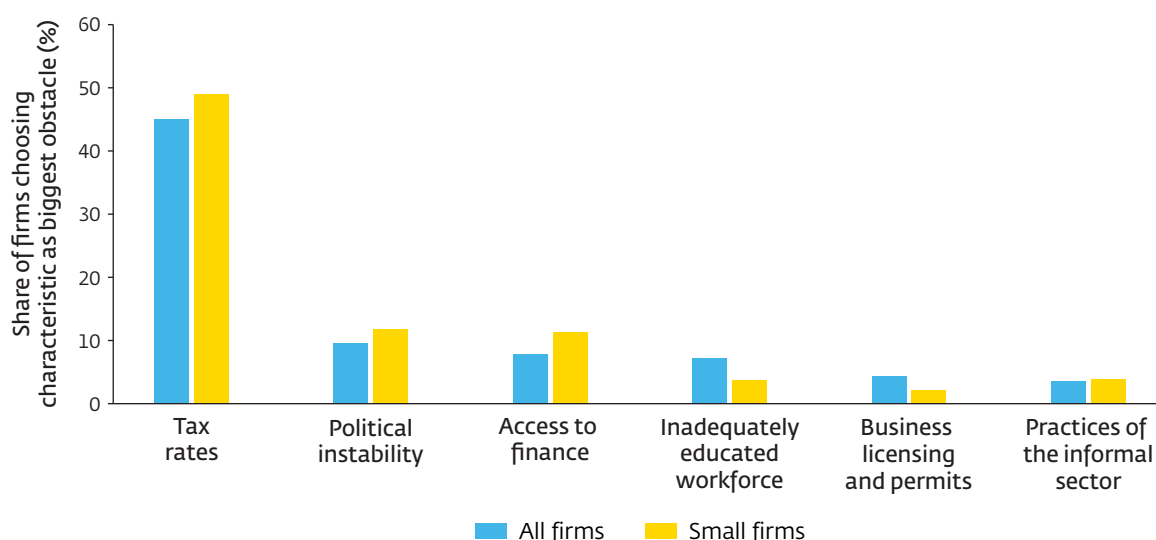
	Most recent	Mongolia Five-year average	EAP regional comparators median	UMICs group comparators median
Corporate bond market				
Outstanding private sector corporate bonds (% of GDP)	2.3	4.7	34.4	6
No. of listed corporate bonds	2	1.3	166.5	17
Public equity market				
Stock market capitalization (% of GDP)	16.8	—	105.9	33.9
No. of Listed firms	173	—	970	115
Share turnover velocity (%)	1.5	—	58.1	5.7

Source: Calculations based on data from securities data company Platinum Database by LSEG; World Federation of Exchanges; Mongolian Stock Exchange; International Monetary Fund, *World Investment Report*; national authorities. Note: EAP = East Asia and Pacific; GDP = gross domestic product; UMICs = upper-middle-income countries. Most recent data are for 2024 unless otherwise indicated. EAP comparators comprise nine economies: Australia; Hong Kong SAR, China; Japan, Korea, Rep.; Malaysia; New Zealand; the Philippines; Thailand; and Viet Nam. UMIC comparators comprise 14 countries: Armenia; Azerbaijan; Belarus; Brazil; Colombia; Iran, Islamic Rep.; Jamaica; Kazakhstan; Malaysia; Mauritius; Mexico; Peru; Thailand; and Türkiye.

Political instability and frequent policy changes remain major barriers to private investment. Firms identified political instability as the primary challenge in the 2019 Enterprise Survey, and the latest 2025 Enterprise Survey confirms that it continues to rank among the most significant constraints (figure 1.7). Frequent and unpredictable changes in investment policies, taxation, and regulatory requirements disrupt business operations and discourage investment, particularly FDI.²⁸ Notably, taxation emerged as the most prominent constraint in 2025, reflecting not only the level of the tax burden but, more importantly, the complexity, unpredictability, and uneven enforcement of the system. Ongoing policy changes and reform discussions create uncertainty around future tax obligations, complicating business planning and shortening investment horizons. The Mongolian National Chamber of Commerce and Industry's annual business environment surveys, including the 2023 report, similarly identify policy instability as a major constraint. These challenges are compounded by inconsistent regulatory enforcement and frequent turnover of government officials, which undermine policy continuity and weaken institutional capacity.

Figure 1.7

Political Instability Remains a Top Business Obstacle for Firms in Mongolia



Source: World Bank Group Enterprise Surveys 2025.

Note: Tax rates were the second-most prominent obstacle after political instability in 2019 and emerged as the most prominent obstacle in 2025.

Governance weaknesses translate into a credibility gap in investor protection.

Although Mongolia's legal framework provides nominal safeguards for investors, international benchmarks consistently point to concerns over administrative discretion, uneven application of rules, and limited effectiveness of remedies once disputes arise. Mongolia trails peer countries such as Armenia, Kazakhstan, and Malaysia on regulatory quality and governance effectiveness, as measured by the Worldwide Governance Indicators (figure 1.8). Corruption is a significant concern, especially in public procurement, customs administration, and mining licensing, with Mongolia ranking 114th out of 180 countries on the Corruption Perceptions Index.²⁹ These are also reflected in the World Justice Project Rule of Law Index 2025, which ranked Mongolia 78th out of 143 countries on regulatory enforcement. The result is a higher cost of capital and an investment pattern skewed toward short-term, relationship-based, or controlling stakes, while discouraging minority equity participation and early-stage models, such as junior exploration, that are critical for private sector-led diversification and growth.

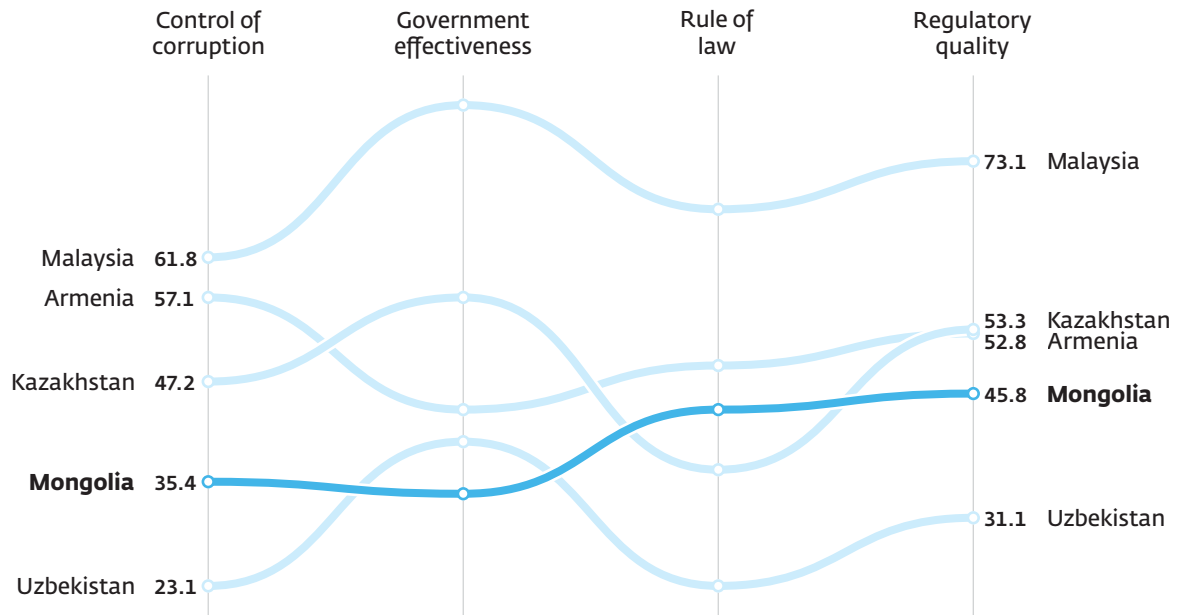
Land tenure represents a further expression of governance and enforcement weaknesses.

Under Mongolia's Constitution and Land Law, land is state owned; citizens and entities are granted use or possession rights through administrative contracts, which may be extended for up to 60 years.³⁰ While these arrangements provide legal certainty

Figure 1.8

Mongolia Lags Most Peers on Regulatory Quality and Government Effectiveness

Worldwide Governance Indicators, Mongolia and comparators, 2023 (percentile rank)



Source: World Bank Worldwide Governance Indicators.

Note: The Worldwide Governance Indicators track perceptions of governance quality across countries and over time. Regulatory quality captures the government's ability to design and enforce sound policies that support private sector development. Government effectiveness reflects the quality of public services and civil service, the degree of independence from political pressure, the quality of policy formulation and implementation, and the credibility of government commitments.

for specific uses, they fall short of transferable ownership and limit the establishment of clear, exclusive surface rights. Pastoral land access is governed largely by customary and seasonal grazing patterns rather than registered, enforceable tenure, while mining licenses grant legally enforceable subsoil rights and conditional surface access. The two systems frequently overlap spatially but operate under different legal logics, creating persistent friction even when all parties comply with the law. Although the Minerals Law requires license holders to cooperate with local administrations and conclude agreements covering land access, compensation, and environmental and community obligations,³¹ these distinct dimensions are often bundled together in practice rather than clearly differentiated across surface rights agreements and environmental and social instruments. Implementation is uneven and difficult to operationalize at scale where multiple licenses overlap extensive grazing areas; outcomes depend heavily on local administrative capacity and bargaining dynamics.³² For herders, the absence of exclusive pasture rights limits leverage in formal negotiations. For investors, uncertainty over access conditions, environmental liabilities,

and dispute resolution raises entry barriers, heightens social and environmental risk, and increases transaction, financing, and compliance costs. The result is structural ambiguity in land governance that constrains private investment across land-intensive sectors.

The labor market combines strong human capital with persistent structural challenges (table 1.4). Unemployment is moderate, at 5.2 percent. The working-age population, ages 15–64, represented 62.7 percent of the total in 2024, below the EAP

Table 1.4

Mongolia's Labor Force Participation Lags Comparators

	Mongolia	EAP	UMICs	Regional and structural	Aspirational
Labor force supply					
Population ages 15–64 (% of total population)	62.7	68.3	68.5	66.1	72.4
Labor force participation rate (% of population ages 15–64)	63.6	73.4	69.95	71	78.3
Learning-adjusted years of school	9.2	8.3	7.8	8.7	9.9
School enrollment tertiary (% gross)	69	63	65	55.9	70
Labor market conditions					
Unemployment, total (% of total labor force)	5.2	3.8	5.4	6.9	4.3
Share of firms identifying an inadequately educated workforce as a major or very severe constraint (%)	37.8	11.2	21.9	24.7	23.4
Employment by sector (% of total)					
Industry	23.1	28.5	27.8	21.6	25.7
Agriculture	27	21.7	19.6	17.9	3.6
Services	49.9	49.9	52.6	60.4	70.7

Sources: Approach follows the methodology used in the World Bank Group Growth and Jobs Reports and draws on data from World Development Indicators; International Labour Organization modeled figures and sectoral employment for 2025; World Bank Human Capital Index; and United Nations Educational, Scientific and Cultural Organization, with the latest available data for all countries and 2024 for Mongolia; and World Bank Enterprise Surveys, with the latest available data for all countries and 2025 for Mongolia.

Note: EAP = East Asia and Pacific; UMICs = upper-middle-income countries. Learning-adjusted years of school adjusts years of schooling for how much students learn in each year of school, based on standardized test results.

average of 68.3 percent and the aspirational peer average of 72.4 percent. The labor force participation rate (LFPR), at 63.6 percent, is low, particularly among women and youth, reflecting a high degree of informality. Based on 2024 labor data, an LFPR gender gap of 16 percentage points suggests persistent barriers to women's economic participation, including limited childcare options, cultural expectations around household roles, and the concentration of women in informal or part-time activities. While education outcomes are strong—9.2 learning-adjusted years of schooling and 69 percent tertiary enrollment, both above regional averages—these gains have not translated into higher labor productivity, as job opportunities remain concentrated in agriculture, trade, and public services.

The shortage of skilled labor and limited workforce participation discourages private investment, undermining Mongolia's ability to diversify its economy. While the country has strong human capital and a young, growing workforce, with 52 percent of the population under age 30,³³ a gap persists between labor demand and skills availability. About 38 percent of firms cite an inadequately educated workforce as a major or very severe constraint, far above the regional average.³⁴ Technical and vocational education is underfunded, and employers frequently cite shortages of skilled workers in information technology, engineering, and business services. According to the 2022 Barometer Survey, larger firms and firms that are innovative, exporting, or expanding are more likely to view the lack of skills as a constraint to their operations.³⁵ Surveys of Mongolia's technology industry rate skills shortages as one of the top constraints,³⁶ and the Ministry of Education and Science estimates that 39,000 engineers and technicians will be needed for major projects over the next five years, far exceeding current supply.³⁷

Infrastructure deficiencies and high trade costs reflect Mongolia's landlocked geography and vast, sparsely populated territory, which create significant logistical challenges. The World Bank Group's 2023 Logistics Performance Index ranked Mongolia 108th out of 139 countries.³⁸ Inefficiencies at border crossings, outdated road networks, and limited rail connectivity add to these costs. Infrastructure investments, including a 415-kilometer railway connecting the Tavan Tolgoi coal mine to China, aim to improve logistics efficiency, but significant gaps remain in warehousing, road transport, and multimodal trade connectivity.

2

Sector Selection



The selection of sectors for this Country Private Sector Diagnostic (CPSD) followed a rigorous process that combined a comprehensive review of available literature and policy documents, multistage data analysis (figure 2.1), internal consultations with World Bank Group experts, and in-country consultations.

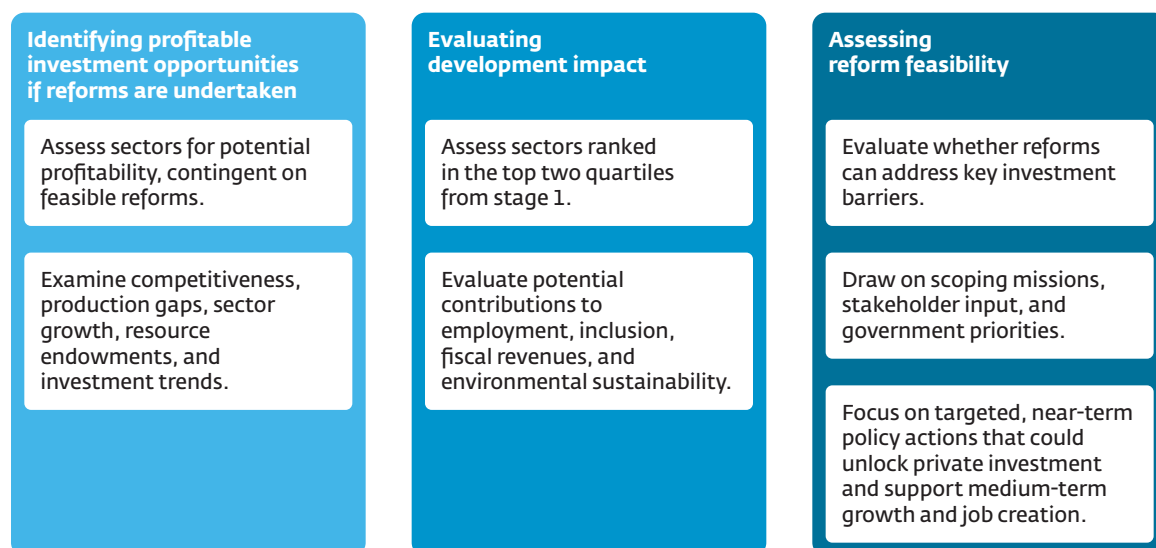
The process applied the following selection criteria:

- 1 Potential to attract significant private capital if reforms are undertaken to alleviate constraints.
- 2 Potential development impact, particularly through the creation of more and better jobs.
- 3 Feasibility of removing key constraints through government action in the near term.

Sector selection is not exhaustive and does not imply that other sectors lack investment or growth potential. Private investors may identify profitable opportunities in other areas. Inclusion of a sector does not imply that it is a priority for current or future support from the World Bank or International Finance Corporation. The focus is on sectors where public policy actions can feasibly alleviate identified constraints to private investment and generate commercially viable opportunities for domestic and foreign private investors. Recommended actions are not necessarily sufficient on their own. Their impact on investment and job creation will likely require complementary measures and capacity building, in some cases extending beyond the medium term. The CPSD complements other

Figure 2.1

Multistage Data Analysis in Sector Selection



core diagnostics, particularly the Growth and Jobs Report, which covers, among other issues, cross-cutting constraints to private sector development.

Mongolia offers diverse opportunities for private investment in both export-oriented and domestic-market sectors. The country's abundant natural resources make resource extraction dominant. Its climate creates major opportunities in renewable energy, while its geography supports livestock-based exports with demand in regional and global markets. However, profitability depends on cost efficiency, which often requires scale. Mongolia's relatively small domestic economy—serving a population of about 3.5 million—and the concentration of economic activity within the capital city may limit firms' ability scale and invest.

Three sectors were selected for this CPSPD: (1) sustainable cashmere processing;³⁹ (2) renewable energy generation, including wind and solar; and (3) mineral exploration for energy transition minerals (ETMs). With concrete and targeted near-term policy actions, these sectors offer strong potential to create viable and profitable opportunities for local and foreign investors, create more and better jobs, and support more diversified and environmentally sustainable growth.

Table 2.1

Selected Sectors Offer Significant Investment and Job Potential If Reforms Are Implemented

Subsector	Private investment potential if reforms are undertaken	Feasibility of implementing reforms in near term	Development impact	
			Job creation	Other development impact*
Sustainable cashmere processing	MEDIUM	HIGH	MEDIUM	HIGH
Solar and wind energy generation	HIGH	MEDIUM	MEDIUM	HIGH
Exploration of energy transition minerals	HIGH	MEDIUM	LOW	HIGH

*"Other development impact" refers to a sector's potential to contribute to broader development objectives beyond job creation, including through export diversification, productivity growth, value addition, fiscal revenues, economic resilience, climate and environmental sustainability, inclusion, and stronger linkages with the wider economy.

Sustainable cashmere processing was selected due to its potential to attract private investment once constraints are addressed, its strong development and job creation impact, and the feasibility of near-term government reforms. Mongolia supplies around 40 percent of global raw cashmere,⁴⁰ second only to China, and cashmere remains the country's largest nonmining merchandise export, generating around US\$330 million in 2024.⁴¹ Untapped opportunities exist in expanding domestic processing, since only 20 percent of output is processed locally⁴² and much of the raw fiber still leaves the country minimally processed or unprocessed. The global cashmere clothing market, valued at nearly US\$3 billion in 2023, is projected to grow to approximately US\$3.5 billion by 2028,⁴³ driven by consumer preferences for ethical, eco-friendly materials in Europe and North America, which account for around 40 percent and 30 percent share of the global market, respectively. This aligns with Mongolia's potential to brand its cashmere as responsibly produced. The sector has begun implementing sustainability standards, and the government has introduced regulations restricting exports of washed, nondehaired, cashmere in favor of domestic processing.⁴⁴ Cashmere is central to Mongolia's rural economy, providing income for 190,000 herder households—around one-third of the population—while downstream processing employs roughly 7,600 workers, with women accounting for a large share of employment in cashmere processing and garment manufacturing.⁴⁵

Major impediments restrict private investment in the sector by rising risks and costs. Declining fiber quality, caused by herd overexpansion and weak breeding practices, reduces the share of fine-diameter cashmere that meets premium market specifications. This limits access to higher-value segments, compresses price premiums, and weakens investor confidence in the sector's competitiveness. Financing is scarce and poorly timed, with high collateral requirements and credit cycles misaligned with cashmere's seasonality. Limited alignment and recognition of sustainability certification systems restrict access to premium markets, creating dual compliance costs and discouraging investment in value-added segments that require approval from eco-conscious buyers. Regulatory uncertainty from shifting implementation deadlines and shortages of skilled labor in dyeing, design, and machinery operation further constrain investment. Infrastructure gaps, unreliable power, and high logistics costs add to production risk.

Renewable energy, particularly wind and solar, was selected for this CPSD because of its strong private investment potential, provided that targeted reforms are implemented. Mongolia has a large technical renewable resource base, with estimated potential of up to 700 gigawatts (GW) of solar and 400 GW of wind—equivalent to roughly 300 times current energy consumption—while approximately 90 percent of grid electricity generation remained coal based as of 2024.⁴⁶ Rising electricity demand, driven by mining, industrialization, and urbanization, is projected to grow fivefold between 2022 and 2050, with the generation gap increasingly met by carbon-intensive imports. Wind

and solar combined with battery storage are increasingly cost competitive and can provide reliable, lower-carbon electricity. However, progress is constrained by weak transmission infrastructure, the absence of a long-term grid expansion plan, regulatory uncertainty, nonbankable power purchase agreements (PPAs), and a single-buyer market model that limits supply options to self-supply and sales to a single buyer. Investment potential exists in utility-scale, grid-connected projects with the National Dispatching Center as off-taker and in direct power supply to commercial and industrial users.

Investors and developers in wind and solar generation are deterred by uncertainty around auction timeline and volumes, protracted and ad hoc PPA negotiations, nonbankable PPA terms, permitting delays, and inadequate investor protection.

Reforms will require strengthening and expanding the electricity grid to integrate greater variable renewable energy. The development impact of new wind and solar investments would be significant, reducing the country's greenhouse gas emissions intensity and dependence on coal while freeing fiscal resources spent on coal subsidies. Wind and solar also offer strong job creation potential. Each megawatt of solar and wind capacity generates direct employment during construction and sustained jobs in operations, maintenance, and related services. The sector also stimulates domestic manufacturing and services, strengthening local value chains and small and medium enterprise participation.

Mineral exploration for ETMs was selected because of Mongolia's strong but unexplored geological prospectivity and policy constraints that have discouraged private investment. Increased exploration is the foundation for resource extraction beyond coal. Known occurrences of copper, lithium, graphite, nickel, and rare earth elements, combined with accelerating global demand for ETMs, present an opportunity for additional private investment. Despite underexplored deposits, such as those with unknown commercial viability, and potential new discoveries, exploration remains limited by a high-risk and nontransparent tendering system unsuitable for greenfield exploration, unpredictable licensing and environmental approvals, insufficient publicly available geological data, and discretionary fiscal practices. Because exploration is a bottleneck in the mining value chain, targeted reforms could attract substantial private investment over the medium to long term. While exploration itself generates relatively modest employment, without a steady pipeline of exploration, the larger employment and value chain impacts from mine development, production, processing, and related services would not materialize.



3

Sustainable Cashmere Processing

AT A GLANCE

- Mongolia could attract private investment in sustainable cashmere processing, supported by its large raw cashmere supply, export potential, and rising demand for high-quality, responsibly sourced cashmere.
- Investment is constrained by declining fiber quality, weak certification recognition, electricity shortages, regulatory uncertainty, opaque pricing, limited affordable financing, overlapping standards, traceability gaps, and skills shortages.
- Priority reforms include shifting support toward fiber quality, standardizing breeding protocols, adopting grading-based pricing, adjusting White Gold loan terms, recognizing domestic standards met through international compliance, and strengthening traceability.
- If feasible reforms are implemented, the sector could attract US\$150 million in investment and generate up to 5,000 jobs by 2030.

Sector Context and Private Investment Potential

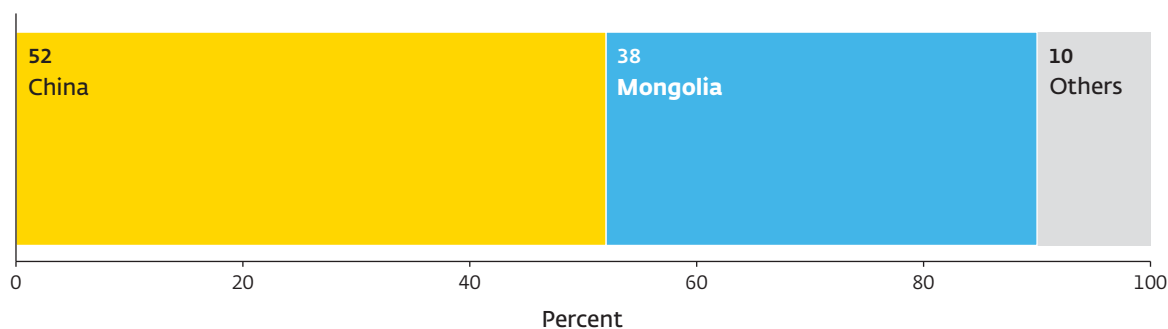
Adding value to sustainable cashmere production could create a profitable private investment opportunity. Cashmere is one of the fastest-growing industries in Mongolia's agribusiness sector. Mongolia supplies roughly 40 percent of the world's raw cashmere, second only to China (figure 3.1).⁴⁷ However, as of 2024, only about one-fifth of its cashmere production was processed domestically.⁴⁸ This suggests potential to attract private investment into higher-value-added cashmere production through processing facilities, spinning mills, and finished-product manufacturing.

The global cashmere clothing market is projected to grow significantly, creating demand for high-quality, responsibly sourced products. Valued at nearly US\$3 billion in 2023, the market is projected to reach approximately US\$3.5 billion by 2028. Europe led the market in 2023, with a 37.3 percent share, followed by North America, at 27.6 percent.⁴⁹ Beyond apparel, cashmere is gaining traction in luxury home furnishings. Its lightweight texture and durability make it ideal for pillows, cushions, and upholstery, including chairs, sofas, ottomans, and headboards. Growth in this segment is expected to outpace other luxury raw materials (figure 3.2).⁵⁰

Consumers, particularly in Europe and North America, increasingly prioritize ethically sourced and environmentally responsible cashmere, and Mongolia has potential to capture part of this demand. Mongolia has been working to burnish its reputation for high-quality, responsibly produced cashmere. A key step was the adoption of the National Standard for Sustainable Textile Production (MNS 6926:2021), aligned with Vision 2050 and the 2030 Agenda for Sustainable Development. While the standard has raised awareness, stakeholders widely recognize that certification is key to unlocking market potential.⁵¹ However, several overlapping certification schemes remain. Recent

Figure 3.1

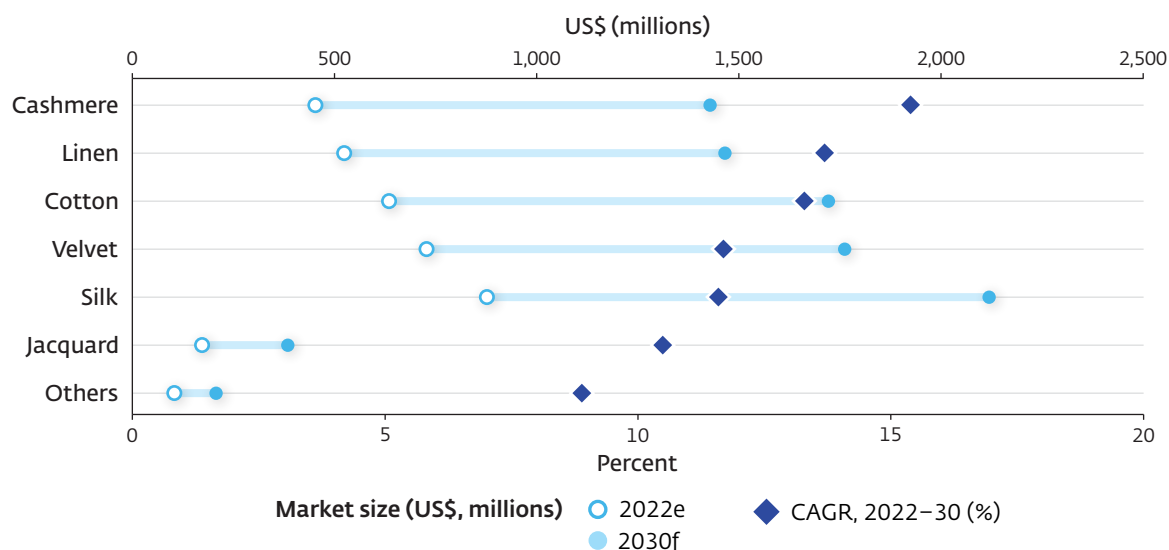
Mongolia Supplies a Large Share of Global Raw Cashmere



Source: MWCA (2023).

Figure 3.2

Demand for Cashmere Is Expected to Grow Faster Than Demand for Other Luxury Fibers



Source: Grand View Research.

Note: CAGR = compound annual growth rate; e = estimate; forecast.

consultations with premium international buyers also indicate that access to higher-value market segments depends not only on sustainability certification but also on the ability to consistently meet product-specific quality requirements, including fiber diameter, length, cleanliness, and natural color.

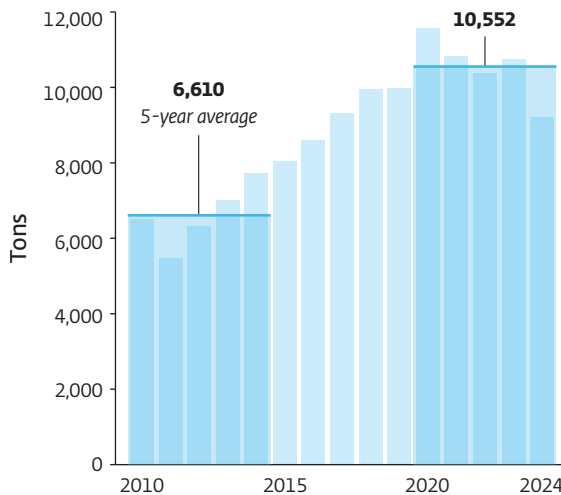
With the right policies and standards, and stronger emphasis on consistent fiber quality, end-to-end traceability, and scalable certified supply chains, Mongolia could capture a larger share of this growing global demand for sustainable cashmere.

Importantly, increased private investment and employment growth in the sector can be achieved without expanding raw cashmere supply or increasing the number of goats. This can be done by focusing on quality upgrading and value addition rather than volume expansion—thereby avoiding additional overgrazing risks and aligning sector growth with sustainability objectives (see appendix A).

Mongolia's annual cashmere production increased 60 percent over the last decade (figure 3.3). This growth occurred despite the impact of the 2024 *dzud*, a severe winter weather event that resulted in the loss of over 2 million goats (figure 3.4).⁵² This, in turn, led to a 16.5 percent drop in cashmere production and an estimated US\$70.2 million loss for raw cashmere producers.⁵³

Figure 3.3

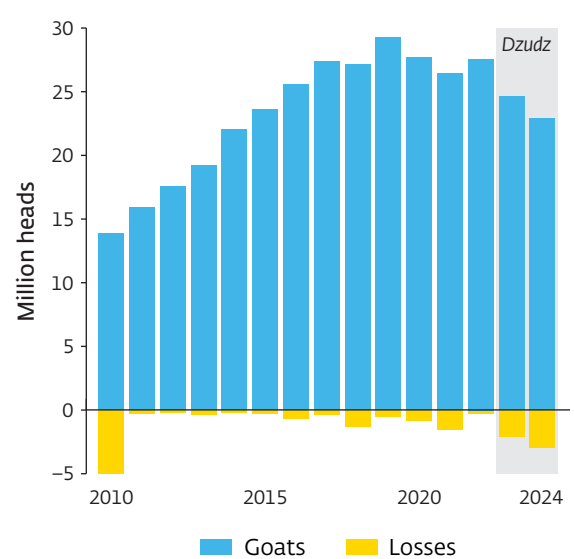
Mongolia's Raw Cashmere Output Has Risen Sharply Over the Past Decade



Source: National Statistics Office of Mongolia.

Figure 3.4

Goat Herds Remain Large Despite Heavy Losses from the 2024 *Dzud*



Source: National Statistics Office of Mongolia.

Only a small share of Mongolia's primary cashmere production is aligned with

sustainability criteria. Based on available evidence from certification schemes and donor programs, only 11.4 percent of raw cashmere production was certified in 2024, including 10.8 percent under the Sustainable Fibre Alliance (SFA), 0.4 percent under AVSF-supported schemes, and 0.2 percent under Responsible Nomads.⁵⁴

Cashmere exports are concentrated in washed cashmere, which accounts for over 90 percent of exports and involves only primary processing (figure 3.5).

Mongolia is by far the world's largest exporter of washed, or scoured, cashmere, accounting for 94 percent of global exports. In 2024, Mongolia exported 9,547 tons of cashmere, largely through intermediaries that collect raw cashmere from herders, transport it to washing facilities, often foreign owned, and export it to China with minimal processing and value added. Exports of combed, or dehaired, cashmere have stagnated over the past decade. In 2024, only 7.4 percent of total production was exported in combed form, primarily to Italy, followed by China, France, the Republic of Korea, and the United Kingdom (figure 3.6). Cashmere apparel exports, which involve the full value chain—including sorting, washing, dehairing, dyeing, spinning, weaving, and sewing or knitting—are modest. In 2024, knitted cashmere apparel exports accounted for 3 percent of Mongolia's total cashmere export

Figure 3.5

The Cashmere Value Chain Builds Value from Herding to Finished Garments

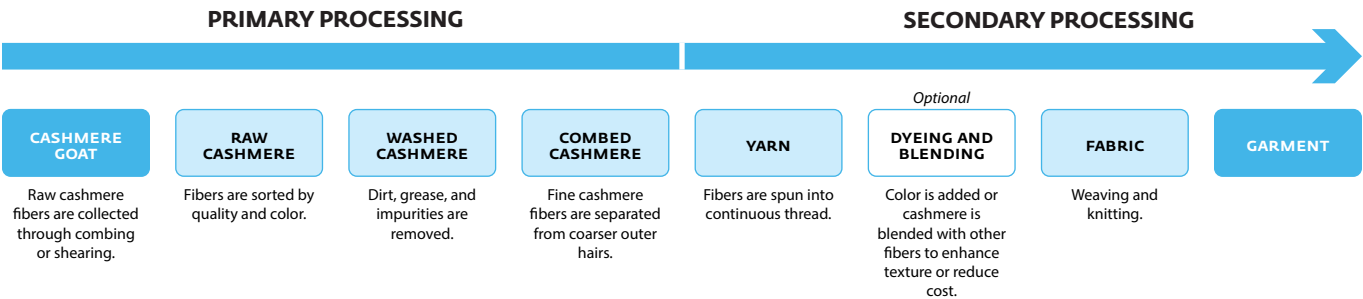
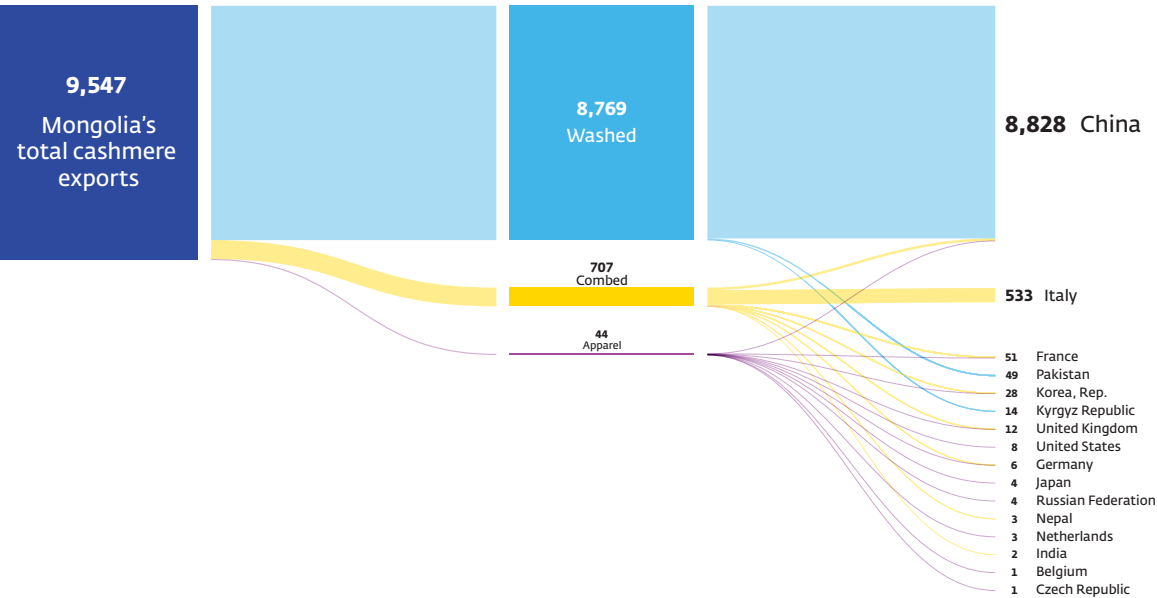


Figure 3.6

Mongolia's Cashmere Exports Remain Concentrated in Low-Value Washed Cashmere

Cashmere exports, 2024 (tons)



Source: Data from International Trade Centre Trade Map.

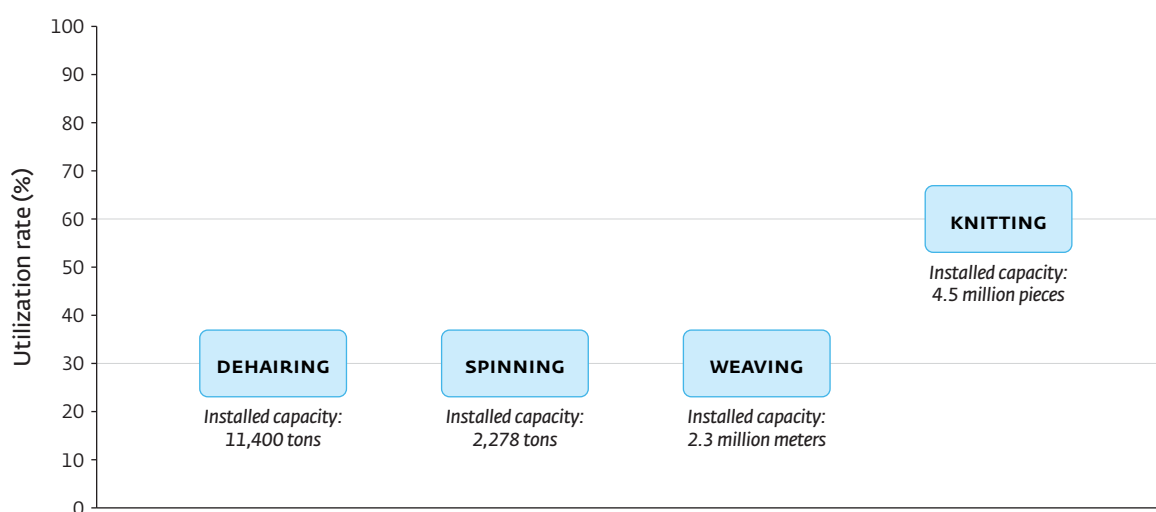
value, with shipments reaching 44 tons across 11 countries, including Korea, the United States, Japan, and several European nations.

In February 2025, Mongolia's technical regulation on cashmere processing and trade, commonly referred to as the raw cashmere export ban, came into effect, resulting in the cessation of washed cashmere exports. Preliminary data as of June 2025 show no washed cashmere exports, compared with 2,667 tons in the first half of 2024. Meanwhile, combed exports increased by 62 percent year over year, to US\$42.3 million, in June 2025, and exports of final finished products rose 25 percent year over year. In this context, discussions with industry participants suggest that Mongolia's comparative advantage lies in premium market segments that value differentiated fiber characteristics, including natural colors, sustainability credentials, and traceability, rather than in competing on volume in standardized cashmere products.

Although processing capacity has expanded, utilization rates across the value chain remain low, according to the Mongolian Wool and Cashmere Association (figure 3.7). Before the 2025 raw cashmere export ban, intermediaries purchased most fiber for export to China after minimal washing, leaving domestic processors undersupplied and contributing to low utilization.⁵⁵ Underutilization also reflects the sector's dispersed sourcing structure, which can increase transaction costs and complicate efforts to secure consistent, traceable supplies for higher-value processing. Alongside declining

Figure 3.7

Capacity Utilization Remains Low across Mongolia's Cashmere Value Chain, 2024



Source: MWCA (2025).

and heterogeneous fiber quality, limited compliance with international sustainability and traceability requirements, and weak integration into higher-value supply chains, these factors reduce the sector's ability to attract larger-scale commercial investment.

Despite these constraints, domestic processors expanded capacity in anticipation of the ban and the opportunity to capture higher value through deeper domestic processing. With the introduction of the 2025 regulation and support from the White Gold Program (box 3.1), utilization rates in dehairing have begun to rise and are likely to increase more noticeably in the coming years. Progress in deeper processing, however, may take longer and will require appropriate policy implementation. The Ministry of Food, Agriculture and Light Industry (MOFALI) will conduct an updated assessment on utilization rates and capacities in early 2026.

Box 3.1

White Gold Initiative, 2024–28

Launched in April–May 2024, the White Gold Initiative is Mongolia's flagship national program to revitalize the wool, cashmere, and leather sectors. It aims to transform raw materials, referred to as Mongolia's "white gold," into high-quality, value-added exports through domestic processing and sustainable practices. The initiative is backed by a legal framework, including Resolutions No. 63 and No. 190, and Tog 2.2 trillion, approximately US\$600 million, in government financing. This includes Tog 788 billion in low-interest loans in 2025, supported by Tog 66 billion in interest subsidies.

A multistakeholder platform, led by the president's economic adviser and co-chaired by MOFALI and UNDP, coordinates efforts across government, banks, industry, and herder cooperatives. In March 2025, MOFALI and UNDP launched the White Gold Platform to strengthen traceability, raw material quality, sustainable finance, and climate resilience. However, disbursements have largely favored working capital over long-term investment, 89 percent compared with 11 percent, limiting expansion of processing capacity.

	Working capital loan terms	Investment loan terms
Loan amount	Up to Tog 30 billion	Up to Tog 50 billion
Annual interest rate (%)	6	6
Monthly interest rate (%)	0.5	0.5
Loan term	Up to 24 months	Up to 48 months

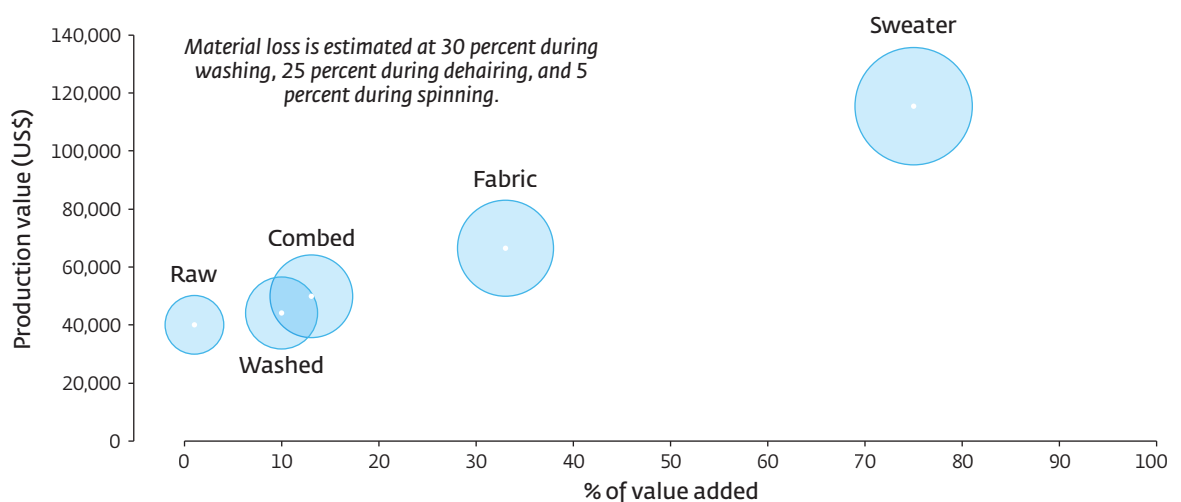
Value addition along the cashmere value chain is critical to profitability.⁵⁶ Washing the fiber increases its value by 10 percent, and combing adds a further 13 percent. Spinning the combed fiber into fabric results in a 33 percent increase. The largest gain occurs when the fiber is transformed into finished garments, such as sweaters, raising value by 74 percent increase from the fiber stage (figure 3.8). Cumulative value addition from raw fiber to finished apparel can exceed 200 percent.

The highest profit margins are found in secondary processing and branded finished goods.⁵⁷ Primary processing is saturated by a large number of firms operating in low-margin segments, while upstream production, particularly intensive goat farming, yields limited returns and has negative environmental externalities. Secondary processing segments—including spinning, weaving, knitting, and garment production—currently lack the capacity to fully process raw cashmere domestically and hold the greatest potential to attract private investment.

Challenges discouraging private investment include declining fiber quality, opaque pricing mechanisms, electricity shortages, regulatory uncertainty around export requirements, and limited access to affordable and timely financing. Overlapping standards create unnecessary compliance burdens. Limited access to government-owned data held by the General Authority for Veterinary Services (GAVS) and the Mongolian Animal Health Information System (MAHIS), integrated systems for animal health and

Figure 3.8

Value Added Exceeds 200 Percent from Raw Fiber Apparel in Mongolia



Source: Sharavdemberel (2023).

veterinary surveillance, complicates traceability. Labor shortages, especially for skilled roles, also reduce productivity and value addition. While this chapter focuses on downstream processing, upstream constraints and related recommendations are also important given their direct implications for quality and sustainability.⁵⁸

Fiber quality is critical for profitable private investment in secondary processing and branded finished goods, yet it has been declining in Mongolia and often falls short of premium market requirements. Quality is primarily measured by fiber diameter, in microns, with finer diameters indicating higher quality. Mongolia's average fiber diameter increased by 2 microns between 1993 and 2002; current estimates range from 16 to 17 microns, above the Chinese average, according to market participants. Government policies have prioritized herd size over fiber yield and quality, contributing to this trend. In practice, local awards often celebrate herders for achieving reaching quantity milestones, such as a 1,000-head herd, rather than for improving fiber quality. UNDP, through the Sustainable Cashmere Platform, has called for a shift toward quality-based incentives and more sustainable production systems, noting that the current incentive structure has contributed to declining fiber quality and environmental degradation. The absence of breeding programs and uncontrolled migration of herders and livestock between provinces have also led to genetic mixing and disease spread, complicating quality control. These practices have reduced the prevalence of natural fiber colors, which are highly valued in premium markets. Industry consultations indicate that premium products require different combinations of fiber characteristics, including diameter, length, cleanliness, and natural color, highlighting the need to better align production with market demand.

Despite legal provisions in the 2017 Law on Livestock and Animal Health, animal identification, registration, and movement control are poorly enforced. FAO assessments found no reliable link between veterinary certificates and individual animals and no retrievable herd of origin for moved stock, undermining disease control and traceability.⁵⁹ This reflects weak coordination across regions and institutions responsible for animal identification, veterinary certification, and livestock movement control, as well as gaps in traceability and enforcement mechanisms. These weaknesses contribute to genetic mixing and stress-related coarsening, resulting in inconsistent cashmere quality.

The Mongolian Commodity Exchange (MCE) lacks transparency in its pricing system and imposes mandatory registration and service fees on all international cashmere transactions, reportedly to promote better and more consistent quality.⁶⁰ Established in 2013 to support exports, the MCE initially required a 0.82 percent service fee for export licenses on raw and washed cashmere. After the prohibition of raw exports in 2025, the fee was reduced to 0.62 percent for dehaired cashmere. Although the stated purpose is to guarantee consistent quality standards and provide market information, inspection, certification, and storage services, market participants question the effectiveness of the

exchange and view the service fee as a tax because few services are actually provided. Prices are set using a formula based on processor costs and international market prices, with limited differentiation by quality, leaving quality-based pricing to individual negotiations. The recent introduction of third-party certification by the Mongolian Wool and Cashmere Association was an attempt to address trust and mislabeling issues. However, building trust in laboratory testing and certification will take time, as credibility depends on sustained performance and alignment with internationally trusted laboratories.

Financing constraints restrict the growth and modernization of the sector. Limited access to affordable and timely financing, especially for smaller producers and exporters, slows modernization and expansion. Government-backed loan disbursements are often misaligned with seasonal cycles, delaying raw material purchases and limiting investment in technology and scaled operations. While the White Gold Program is a step toward improving access to finance through low-interest loans, its structure has disproportionately favored short-term working capital over long-term investment. As of 2025, 89 percent of disbursements had supported working capital, with only 11 percent allocated to investment loans, undermining the program's goal of expanding processing capacity.

Regulatory reforms enable movable asset finance, but adoption remains limited. The Law on Pledges of Movable Property and Intangible Assets, together with the establishment of an electronic movable collateral registry, allows firms to use inventory, receivables, and equipment as collateral, laying the groundwork for supply chain finance. However, uptake among banks and nonbank financial institutions (NBFIs) is uneven due to risk aversion and limited familiarity with these lending models among loan officers.

Overlapping and duplicative sustainability-related standards place unnecessary compliance burdens on firms. Companies must navigate two national standards and three international voluntary standards to meet global sustainability expectations, while also complying with domestic standards required for local financing and government support. Because international standards are generally more stringent, firms that meet them have effectively satisfied domestic requirements, yet they must still complete parallel compliance processes, adding avoidable administrative and financial strain. Appendixes B and C document the applicable standards and provide a comparative assessment of overlapping requirements, which can be burdensome for many firms.

Limited access to government livestock health and identity data makes it difficult for cashmere processors to meet rising international requirements for verified disease-free status, traceability, and sustainability. Records held by the General Authority for Veterinary Services (GAVS) and the Mongolian Animal Health Information System (MAHIS)

are not accessible or interoperable, preventing firms from using official vaccination, disease surveillance, and herder identity data to demonstrate compliance with market standards.⁶¹ Fragmented traceability structures further limit entry into premium markets that require auditable verification.

Regulatory uncertainty around export requirements is disrupting business planning.

The Technical Regulation for Cashmere Processing and Trading, approved under Government Resolution No. 380/2022 and widely known as the raw cashmere export ban, requires all exported cashmere to be dehaired, effectively banning washed exports. While intended to promote domestic value addition, implementation has been inconsistent, with multiple deadline changes and shifting timelines for putting the regulation into force, including June 2024, June 2025, and February 2025, causing confusion. This unpredictability hampers compliance, credibility and operational planning for exporters and processors. Although broadly welcomed by stakeholders, the regulation's impact depends on consistent enforcement and clear timelines.

Electricity shortages and delays in obtaining grid connections undermine the attractiveness of the sector to private investors. The World Bank's 2025 Enterprise Survey identified a median wait of 30 days for a new electricity connection, down from 73.8 days in 2013, with 27.2 percent of firms reporting outages, below the East Asia and Pacific average of 39.7 percent.⁶² However, even after obtaining technical approvals, some enterprises face long delays in being physically connected to the grid. As discussed in the chapter on solar and wind energy generation, these bottlenecks reflect structural constraints, including distribution networks operating near full capacity, insufficient grid infrastructure, and a growing energy deficit.

Labor shortages, particularly in skilled roles, limit the ability of the sector to attract private investment. The industry faces a persistent shortage of skilled labor for higher-value-added activities such as programming, design, and technical operations. Recent sector assessments show that firms struggle to recruit workers with essential technical skills, including industrial sewing, machine operation, quality management, production programming, and design, which are skills needed to move into higher-value-added processing.⁶³ This is compounded by the high cost of retaining skilled staff, who often require subsidized housing, health care, and other benefits. The lack of specialized vocational training programs tailored to the industry also forces firms to rely heavily on costly and time-consuming on-the-job training, further constraining efficiency and growth. The sector struggles to attract younger workers, partly due to low salaries and competition from other industries, such as mining and seasonal jobs.

Overgrazing by goats at the upstream end of the value chain creates a sustainability challenge, contributing to land degradation and biodiversity loss.⁶⁴ Intensive grazing

practices have led to widespread soil erosion, desertification, and depletion of native vegetation, undermining long-term pasture productivity and ecological balance. Pasture management and rotational grazing systems, as required in the Responsible Nomads Standards, are strategies to manage this risk.

3.2

Constraints to Private Investment and Recommendations

CONSTRAINT 1. Declining fiber quality and consistency undermines Mongolia's reputation in premium global markets, reducing the potential profitability of private investment.

Value-added potential has been undermined by poor breeding practices, weak quality control, and misaligned government incentives, reducing the sector's attractiveness to private investors. Weak transmission of market requirements through the value chain further limits producers' ability to respond to the quality specifications demanded by premium buyers. The absence of reliable systems to ensure consistent fiber diameter, color, and standards increases reputational risk and lowers returns, discouraging investment interest in processing, branding, and export ventures. While the Law on Livestock and Animal Health contains provisions critical to animal traceability and herd health, enforcement has been uneven due to limited coordination across regions and capacity constraints in veterinary services and local authorities.

RECOMMENDATION 1A. Replace herd-size awards, such as the National Champion Herder Award, with competitive programs that recognize herders for producing high-quality cashmere.

This could help reverse the trend of declining fiber standards. A Herd Quality of the Year award, modeled on successful initiatives in Australia's merino wool sector, should be implemented by MOFALI to promote good practices and encourage sustainability and quality-focused herding. Such award programs should be complemented by activities that improve producers' understanding of premium market requirements, including product-specific fiber characteristics and quality standards.

RECOMMENDATION 1B. Consolidate existing breeding research initiatives into a unified national program run by MOFALI with a focus on quality.

Mongolia has existing pure-breeding research initiatives, but their scope and enforcement vary by region.⁶⁵

RECOMMENDATION 1C. Develop standardized breeding protocols to promote consistent genetic improvement.

MOFALI should lead implementation, including controlled mating, pedigree recording, and selection of superior bucks, supported by mobile breeding teams and regional technical advisers. Avoiding regional fragmentation will require harmonized guidelines and monitoring systems to ensure consistent outcomes across provinces.⁶⁶

RECOMMENDATION 1D. Enforce the Law on Livestock and Animal Health to support quality control by linking enforcement to access to finance, such as the White Gold program, and certification requirements, while acknowledging implementation capacity risks. The Law on Livestock and Animal Health, adopted in 2017, contains provisions critical to maintaining animal traceability and herd health, which are important enablers of fiber quality and certification systems. MOFALI should prioritize enforcement of article 7.4.1, on livestock marking and recordkeeping by owners; article 7.4, on registration and veterinary certification for livestock involved in breeding, trade, movement, or slaughter; article 7.12, on restrictions on migration without prior notice and registration; and article 7.6, on quarantine enforcement for undocumented or diseased animals. Enforcement would be operationalized through coordinated action between veterinary services and local authorities, supported by risk-based inspections linked to animal movement and fiber trade and expanded use of existing digital systems, including gradual rollout of digital animal identification. Effective enforcement would reduce genetic mixing and disease spread, supporting a more stable and high-quality cashmere supply chain.

CONSTRAINT 2. The current pricing system does not reward higher-quality fiber. The MCE does not link prices sufficiently to fiber quality. Prices are set using a formula based on processor costs and international markets, with limited differentiation by quality. This discourages private investment in quality upgrading.

RECOMMENDATION 2A. Develop and adopt pricing mechanisms that reward quality based on established grading standards. The MCE should adopt a transparent approach to setting average market prices differentiated by quality, in line with the Technical Regulation for the Production and Trade of Cashmere. Current pricing does not fully reflect market values or apply existing standards.⁶⁷

RECOMMENDATION 2B. Introduce premium contracts or specialty auctions for higher-quality cashmere and allow greater scope for bilateral and contract-based transactions outside the exchange. The MCE should create dedicated channels for high-quality cashmere, such as fiber of 12.5 microns or less. This would help formalize and operationalize quality-based price differentiation.

If MCE privatization is not feasible at this time, the following reforms should be implemented to help the MCE operate as a market-oriented commodity exchange, consistent with good international practice:⁶⁸

RECOMMENDATION 2C. Require at least half of MCE board members to be independent and have relevant industry expertise.

RECOMMENDATION 2D. Adopt a transparent and enforceable rulebook covering trading rules, membership and participation requirements, disclosure and reporting obligations, conflict-of-interest provisions, and sanctions for noncompliance. The rulebook should be supported by self-regulatory oversight and public reporting.

RECOMMENDATION 2E. Adopt and publish a quality-differentiated pricing methodology, including full trade price and volume data, grade-specific prices, and auction outcomes, to ensure transparent price discovery.

RECOMMENDATION 2F. If the MCE service fee is maintained, require the MCE to (a) publicly disclose the legal basis of the fee and its rate-setting rationale and (b) explicitly earmark fee revenue for legally mandated core exchange services. These services include price and market information, organized trading mechanisms, authorized warehouses and storage, and quality-related functions directly linked to exchange-based cashmere trading.

CONSTRAINT 3. Government-backed loan disbursement schedules do not reflect the seasonal nature of production and export cycles. This mismatch makes it difficult for firms, especially smaller producers and exporters, to purchase raw materials, invest in processing, and scale operations when financing is most needed. This constraint is not that loan terms are unfavorable, but that disbursements and tenors are poorly aligned with investment timelines.

RECOMMENDATION 3. Extend the term of investment loans under the White Gold Program from the current maximum of 48 months to up to seven years, with a built-in sunset as processing capacity expands.⁶⁹ MOFALI should adjust loan terms to better align financing with the sector's production cycle and capital-intensive investment needs. Longer tenors would give enterprises sufficient time to purchase raw materials, generate revenue, and complete the importation, installation, and calibration of new equipment, such as spinning lines, until operations are fully stabilized. The extended loan period would also provide more appropriate support for firms to build essential infrastructure, including premises, wastewater treatment facilities, and electricity connections, and to prepare and train the workforce.

CONSTRAINT 4. Overlapping and duplicative sustainability standards increase compliance burdens for firms. Two national standards and three international voluntary standards are currently in use to meet global buyer expectations for sustainability. In addition to meeting international standards to access export markets, firms must comply with local standards to access domestic financing and government support.

RECOMMENDATION 4. Recognize compliance with overlapping requirements in international standards as satisfying equivalent domestic standards. MOFALI should identify overlapping requirements between international and domestic standards and reduce duplicative compliance obligations for firms.

CONSTRAINT 5. Limited access to government-owned GAVS-MAHIS data constrains traceability in the cashmere value chain. Although MAHIS already captures livestock-level information downstream firms cannot access key data fields, including herder identification, vaccination and disease records, movement certificates, and veterinary training records, processor intake data, disease-free certification (for diseases such as foot-and-mouth disease and anthrax), and fiber-quality parameters. The absence of controlled access and system interoperability limits the ability to link traceability data to sustainability certifications or quality-based pricing, reducing herders' incentives to improve fiber quality.

RECOMMENDATION 5. Permit role-based, accredited access to MAHIS data fields that directly support traceability and sustainability claims. GAVS should allow strictly controlled, logged, and auditable access to relevant MAHIS data, including data that reflect foot-and-mouth disease and anthrax-free status in health certificates and confirm disease-free status at washing, combing, and dehairing through laboratory tests. Audit trails should record who accessed which data and for what purpose.⁷⁰ Interoperability should also be strengthened so the Responsible Nomads Traceability System (RMTS) can support Responsible Nomads and other sustainability certifications, including the EU digital product passport requirements starting in 2026. Linking traceability to quality-based pricing for higher-grade fiber can motivate herders to improve quality.

CONSTRAINT 6. Skilled labor shortages hinder value addition higher in the cashmere value chain. The industry faces persistent shortages of skilled labor for higher value-added activities, including industrial sewing, machine operation, quality management, production programming, and design. These shortages are compounded by the high cost of retaining skilled staff, who often require subsidized housing, health care, and other benefits.

RECOMMENDATION 6. Temporarily ease labor restrictions to help firms hire specialized foreign expertise and support skills transfer. The Ministry of Family, Labor and Social Welfare should (a) lift the labor quota for the sector for up to three years, allowing firms to hire the necessary expertise without restriction; and (b) waive the labor tax under the Law on Migration of Workforce for foreign employees for up to three years to incentivize skills transfer. As the cashmere sector modernizes, foreign technicians and specialists are increasingly needed for equipment installation, quality control, and workforce training. Mongolia has prior experience importing labor, primarily

for construction and selected service sectors, from countries such as Bangladesh, the Kyrgyz Republic, the Philippines, and Uzbekistan. Discussions are also underway to expand this approach, including a 50 percent reimbursement policy for imported labor costs. A time-bound waiver of the labor tax and quota would incentivize host firms to facilitate skills transfer from foreign to domestic workers.

3.3 Risks to Be Managed

Chemical use in cashmere processing can threaten water quality and public health.

Detergents, dyes, and bleaches can contaminate local water bodies if not properly managed, harming aquatic ecosystems and posing risks to surrounding communities. While environmental and chemical management standards apply to textile processing in Mongolia, available evidence suggests that enforcement and monitoring remain uneven, particularly for wastewater treatment and chemical handling.⁷¹

Improper waste disposal from processing can generate environmental hazards.

Solid waste from dehairing, spinning, and dyeing, such as fiber waste and sludge, can pollute land and water sources if not properly treated or repurposed. Although waste management regulations apply to industrial processors, limited enforcement capacity and infrastructure constraints mean that proper treatment and disposal of textile waste is not consistently ensured.⁷²

Cashmere production is highly water intensive. Producing 1 kilogram of cashmere can require up to 20,000 liters of water, intensifying stress on already limited supplies, particularly in arid regions. This poses a significant environmental risk as the sector grows and processing expands.

High energy use and fossil fuels increase carbon emissions. Cashmere processing is energy intensive and often relies on nonrenewable energy sources, contributing to greenhouse gas emissions and air pollution, particularly in rural areas with limited access to clean energy.

3.4 Expected Impact on Private Investment and Jobs

The proposed reforms could help attract US\$150 million in private investment by addressing constraints such as declining fiber quality, the absence of grade-based pricing mechanisms, misaligned seasonal loan terms, and limited recognition of sustainability certifications. These reforms could unlock private investment opportunities in spinning

and knitting, estimated at US\$115 million for spinning and US\$35 million for knitting (see appendix A).

Increasing the share of raw cashmere processed domestically from 20 percent to 70 percent by 2030 could generate an additional 3,000–5,000 full-time equivalent jobs, on top of the nearly 7,600 jobs already supported by the sector (see appendix A).⁷³ These direct job gains would likely be complemented by indirect and induced employment spillovers across upstream services, downstream logistics, and trade, as cashmere value chain investments generate additional demand for supporting inputs and services. These projected employment gains reflect the sector's potential under a higher-processing scenario and are unlikely to materialize immediately given existing workforce and training constraints.

Table 3.1

Policy Recommendations to Remove Impediments to Private Investment in Sustainable Cashmere Processing

Constraints	Recommended actions
1. Declining fiber quality and consistency undermines Mongolia's reputation in premium global markets, reducing the potential profitability of private investment.	1A. Replace herd-size awards, such as the National Champion Herder Award, with competitive programs that recognize herders for producing high-quality cashmere.
	<i>Responsible public sector entities:</i> MOFALI
	1B. Consolidate existing breeding research initiatives into a unified national program with a focus on quality.
	<i>Responsible public sector entities:</i> MOFALI
	1C. Develop standardized breeding protocols to promote consistent genetic improvement.
	<i>Responsible public sector entities:</i> MOFALI
	1D. Enforce the Law on Livestock and Animal Health to strengthen animal traceability and herd management, including through systematic livestock registration, migration control, and quarantine enforcement under articles 7.4.1, 7.4, 7.12, and 7.6.
	<i>Responsible public sector entities:</i> MOFALI and GAVS

(Table continues next page)

Table ES.2

Policy Recommendations to Remove Impediments to Private Investment in Sustainable Cashmere Processing (*continued*)

Constraints	Recommended actions
2. The current pricing system does not reward higher-quality fiber.	2A. Develop and adopt pricing mechanisms that reward quality based on established grading standards. 2B. MCE should introduce premium contracts or specialty auctions for higher-quality cashmere, and allow greater scope for bilateral and contract-based transactions outside the exchange, creating formal market channels that reinforce and operationalize quality-based price differentiation. If MCE privatization is not feasible at this time, the following reforms should be implemented to help MCE operate as a market-oriented commodity exchange consistent with good international practice:^a 2C. Require that at least half of board members be independent and have relevant industry expertise. 2D. Adopt a transparent and enforceable rulebook covering trading rules, membership and participation requirements, disclosure and reporting obligations, conflict-of-interest provisions, and sanctions for noncompliance, supported by self-regulatory oversight and public reporting. 2E. Adopt and publish a quality-differentiated pricing methodology with full trade price and volume data, including grade-specific prices and auction outcomes, to ensure transparent price discovery. 2F. If MCE's service fee is maintained, (i) publicly disclose the legal basis for the fee and the rationale for rate setting, and (ii) explicitly earmark fee revenues for delivery of MCE's legally mandated core exchange services.
	<i>Responsible public sector entities:</i> MCE and MOFALI
3. Government-backed loan disbursement schedules do not reflect the seasonal nature of production and export cycles.	3. Extend the term of investment loans under the White Gold Program from the current maximum of 48 months to up to seven years, with a built-in sunset as processing capacity expands.
	<i>Responsible public sector entities:</i> MOFALI and MoF
4. Overlapping and duplicative sustainability standards increase compliance burdens for firms.	4. Recognize compliance with overlapping requirements in international standards as satisfying equivalent domestic standards.
	<i>Responsible public sector entities:</i> MOFALI

(Table continues next page)

Table ES.2

Policy Recommendations to Remove Impediments to Private Investment in Sustainable Cashmere Processing *(continued)*

Constraints	Recommended actions
5. Limited access to government-owned GAVS–MAHIS data constrains traceability in the value chain.	5. Permit role-based, accredited access to MAHIS fields that directly support traceability and sustainability claims, including herder identification, vaccination and disease records, movement certificates, veterinary training, and processor intake data.
	<i>Responsible public sector entities: GAVS</i>
6. Skilled labor shortages hinder value addition higher in the value chain.	6. Lift the labor quota for the sector for up to three years to allow firms to hire needed expertise without restriction, and waive the labor tax under the Law on Migration of Workforce for foreign employees for up to three years to incentivize skills transfer.
	<i>Responsible public sector entities: MSLP</i>

Note: GAVS = General Authority for Veterinary Services; MAHIS = Mongolian Animal Health Information System; MCE = Mongolian Commodity Exchange; MOFALI = Ministry of Food, Agriculture and Light Industry; MSLP = Ministry of Family, Labor and Social Welfare.

- a. International experience indicates that commodity exchanges operate most effectively when commercial operations are insulated from direct government influence and supported by independent governance and oversight, transparent and enforceable trading rules, robust disclosure, and market-based price-discovery mechanisms. Reforms can range from strengthened governance and operational autonomy—including greater board independence and clearer accountability arrangements—to broader ownership reforms, including privatization. The recommendations 2C through 2F identify minimum reforms to strengthen MCE's market orientation and operational autonomy.

4

Solar and Wind Energy Generation

AT A GLANCE

- Mongolia has significant wind and solar potential—estimated at 700 and 400 gigawatts, respectively—yet renewables accounted for only about 10 percent of electricity generation in 2024, while coal-fired plants supplied roughly 90 percent.
- Electricity demand is projected to increase fivefold during 2022–50, driven by industry, urbanization, and mining. Wind and solar power, combined with battery storage and partial grid connectivity, can deliver cost-competitive, reliable, and lower-carbon electricity for both grid supply and direct use by commercial and industrial (C&I) consumers. The most promising opportunities are grid-connected, utility-scale projects with the National Dispatching Center as the offtaker and direct supply to C&I consumers.
- Limited and outdated transmission infrastructure undermines investor confidence by constraining renewable energy, particularly from the resource-rich southern regions, and creating uncertainty around connection timing, curtailment risks, auction schedules, procurement, and technical requirements. While Mongolia's first competitive renewable energy auction in June 2026 is an important milestone, predictable auctions, bankable PPA templates, and a market model allowing bilateral contracts with large C&I offtakers are needed.
- Priority reforms to unlock private investment include publishing a long-term transmission plan, establishing a rolling auction calendar, adopting bankable PPA templates, enabling third-party grid access, and moving toward a competitive wholesale electricity market.
- These reforms could unlock around US\$230 million in medium-term investment in solar photovoltaic, wind power, and battery energy storage systems, generate around 1,700 jobs, and avoid an estimated 5 million metric tons of carbon dioxide emissions.⁷⁴

Sector Context and Private Investment Potential

Mongolia's exploitable wind and solar energy resources are estimated at 700 gigawatts (GW) for solar and 400 GW for wind—equivalent to approximately 300 times current energy consumption.⁷⁵ Most of these resources are in the sparsely populated southern region. Despite this potential, private investment—and investment overall—in renewable energy has been limited. In 2024, the country's aging and highly polluting coal-fired combined heat and power plants accounted for 90 percent of electricity generation.

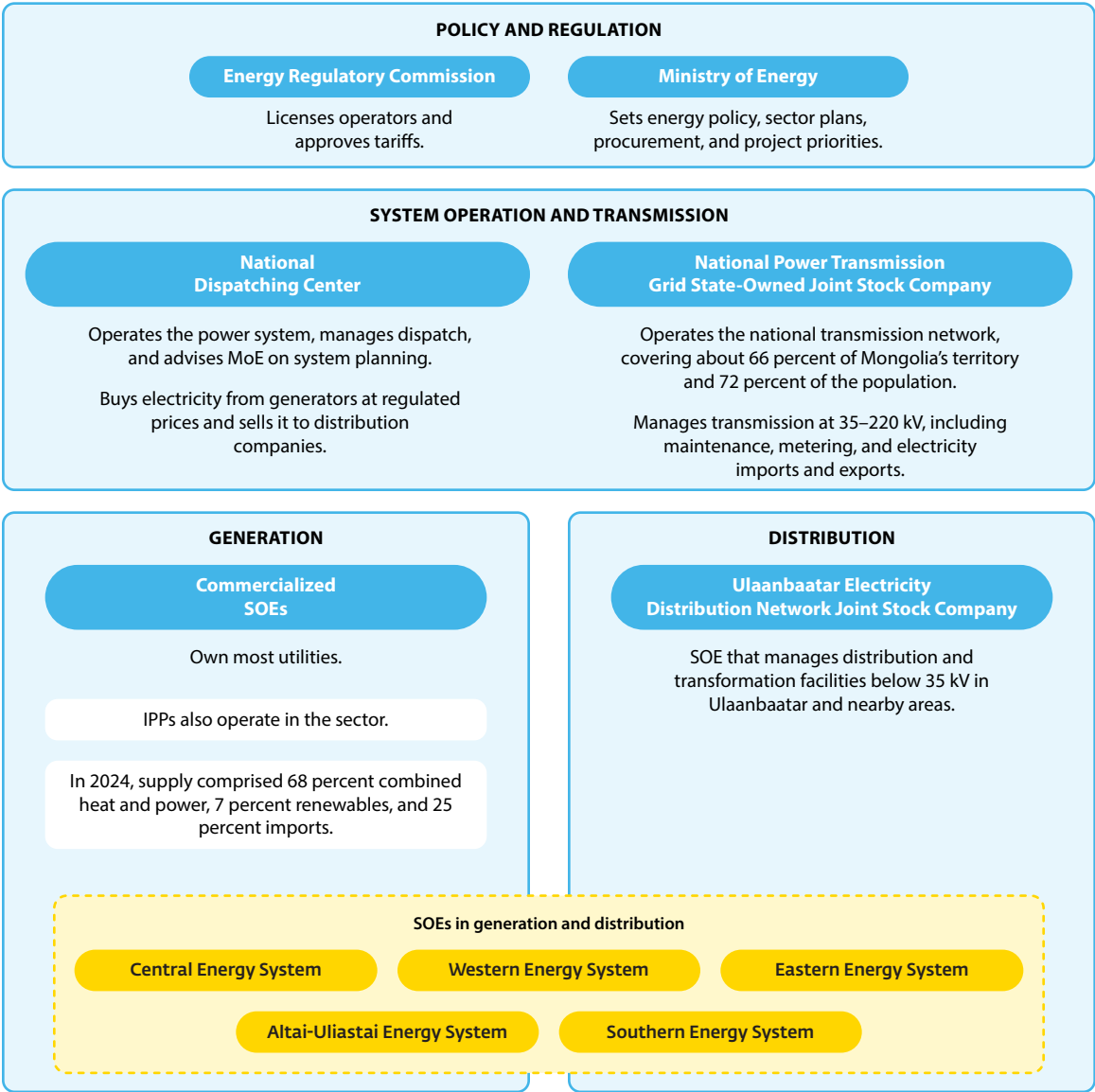
A growing energy deficit is creating pressure for policy reform. Electricity demand is projected to increase nearly fivefold by 2050,⁷⁶ driven largely by growing industrial and mining demand and increased household consumption in Ulaanbaatar.⁷⁷ In 2024, around 25 percent of energy consumed was imported from China and the Russian Federation.⁷⁸

The sector operates under a single-buyer market model. The National Dispatching Center (NDC), which serves as the system operator, purchases electricity from multiple generators, many of them privately owned, at regulated tariffs and sells it to regional distribution companies. The Energy Regulatory Commission (ERC) oversees this framework, regulating generation, transmission, distribution, dispatch, supply, tariff setting, licensing, and energy efficiency (see figure 4.1 for a summary of Mongolia's power sector structure). While the single-buyer model has supported coordinated system management and tariff stability, it has limited bilateral contracting and market-based price formation, discouraging private investment.

Private investment has been marginal and largely supported by development finance institutions (DFIs). As of 2024, Mongolia had 10 utility-scale solar photovoltaic (PV) projects and three wind projects, contributing 9 percent of domestic electricity generation.⁷⁹ Most are owned by domestic private firms, alongside several joint ventures with foreign partners. Their development relied heavily on financing from DFIs, such as the European Bank for Reconstruction and Development, Asian Development Bank, and World Bank.

A major disincentive to private investment is limited and outdated grid infrastructure. Mongolia has five regional power systems. The central system, which serves Ulaanbaatar and surrounding areas, accounts for around 80 percent of total electricity supply. Most networks rely on aging transmission lines designed decades ago for low power loads, making them unsuitable for integrating variable renewable energy. The lack of high-voltage transmission capacity between the wind and solar resource-rich southern regions and Ulaanbaatar's demand center prevents large-scale integration. Overloaded power lines restrict power evacuation during periods of high renewable

Figure 4.1
Power Sector Organizational Structure



Sources: JICA, TEPSO, and TEPCO (2022); Mongolian Government (n.d.); ERC (n.d.; 2025); B. (2025); World Bank (2024b).
 Note: Information as of 2025 or most recent data available.

output, while limited system flexibility and outdated grid management practices reduce the system's ability to balance variability. This leads to higher technical losses and curtailment of wind and solar generation, as observed in early projects, undermining dispatch certainty and profitability.

Ongoing and planned grid upgrades are opening new opportunities for utility-scale, grid-connected projects. Several major transmission projects are planned for completion by 2030,⁸⁰ which will boost the Central Energy System's grid capacity and reliability and support renewable energy integration. In parallel, the government is deploying battery energy storage systems (BESS) across the grid to support higher shares of renewables. A recently commissioned large-scale BESS, supported by public investment and providing 130 megawatts (MW) of power capacity and 400 megawatt-hours (MWh) of storage capacity, has helped alleviate some of the grid challenges.⁸¹

The colocation of rich solar and wind resources with mining operations in the Gobi region holds investment potential. In 2024, mining entities involved in extraction and sales accounted for about 56 percent of total national electricity consumption, sourced from both imports and domestic generation. Major consumers such as the Oyu Tolgoi mine, which accounted for roughly 42 percent of the total mining sector's electricity use,⁸² relied almost fully on power imports from China due to insufficient and unstable domestic supply. Several off-grid mining operations as of 2025 depend fully on diesel generation. With multiple mining projects expected to start operations within the next three to ten years, demand for reliable, low-cost power will grow.

Wind and solar power can provide a cost-competitive and sustainable solution for the mining sector's growing demand. Mining companies can pursue three options: invest in new transmission lines to connect directly to China's cross-border grid, separate from Mongolia's main domestic grid; link to the domestic grid where capacity exists; or develop self-generation using a combination of wind, solar, storage, and diesel. Project economics improve when partial grid connection provides backup supply, reducing diesel use and battery needs. Declining global wind and solar costs further strengthen the competitiveness of renewable-based solutions. In Mongolia, investor estimates suggest that utility-scale wind and solar projects near grids serving industrial users could deliver electricity at US\$3.5–7.9 per kilowatt-hour (kWh),⁸³ making them competitive with tariffs for power imported from China, around US\$8.8 per kWh in 2024;⁸⁴ domestic grid tariffs for mining firms, US\$8.3 per kWh in 2024;⁸⁵ and the cost of new coal generation, approximately US\$8.9 per kWh.⁸⁶ In addition, many mining companies are willing to pay a premium for renewable power to meet environmental, social, and governance goals and ensure long-term supply reliability.⁸⁷

The mining sector's energy needs create opportunities for private wind and solar developers to contract with credible offtakers through off-grid and grid-connected arrangements. In practice, these renewable solutions function primarily as hybrid or grid-supported systems rather than as stand-alone sources of variable generation. Developers can pursue two models with backup BESS or diesel generators: (1) wind and solar plants connected directly to mines under off-grid self-supply, as an alternative to

diesel generation alone; and (2) captive renewable systems that remain grid connected for backup, as a substitute for grid electricity. A third model—bilateral corporate power purchase agreements (PPAs) with grid-connected mines—would become viable once regulatory constraints are eased to allow a transition from the existing single-buyer framework toward more competitive arrangements, ranging from “single-buyer-plus” to full wholesale market model. This would enable developers to transmit energy over existing transmission infrastructure,⁸⁸ select optimal sites for wind and solar investment, avoid the cost of dedicated transmission lines, and reduce BESS needs.⁸⁹ The investment case across these models is supported by rising grid tariffs for mining consumers as the government moves toward cost-reflective pricing.

Expanding renewable energy by removing impediments to private investment is central to the government’s energy strategy. Vision 2050, a long-term development plan approved in 2020, sets a target of renewables to reach 30 percent of installed capacity by 2030. As of 2025, renewables accounted for about 19 percent of installed capacity, with wind and solar contributing 17 percent. A major government initiative underway is the deployment of BESS to support greater integration of variable renewables, reduce curtailment, and ensure grid stability. These efforts are complimented by government plans to develop pumped storage hydropower, which could further enhance the system’s capacity to integrate renewables.⁹⁰

The absence of a clear roadmap to scale up renewable energy creates investor uncertainty. Without a firm schedule identifying priority projects, grid expansion timelines, allocation of investment responsibilities between public and private actors,⁹¹ and procurement schedules, investors face elevated risks. In particular, the absence of medium- and long-term investment plans for transmission and distribution grid networks creates uncertainty about where and when new renewable projects will be able to connect to the network.

Regulatory and political uncertainty has discouraged private investment. The feed-in tariff introduced under the 2007 Renewable Energy Law spurred rapid expansion in renewable energy investment,⁹² but the 2019 transition to a competitive auction mechanism⁹³ was slower than expected, creating uncertainty over timing, project pipelines, and procurement rules. Mongolia’s first competitive renewable energy auction, completed in June 2026, marked an important milestone toward operationalizing the auction framework and demonstrated strong investor interest, with 220 MW of solar capacity and 135 MW of battery storage awarded across five provinces. However, further efforts are needed to institutionalize a predictable auction program and strengthen the supporting regulatory framework. Before the first auction in 2026, some investors also faced protracted PPA renegotiations⁹⁴ and retroactive technical requirements that raised project costs. For example, the mandatory energy storage requirement for grid connection,

introduced in 2019, requires storage equivalent to 20 percent of solar generation capacity and 40 percent of wind generation capacity, each with four-hour duration.⁹⁵ Applying this requirement to projects already approved for construction undermined financial viability.

4.2

Constraints to Private Investment and Recommendations

CONSTRAINT 1. Uncertainty around grid expansion plans undermines the commercial viability of projects. Insufficient integrated grid planning and unclear sequencing of transmission investments creates uncertainty about whether, when, and where projects can connect to the grid, as well as the associated curtailment risks. This increases the risks of private investment in solar and wind power generation.

RECOMMENDATION 1. Require the NDC and National Power Transmission Grid State Own Stock Company (NPTG) to develop and publish a long-term transmission plan with clear timelines for expanding interconnection capacity. The Ministry of Energy (MoE), working with the NDC and NPTG, should require the plan to be published and updated regularly on the NPTG website. The plan should identify grid locations and transmission capacity expected to be available for renewable energy projects.

CONSTRAINT 2. The lack of a sustained and predictable auction pipeline and limited transparency reduce long-term predictability for investors. While Mongolia's first competitive renewable energy auction was concluded in June 2026, the absence of a sustained auction pipeline and limited transparency in procurement processes continue to reduce long-term predictability for investors.

RECOMMENDATION 2. Establish a 24-month rolling auction calendar. The MoE and ERC should build on the first auction by establishing a 24-month rolling auction calendar that identifies indicative sites, target capacities, and eligibility and technical requirements. Future auction schedules should be clearly communicated and consistently implemented to provide investors with greater predictability.

CONSTRAINT 3. Insufficient bankability terms in the current PPA template and protracted negotiations undermine investor confidence. Although the 2019 law requires PPAs to use an ERC-approved template, the 2017 version, which is not publicly available, remains in use.⁹⁶ The template lacks key bankability terms often requested by investors, including international arbitration for enforceable dispute resolution and reasonable take-or-pay clauses to address curtailment risks. The absence of these terms creates uncertainty around revenue and contract enforcement, which can affect financing prospects for new projects.

RECOMMENDATION 3A. Develop new standardized, bankable PPA templates for utility-scale projects and publish price and curtailment rules. The ERC and NDC should develop a template that incorporates features commonly found in benchmark PPAs, including:

1. Clear revenue stabilizing mechanisms that fairly allocate risk between parties. The template should include a reasonable take-or-pay provision that compensates investors for a defined share of curtailed energy, or deemed generation,⁹⁷ aligned with grid code and dispatch protocols.
2. Change-in-law provisions to protect generators from future revisions with significant financial implications, as well as provisions for international arbitration or an effective dispute resolution mechanism.
3. Provisions that allow long-term PPAs, including those awarded under the auction mechanism, to be integrated smoothly into a future market-based mechanism without undermining project bankability.⁹⁸

RECOMMENDATION 3B. Establish and publish indicative timelines for key stages of PPA negotiations and approvals. ERC should require PPA negotiations between independent power producers (IPPs) and NDC to follow defined deadlines for submission, regulatory review, negotiation, and final approval.

CONSTRAINT 4. Lack of third-party access to NPTG's grid prevents prospective wind and solar power generators from supplying electricity directly to large commercial and industrial (C&I) offtakers through the existing grid. The single-buyer model prohibits generators from signing direct bilateral PPAs with C&I consumers using NPTG's grid to deliver electricity in exchange for a regulated "wheeling" fee, paid by power producers or electricity buyers to transport electricity over the transmission network. As a result, project developers must either build costly off-grid systems or rely solely on the single buyer. This lack of market access limits revenue options and discourages investment in grid-connected wind and solar projects near major industrial demand centers.

RECOMMENDATION 4A. Develop and adopt a third-party access code to allow IPPs to use NPTG's grids to deliver power directly to C&I offtakers under a single-buyer-plus model. MoE, in coordination with ERC, should develop a code defining wheeling tariffs that IPPs would pay NPTG for using the transmission lines. The code should require IPPs to be financially responsible for their own power imbalances. Given current transmission constraints, wheeling arrangements could be introduced in phases. Initial implementation could be limited to geographic zones where transmission capacity is available or under construction and should be accompanied by targeted network planning and effective balancing design.

RECOMMENDATION 4B. Adopt and publish a transparent methodology to calculate system marginal price (SMP) using an optimization tool that reflects grid conditions, demand and supply balance, and the variable costs of available generators. NDC would develop the optimization tool used to calculate the SMP, which would serve as a transparent short-term reference price to support the transition toward a more market-based dispatch and pricing framework. It could also provide a reference or floating price index for bilateral PPAs between IPPs and the single buyer or C&I off-takers, and serve as an input into the imbalance pricing mechanism, ensuring that deviations between contracted and actual generation or consumption are settled at an economically efficient price. By improving price transparency and cost reflectivity, this reform would complement wheeling arrangements and help remove regulatory and pricing barriers that limit direct market access.

4.3

Expected Impact on Private Investment and Jobs

The proposed reforms could help attract US\$230 million in investment in solar PV, wind power, and BESS in the medium term. This investment could generate around 1,700 jobs, comprising about 900 direct jobs, 400 indirect jobs, and 400 induced jobs.⁹⁹

Implementation of the recommendations could increase electricity supply from domestic renewable sources, reducing reliance on carbon-intensive imports. This could avoid an estimated 5 million metric tons of carbon dioxide emissions over the modeled 27-year period, 2028–54, equivalent to an average of 190,000 metric tons of carbon dioxide per year.

Table 4.1

Policy Recommendations to Remove Impediments to Private Investment in Solar and Wind Energy Generation

Constraints	Recommended actions
Grid-connected utility-scale wind or solar PV power generation with NDC as offtaker	
1. Uncertainty around grid expansion plans undermines the commercial viability of projects.	1. Develop and publish a long-term transmission plan with clear timelines for expanding interconnection capacity.
	<i>Responsible public sector entities:</i> MoE, ERC, NDC, and NPTG
2. The lack of a sustained predictable auction pipeline and limited transparency reduce long-term predictability for investors.	2. Establish a 24-month rolling auction calendar.
	<i>Responsible public sector entities:</i> MoE and ERC
3. Insufficient bankability terms in the current PPA template and protracted negotiations undermine investor confidence.	3A. Develop new standardized, bankable PPA templates for utility-scale projects and publish price and curtailment rules.
	<i>Responsible public sector entities:</i> ERC and NDC
	3B. Establish and publish indicative timelines for key stages of PPA negotiations and approvals.
	<i>Responsible public sector entities:</i> ERC
C&I offtakers	
4. Lack of third-party access to NPTG's grid prevents prospective wind and solar power generators from supplying electricity directly to large C&I offtakers through the existing grid.	4A. Develop and adopt a third-party access code to allow IPPs to use NPTG's grids to deliver power directly to C&I offtakers under a single-buyer-plus model.
	<i>Responsible public sector entities:</i> MoE and ERC
	4B. Adopt and publish a transparent methodology to calculate system marginal price.
	<i>Responsible public sector entities:</i> NDC

Note: C&I = commercial and industrial; ERC = Energy Regulatory Commission; IPPs = independent power producers; MoE = Ministry of Energy; NDC = National Dispatching Center; NPTG = National Power Transmission Grid; PPA = power purchase agreements; PV = photovoltaic.

5

Exploration of Energy Transition Minerals

AT A GLANCE

- Mongolia hosts favorable mineral systems for nearly all energy transition minerals (ETMs), and proximity to China, the world's dominant ETM market and refining hub, offers cost and market-access advantages. Yet exploration remains modest: less than 15 percent of legally available land is held under exploration licenses, and many existing licenses are inactive.
- Private investment in mineral exploration is constrained by outdated geodata systems, opaque and price-driven tenders, unclear subnational permitting, uncertain fiscal and license-transfer valuation rules, infrastructure bottlenecks, environmental concerns, and community tensions.
- Strengthening Mongolia's ETM exploration environment will require near-term reforms, including upgraded geodata management rules and reporting systems, reformed tender rules, standardized surface rights approvals, clarified state participation, and improved fiscal competitiveness.
- These reforms could unlock an estimated US\$200 million–US\$500 million in private investment in the medium term and generate 700–1,400 jobs.

Sector Context and Private Investment Potential

Mongolia represents a geologically promising but underexplored source of energy transition minerals (ETMs).¹⁰⁰ The country hosts large copper and gold deposits, as well as geological formations favorable for rare earth elements (REEs), lithium, graphite, cobalt, and nickel. Proximity to China, the largest market for most ETMs, offers cost advantages and access to steady demand, while government and industry efforts to diversify ETM supply chains are increasing interest in alternative sources. With the right conditions, Mongolia could attract significantly more private investment in ETM exploration.

Increased mineral exploration is a precondition for expanding Mongolia's mining value chain and diversifying resource extraction beyond coal. Mining, primarily coal, currently accounts for 25 percent of gross domestic product (GDP), more than 90 percent of exports, and around 80,000 direct jobs. However, sustaining the sector's importance will require the identification of new deposits. Exploration is the binding constraint: without a stronger early-stage project pipeline, investment in new mines, processing, and related job creation will remain limited.¹⁰¹

Mongolia's ability to attract high-quality ETM explorers depends not only on geology, but also on whether firms can enter, raise capital, operate, and exit predictably. Junior companies need to acquire surface rights, raise equity to finance operations, including drilling, and sell or farm out projects once a resource is proven. Because exploration is high risk, with only one in 1,000 exploration projects becoming a viable deposit, investors are sensitive to the cost and predictability of entry, the reliability of geodata, and the clarity of exit rules for transferring or monetizing discoveries. The long, staged nature of the mineral value chain, illustrated in figure 5.1, makes these investments particularly sensitive to regulatory uncertainty.

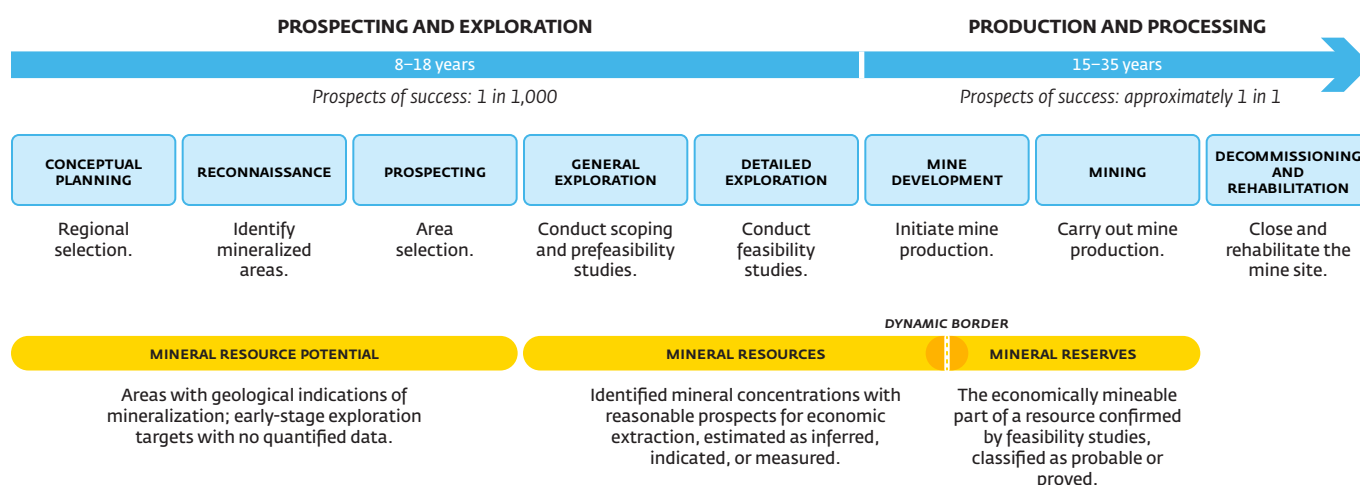
Projected demand growth for ETMs increases private investment opportunities.

Between 2021 and 2025, global output of lithium, nickel, cobalt, graphite, and copper grew at least as the previous five years (figure 5.2). Although total REE production decelerated, magnet REEs grew faster than in earlier years, reflecting rising demand from electric vehicles, wind turbines, and other electrification technologies.¹⁰² Global supply temporarily outpaced demand during this period, lowering prices, particularly for lithium and nickel,¹⁰³ but the long-term trend remains expansion as economies electrify. Demand for lithium could grow 4.5-fold between 2020 and 2040, while demand for graphite and nickel could double and demand for cobalt and REEs could rise by 50–60 percent.¹⁰⁴ Global copper shortages are anticipated by 2030 as renewable power systems expand.

Global ETM supply chains remain highly concentrated, motivating governments and industry to diversify production and processing. China dominates both ETM

Figure 5.1

Exploration Is the Riskiest Stage of the Mineral Value Chain



Source: Adapted from BGR and MRPAM (2023).

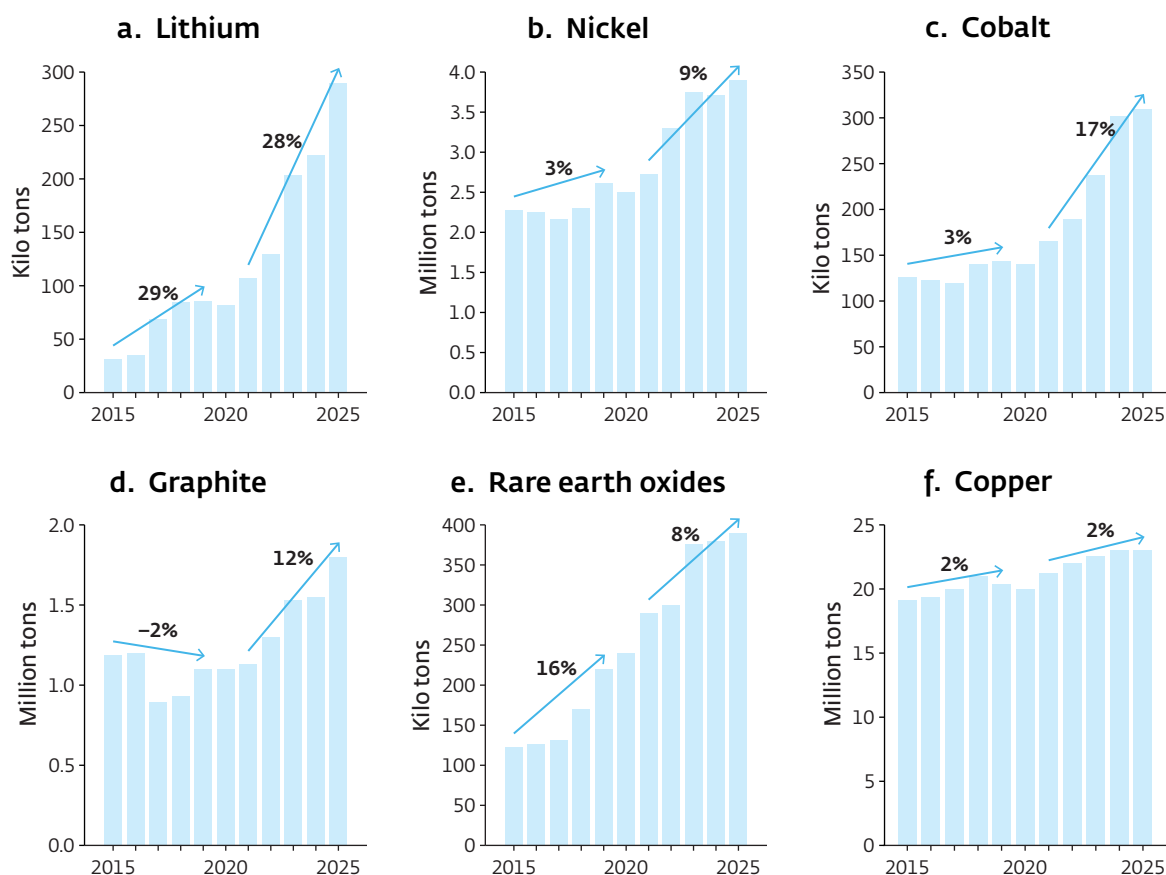
consumption and refining, while the top three producers account for nearly 80 percent of ETM production and an even higher share of processing capacity. This concentration is driving efforts to secure alternative supply partnerships, positioning Mongolia as a potential source of new supply. Mineral exploration is therefore a national priority under Mongolia's Vision 2050,¹⁰⁵ supported by the scaling up of high-quality geological surveys¹⁰⁶ and efforts to strengthen the legal and regulatory framework for critical minerals, with a focus on improving predictability for private ETM exploration investment.

Mongolia remains underexplored despite its mineral prospectivity and strategic proximity to China's processing base. Mineral exploration is typically driven by a combination of major firms, which focus primarily on brownfield exploration near existing operations, and junior mining companies—specialized firms with higher risk tolerance that often lead early-stage greenfield discovery. Mongolia's mining sector remains concentrated around a few megaprojects, with only a limited number of active junior exploration firms¹⁰⁷—well below the scale observed in mature mining jurisdictions, where hundreds of junior explorers operate and drive early-stage discovery. Private exploration expenditure is low relative to the importance of the mining sector¹⁰⁸ and has stagnated over the past decade, during which no significant new discoveries have been made. This is largely due to the restrictive licensing procedures introduced in the early 2010s, including the closure of open applications for new exploration licenses and exclusive reliance on tender-based allocation, which requires upfront financial commitments and prioritizes bid price over risk-based exploration decisions. Mongolia's 999 active exploration licenses cover just

Figure 5.2

Global ETM Output Remained Robust in 2021–25, with Growth Accelerating for Most Minerals

Global mine production of minerals, 2015–25



Source: US Geological Survey Mineral Commodity Summaries database.

Note: ETM = energy transition mineral.

3.2 percent of the country, representing less than 15 percent of land legally available for mining and exploration.¹⁰⁹

Mongolia's geology offers multiple entry points for private investment in ETM

exploration (table 5.1). These include (2) greenfield entry, through which junior or midtier firms can obtain new or inactive licenses to undertake early-stage exploration activities, such as reconnaissance, to identify new ETM occurrence or deposits based on geodata, or to advance known occurrences of rare earths, lithium, graphite, and copper that require further drilling and resource definition;¹¹⁰ and (2) brownfield entry, through which junior, midtier, or major firms can explore around existing copper mines to extend known deposits or identify nearby ore bodies at lower geological risk. Under both pathways, investors

Table 5.1

Private Investment Entry Points Span Early- and Mid-Stage ETM Opportunities, with Copper More Advanced

No.	Mineral	Current status in Mongolia	Nature of potential opportunity
1	Cobalt	Only small occurrences have been identified, with no systematic modern exploration to date.	<i>Early-stage greenfield</i> Systematic exploration is needed to confirm scale and grade.
2	Copper	Two large operating mines anchor the sector, and several other major development-stage projects are ongoing.	<i>Greenfield and brownfield</i> Opportunities exist in satellite deposits and new copper discoveries in underexplored regions.
3	Graphite	The Gobi region has been recognized as a potential host of graphite. Although prospects are likely low in tonnage, they are located in favorable areas, and exploration is underway.	<i>Early-stage greenfield</i> Early drilling results indicate potential to advance to resource definition if exploration capital and technical capital are secured.
4	Lithium	Fifteen to sixteen known occurrences and five identified deposits across multiple <i>aimags</i> . Drilling is ongoing, but most have not been drilled enough to define size or grade and remain at prefeasibility stage.	<i>Mid-stage and early-stage greenfield</i> Known deposits still require resource definition and testing; investor entry most likely through joint ventures or farm-ins with current license holders.
5	Nickel	Drilling is underway at the Oval copper-nickel discovery, with confirmed high-grade intersections, but a modern resource estimate is still pending. Other ultramafic belts remain largely untested.	<i>Mid-stage greenfield with additional discovery potential</i> One known target could progress to resource definition, while broader belts offer scope for new nickel discoveries if modern exploration is applied.
6	Rare earth elements (REEs)	Seven deposits are known, two of which are currently upgrading minable reserve estimated through the international resource statements and prefeasibility studies that are under way.	<i>Mid-stage and early-stage greenfield</i> Known deposits require redrilling and modern reporting, while surrounding belts and targets remain early-stage and may host additional REE discoveries.

Source: Based on consultation with government officials; Mongolian Critical Minerals Association; Mongolia Inc. (2025).

Note: ETM = energy transition mineral.

may enter by acquiring exploration rights directly from the state through a license or by participating in joint venture or farm-in arrangements with existing license holders.

Currently, most exploration is carried out by small domestic firms with limited technical and financial capacity. Of the country's roughly 1,000 exploration licenses, about half are inactive. Only seven active licenses include ETM rights, and several of these are seeking joint venture partners, suggesting a financing gap and a need for technical expertise. Some areas under inactive licenses may have commercial potential

but have never been systematically sampled, tested, or drilled, suggesting large tracts of underexplored ground that could attract private investment. However, low holding costs, light renewal requirements, and minimal tracking of actual exploration expenditures allow companies to retain licenses even when they are not actively advancing exploration or developing mines.¹¹¹

Limited midstream processing, water constraints in the Gobi, and underdeveloped transport and energy infrastructure affect exploration investment. Although these challenges primarily impact the midstream and downstream phases of the mining value chain, they can make financiers more cautious about backing junior ETM projects by lowering the expected value of a future mine. Cross-cutting issues, such as inefficient dispute resolution mechanisms, weak investor protection, and periodic policy shifts, add further uncertainty for private investors,¹¹² reinforcing the need for reforms to improve predictability.

The current operating environment limits the ability of reputable explorers to enter, advance discoveries, or exit successfully. Although Mongolia ranks 15th of 86 jurisdictions on the Fraser Institute's Best Practices Mineral Potential Index, which measures geological attractiveness, it ranks 49th on the Policy Perception Index, which captures how regulatory and governance factors shape investor sentiment toward exploration. The difference indicates that strong geology is not translating into competitive private investment.¹¹³ This misalignment is reinforced by the government's triple role as policy maker, regulator, and commercial participant. Through its national mining holding company, the government manages interests in strategically important mineral deposits, including holding equity stakes in multiple large-scale deposits.¹¹⁴ These roles are insufficiently ring-fenced, creating uncertainty over future state equity participation, complicating exploration asset valuation, and deterring early-stage capital.

For greenfield activities, exploration companies evaluate geological prospectivity when deciding where to invest and rely heavily on publicly available baseline geodata.¹¹⁵ When baseline geodata are incomplete or difficult to access, entry costs and risk profiles rise sharply. Mongolia's data sets are outdated and insufficiently detailed. While MonGeoCat (Mongolia Geoscience Catalog) provides a user-friendly access point, its value is constrained by limited data volume, coverage, and depth. Much of Mongolia's geological information still relies on Soviet-era survey data, which did not focus on ETMs, with 1:50,000 geological mapping covering less than half the country.¹¹⁶ A significant amount of geodata has not yet been digitized and remains fragmented across formats, with much of the pre-1990 material available only in Russian-language hard copy. In addition, exploration data submitted by firms are not consistently captured or made usable for the government and future investors, partly because exploration reporting does not clearly separate technical data from financial, environmental, and health and

safety reporting. This weakens the capture and storage of geodata. Further, data from expired, surrendered, or terminated licenses are not made publicly available after a defined period, requiring new exploration license holders to start from “ground zero.” International investor surveys reflect these gaps, with Mongolia scoring below comparator countries on whether the quality of its geological database supports, rather than deters, exploration investment.¹¹⁷ Government efforts to increase funding for geological surveying and prioritize mapping in the most prospective areas are a critical step toward improving data availability and reducing early-stage exploration risk.

Data gaps become more consequential under the bid-price tender system, which requires companies to bid competitively for exploration rights before sufficient geodata are available to assess risk or commercial viability. Since 2022, all exploration and mining licenses have been allocated by tender through an online platform, with bids assessed 55 percent on price and 45 percent on technical criteria. In practice, this operates as a highest-bid auction. While appropriate in some cases for brownfield sites, where known deposits allow bidders to make informed decisions and the government to maximize revenue, this approach is poorly suited to high-risk, early-stage ETM exploration, where geological uncertainty is significant. Because no technical prequalification is required, tenders for geologically uncertain greenfield areas are prone to attracting speculators rather than technically qualified exploration firms. In practice, this has favored well-capitalized bidders for non-ETM resources while deterring private investment in greenfield junior exploration. While auctions can in theory improve transparency by making price the deciding factor, this can come at the expense of technical quality; stakeholders report that the existing process remains susceptible to collusion and nontransparent practices.¹¹⁸

Once exploration rights are issued, firms can face delays from overlapping land claims, denial of environmental management plans, and other local permits and clearances. Investors report delays related to overlapping land claims and discretionary local environmental approvals can extend project timelines by up to 12 to 18 months and heighten perceptions of risk. Permitting procedures are inconsistent across *aimags* and often require multiple rounds of local review.¹¹⁹ A 2024 mining investor survey identified reducing excessive local-level involvement as the top reform priority for improving Mongolia’s environmental framework.

Even when land rights are lawfully obtained, community opposition has led to protests and project delays, reinforcing perceptions of policy instability. Despite existing consultation requirements, firm engagement with communities at the *bag* and *soum* levels during exploration is often limited and occurs late in the process. As a result, communities often learn about projects after licenses have been issued. This fuels resistance to unfamiliar ETM projects and misinformation about environmental and health

risks, some of which require careful management. Reliance on pastoral herding systems further heightens environmental and social sensitivities. Mongolia has an unusually high volume of mining litigation for the size of the sector,¹²⁰ with judicial review often taking two years and only about 10 percent of cases decided in favor of companies.¹²¹ These dispute-related bottlenecks create scope for discretionary political intervention and rent seeking and deter small exploration firms that lack the capacity to manage prolonged permitting cycles and community disputes. A key issue is the ineffective framework for sharing mining benefits with local communities, including weak awareness and understanding of how local development funds (LDFs) translate mining revenues into local spending. Despite increased subnational transfers and substantial LDF allocations, citizen awareness of how these funds are allocated, what they finance, and how communities can participate in decision-making remains low, reflecting limited outreach and capacity constraints at the local level.¹²²

Unpredictable fiscal treatment and uncertainty around state participation reduce certainty over how a discovery can be developed or transferred, lowering the value of early-stage exploration. Ongoing tax disputes, uncertainty around the valuation basis for license transfers, ambiguous criteria for strategic deposit designation, and ad hoc state participation reduce investor confidence that successful discoveries can be monetized without unexpected fiscal or regulatory intervention.¹²³ For license transfers, taxable value is not based solely on the transaction price between unrelated parties. Instead, it is determined through prescribed averaging of the transaction price and model-based methods, including income-based net present value (NPV), cost-based, and market-based, depending on the stage of the exploration.¹²⁴ Model-based methods like NPV are highly sensitive to assumptions and may diverge substantially from market prices, creating uncertainty over the after-tax sale proceeds. Ambiguous criteria for strategic deposit designation create a further layer of risk by making it unclear not only whether state participation will be triggered, but also how it would be exercised in practice. In a market where state-owned enterprises (SOEs) and state-linked joint ventures dominate production in mineral commodities and account for a substantial share of exports and fiscal revenues,¹²⁵ the possibility that an SOE could hold the resulting state equity stake affects not only dilution risk, but also expectations around governance, project control, and commercialization, further reducing the expected value of an exploration asset.

Constraints to Private Investment and Recommendations

CONSTRAINT 1. Limited availability and accessibility of modern geodata deter exploration by raising cost and risk. Despite recent increases in spending, much legacy geodata remains undigitized or difficult to access, and data from relinquished licenses are not systematically captured or released. The absence of a centralized, geographic information system (GIS)-ready national repository linking all state, legacy, and license-generated data requires firms to verify information independently, reducing Mongolia's competitiveness relative to jurisdictions with more comprehensive and accessible geodata.¹²⁶

RECOMMENDATION 1A. Establish a legal mandate requiring relevant agencies, including the Mineral Resources and Petroleum Authority of Mongolia (MRPAM), to transfer geodata to the National Geological Survey (NGS) for integration into a centralized geoscience repository. While the Minerals Law mandates the NGS to create, expand, and maintain the national geology and mineral resource database, significant exploration data held by other agencies are not consistently shared with the NGS, and no clear legal obligation requires other agencies to transfer relevant data for integration. The Ministry of Mining and Heavy Industry (MMHI) should prepare amendments to the Minerals Law to formalize data-sharing processes within and between agencies. This should include firm-submitted exploration data held by MRPAM, some of which are subject to confidentiality provisions but should still be systematically transferred to the NGS, with equivalent confidentiality protections maintained. This would enable NGS to harmonize fragmented analog and digital ETM geodata and standardize them into a unified, map-based, GIS-ready format aligned with international reporting standards, thereby improving the depth of data available in MonGeoCat.¹²⁷

RECOMMENDATION 1B. Require exploration license holders to submit geological, geochemical, geophysical, and drilling data in standardized digital format quarterly, and establish rules for public disclosure. Exploration firms generate data that retains significant value for the government and other explorers even when exploration is not continued.¹²⁸ To improve the capture, storage, and use of private firm data, the government should (a) amend exploration reporting requirements under article 48 of the Minerals Law to require all exploration license holders to submit geological, geochemical, geophysical, and drilling data in prescribed digital templates quarterly during the license tenure and within 90 days of license expiry, surrender, or termination; and (b) establish clear confidentiality rules, including a sunset clause under which submitted technical data become automatically eligible for public release after a defined period, such as one to five years depending on data type. This would align Mongolia more closely with international practice and reduce the loss of valuable exploration information.

CONSTRAINT 2. The method for awarding exploration rights deters more qualified exploration firms. By law, exploration rights are awarded through tenders that are effectively based on the highest bid, and there is no dedicated licensing pathway for early-stage exploration.¹²⁹ Requiring firms to bid before sufficient geodata are available to assess risk and commercial viability discourages serious explorers and encourages speculation.

RECOMMENDATION 2A. Introduce reconnaissance and prospecting licenses. MMHI and MRPAM should develop and propose amendments to the Minerals Law to introduce early-stage exploration license categories, beginning with reconnaissance licenses awarded on a first-come, first-served basis,¹³⁰ to allow firms to conduct initial, low-impact assessments. These short-duration licenses, for example one to three years, would lower entry costs for private firms while supporting geodata generation and the identification of areas suitable for subsequent exploration.

RECOMMENDATION 2B. Where exploration rights are to be tendered, introduce a two-stage tender methodology with clear prequalification requirements. MMHI and MRPAM should add a prequalification phase to screen technical and financial capacity, resulting in a shortlist for second-phase bidding. The Minerals Law permits tenders but does not define the process, so the change can be made by amending the existing tender procedures. Firms would be screened for experience, technical capability, and financial strength, and only prequalified bidders would advance. This would help ensure exploration rights are awarded to qualified firms able to carry out meaningful programs and reduce speculative bidding.

CONSTRAINT 3. Overlapping land claims, local denial of environmental management plans, and community objections delay exploration after licenses are issued. While exploration licenses grant subsoil rights,¹³¹ firms must obtain local environmental approvals and address land access and community concerns before operations can begin. In practice, these processes are not clearly defined or consistently applied and are often affected by limited coordination and early consultation among the central licensing authority, local governments, land users, and communities, as well as gaps in access to credible information. This increases transaction costs, reduces predictability, and creates a risk that exploration activities will be delayed or fail to proceed despite a legally valid license.

RECOMMENDATION 3A. Before tendering exploration rights, require *soum*-level confirmation of land availability and access conditions. In addition to the existing pre-auction approval process at the *aimag* level, MRPAM should require a standardized land-status note from the relevant *soum* authorities confirming whether the proposed exploration area is affected by overlapping claims.¹³² This should cover nondigitized or locally allocated land rights, pasture areas, water points, other known surface-access issues

not captured in central systems, and material land-use constraints that could prevent access under existing legal requirements.¹³³ As part of this process, the *soum* governor should publicly disclose the proposed tender area through locally accessible channels and, where feasible, an online portal. This would strengthen pre-award land screening, improve local awareness, and reduce the risk that firms bid on rights that later prove difficult to access or use.

RECOMMENDATION 3B. After license award and before exploration begins, require standardized public disclosure of license information. The *soum* governor should disseminate a short disclosure, based on MRPAM template, summarizing the license area, planned activities, expected duration, likely land and water use, and contact details of the license holder. This disclosure should be shared through *soum*-level channels and, where feasible and appropriate, *aimag*-level multistakeholder platforms such as Extractive Industries Transparency Initiative councils or similar forums. These platforms can complement local government outreach by facilitating dialogue and improving transparency, without substituting for formal consultation or approval processes. Providing early, accessible, and credible information through multiple channels would help reduce misunderstandings, strengthen trust, and minimize avoidable objections and delays.

CONSTRAINT 4. Ambiguous criteria for classifying deposits of strategic importance create uncertainty over future state equity participation deter early-stage investors. A deposit can be classified as “strategic” under current law if its potential output is expected to exceed 5 percent of GDP or is deemed to affect national security or economic development—criteria that are open to interpretation. Once a deposit is designated strategic, the government may acquire up to 34 percent ownership stake without compensation if the deposit was discovered by a private entity. For investors, although the level of potential state participation is broadly comparable to other jurisdictions, the uncertainty surrounding its application is greater in the case of Mongolia. Strategic designation and equity negotiations typically occur only after significant exploration capital has been committed, often upon confirmation of commercial deposits, creating ex post uncertainty over dilution, governance rights, valuation, and exit options, particularly for junior explorers reliant on asset transfers.¹³⁴

RECOMMENDATION 4. Amend the Minerals Law to establish objective and transparent criteria for strategic deposit designation and clearly define the implications of designation. The government should amend the Minerals Law to replace open-ended criteria, such as whether a deposit is deemed to affect national security, with measurable thresholds for strategic designation. This should clearly specify what type of discovery trigger strategic designation and how the state may participate,¹³⁵ enabling investors to assess risk before committing major exploration capital. These rules should apply consistently from exploration through mining, and future changes should not

be applied retrospectively, consistent with practice in other mining jurisdictions. This would reduce investor uncertainty regarding future state participation.

CONSTRAINT 5. Valuation rules for license transfers increase exit risk by creating uncertainty over the taxable value of transactions. Transaction prices between unrelated parties are not treated as the primary basis for taxation. Instead, taxable value is determined using prescribed averaging of the transaction price and model-based methods that may diverge materially from observed market prices. In certain cases, the Ministry of Finance (MoF) may also disregard the observed transaction price. As a result, explorers face unpredictable tax outcomes, discouraging transfers to firms capable of advancing projects.

RECOMMENDATION 5. Treat observed transaction prices as the primary basis for taxing transfers of exploration licenses between unrelated parties. MoF, in coordination with MMHI, should revise MoF Order No. 302 so that the observed transaction price is the default tax valuation benchmark for arm's-length transactions. Departures from this principle should be limited to clearly defined circumstances where elevated uncertainty and credible evidence justify an adjustment. These changes would improve predictability for investors and anchor the tax base in observable market values rather than model-based assumptions.

5.3 Risks to Be Managed

In light of potential additional private investment in mineral exploration, environmental and social risks will need to be managed to ensure that sector growth remains sustainable, protects Mongolia's fragile ecosystems, and maintains public confidence in the mining sector.

Environmental risks. Increased exploration could place additional pressure on protected areas, pastureland, and fragile, water-scarce ecosystems, particularly in the Gobi. While exploration generally has a smaller environmental footprint than mine development and production, it can still generate impacts through land disturbance, access roads, drilling, and water extraction. Successful exploration is also intended to lead to mine development and downstream processing, which may entail substantially larger environmental impacts, including significant water requirements associated with the extraction and processing of certain ETMs, such as lithium and REEs.

Community and social license risks. Expanded exploration could heighten tensions with herder communities and local governments if land access, pasture use, water resources, rehabilitation obligations, and benefit-sharing arrangements are not managed transparently. Community opposition to exploration and mining projects, including

concerns over the environmental and health impacts of rare earth development, demonstrates how social license challenges can escalate into protests, project delays, cancellations, and policy reversals. Without stronger mechanisms for stakeholder engagement and benefit sharing, increased exploration activity could weaken investor confidence and undermine broader efforts to improve the investment climate.

5.4 Expected Impact on Private Investment and Jobs

By reducing exploration risk and improving investment conditions, the proposed reforms could contribute between US\$200 million–US\$500 million in additional private exploration investment over the medium term. This could generate 700–1,400 direct, indirect, and induced jobs through increased demand for local services, skills development, and technology transfer. Major discoveries could also catalyze complementary investment in transport, power, and logistics infrastructure, with wider regional benefits.

Over the longer term, the number of additional mines that could result from this exploration investment cannot be predicted with certainty given geological and commercial uncertainties. However, at the upper level, US\$500 million in exploration investment could plausibly support the discovery and development of one to two new mines. If successful, such discoveries could translate to US\$1 billion–US\$2 billion in additional annual mining revenue and create 40,000–90,000 direct, indirect, and induced jobs across mining, processing, and related services. These impacts depend on successful project development resulting from more productive exploration and reflect the potential effects of this specific increase in exploration activity rather than an upper ceiling on the long-term growth of the mining sector, which is likely to be substantially higher.

Table 5.2

Policy Recommendations to Remove Impediments to Private Investment in Exploration for ETMs

Constraints	Recommended actions
1. Limited availability and accessibility of modern geodata deter exploration.	1a. Establish a legal mandate requiring relevant agencies, including the Mineral Resources and Petroleum Authority of Mongolia (MRPAM), to transfer geological data to the National Geological Survey (NGS).
	<i>Responsible public sector entities:</i> MMHI, MRPAM, and NGS
	1b. Require exploration license holders to submit geological, geochemical, geophysical, and drilling data in standardized digital format quarterly, and establish clear confidentiality rules under which technical data become eligible for public release after a defined period.
	<i>Responsible public sector entities:</i> MMHI and MRPAM
2. The method for awarding exploration rights deters more qualified exploration firms.	2a. Introduce reconnaissance and prospecting licenses. ^a
	2b. Where exploration rights are tendered, introduce a two-stage tender methodology with clear prequalification requirements.
	<i>Responsible public sector entities:</i> MMHI and MRPAM
3. Overlapping land claims, local denial of environmental management plans, and community objections delay exploration after licenses are issued.	3a. Before tendering exploration rights, MRPAM should require <i>soum</i> -level confirmation of land availability and access conditions.
	3b. After license award and before exploration begins, require the <i>soum</i> governor to disseminate a short, standardized disclosure, based on an MRPAM template, summarizing license-related information.
	<i>Responsible public sector entities:</i> MMHI and MRPAM
4. Ambiguous criteria for classifying deposits of strategic importance, deterring early-stage investors.	4. Amend the Minerals Law to specify objective and transparent criteria for strategic deposit designation and clearly define the implications of designation.
	<i>Responsible public sector entities:</i> MMHI
5. Valuation rules for license transfers increase exit risk once a mineral discovery is made because transaction prices between unrelated parties are not treated as the primary basis for taxation.	5. The Ministry of Finance should adopt valuation principles that treat the observed transaction price as the primary basis for taxing transfers of exploration licenses between unrelated parties.
	<i>Responsible public sector entities:</i> MoF and MMHI

Note: MMHI = Ministry of Mining and Heavy Industry; MoF = Ministry of Finance; MRPAM = Mineral Resources and Petroleum Authority of Mongolia.

a. A draft Minerals Law amendment under parliamentary consideration as of mid-2026 could, if enacted and effectively implemented, create a new pathway for privately financed early-stage geological work in unlicensed areas, offering an alternative to the current tender-based system. Its final scope and practical effectiveness remain subject to the parliamentary process and subsequent implementation.

Appendixes

Appendix A

Estimates of Potential Increases in Private Investment and Employment

A.1. Sustainable Cashmere Processing

This report presents indicative estimates of potential private investment and job creation in cashmere processing under a scenario in which policy reforms enable higher levels of domestic value addition. The analysis estimates the medium-term output that could be achieved and the associated investment and employment implications. The estimates are based on secondary data, expert consultations, and primary surveys of Mongolian cashmere companies conducted in November 2025.

Two complementary approaches were used:

- Bottom-up analysis for investment estimates, using processing-stage data, machinery requirements, unit capacities, labor needs, material loss rates, and operating assumptions.
- Top-down analysis for employment estimates, applying sector employment multipliers and full-time equivalent (FTE) per-ton coefficients.

A.1.1 *Investment Estimates*

A.1.1.1 **APPROACH AND METHODOLOGY**

The investment assessment applies a bottom-up model that estimates machinery needs across the spinning and knitting stages. The model incorporates machinery costs, production capacities, labor requirements per machine, shift patterns, and standard material loss rates (30 percent for scouring, 25 percent for dehairing, and 8 percent for spinning). The objective is to estimate the machinery required to increase the share of raw cashmere processed domestically from 20 percent to 70 percent.

A.1.1.2 **ASSUMPTIONS**

The analysis relies on several technical and operational assumptions. Installed capacity includes 19,000 metric tons (MT) of scouring, 11,400 MT of dehairing, 2,278 MT of spinning, 2.3 million meters of weaving, and 4.5 million knitted garments annually, according to 2025 data from the Mongolian Wool and Cashmere Association. Because existing scouring and dehairing capacity is sufficient, and the associated machinery typically lasts 25–30 years, the investment assessment focuses on expanding spinning and knitting capacity, which represent the main bottlenecks in the value chain. The conservative scenario modeled in this analysis adds 1,000 MT of spinning capacity and 2 million knitted garments per year, allowing the sector to increase the share of processed cashmere to 70 percent if the recommended reforms are implemented. Raw cashmere availability is fixed at 10,000 MT to address sustainability concerns related to overgrazing while maintaining the sector's emphasis on fiber quality and value addition.

Due to limited data availability, the analysis excludes investment in facilities, construction, land, utilities, labor, and service connections, and therefore captures only machinery investment, primarily for brownfield expansion. Operating assumptions include 300 working days per year with two eight-hour shifts per day, equivalent to 4,800 operating hours annually. Consistent with the structure of the industry, in which 65 firms are engaged in knitting compared with only nine in weaving, and reflecting stronger data availability, the model prioritizes knitting over weaving for downstream processing.

All tonnages refer to metric tons. One MT is equivalent to 1,000 kilograms (kg). The analysis assumes a conversion factor of four sweaters per kg of yarn, equivalent to 0.25 kg per sweater, based on consultations with local firms. Currency conversions for Chinese yuan and euros use November 2025 exchange rates of 0.14 and 1.16, respectively. Unless otherwise specified, all values are expressed in constant 2025 US dollars. Exchange rate sensitivity is not incorporated into the analysis.

A.1.1.3

RESULTS

Under a conservative scenario in which spinning capacity is expanded to process an additional 1,000 MT and knitting capacity is increased to produce 2 million additional garments per year, a level considered feasible over the medium term if the proposed recommendations are implemented, the required investment is estimated at approximately US\$150 million, comprising US\$115 million for spinning and US\$35 million for knitting.

A.1.2

Jobs

A.1.2.1

APPROACH AND METHODOLOGY

Job creation potential is assessed through a top-down approach using sector employment multipliers drawn from the Cashmere Value Chain Analysis in Mongolia (European Commission 2024)¹³⁶ and confirmed through consultations with Mongolian firms.

Key analytical parameters include current employment of 7,584 FTEs across the value chain, the potential to reach up to 18,000 FTEs with full processing of 10,000 MT, and a job multiplier of 1.5–1.8 FTEs per metric ton of raw cashmere processed into finished goods. The estimates are aligned with the investment scenario, which adds 1,000 MT of spinning capacity and 2 million knitted garments and increases domestic processing from 20 percent to 70 percent.

The analysis deliberately focuses on direct employment in cashmere processing, which can be estimated with relatively high confidence given the sector's labor-intensive nature and firm-level evidence. Indirect and induced employment effects are not quantified, reflecting methodological challenges specific to cashmere, including the multioutput nature of livestock systems, strong overlap with other agricultural value chains, widespread informality and seasonality of labor, and the absence of cashmere-specific input–output data. To avoid overprecision, the estimates therefore report direct jobs only.

A.1.2.2

RESULTS

Under this scenario, an estimated 3,000–5,000 additional FTE jobs could be created by 2030, reflecting the labor-intensive nature of downstream processing and the gains associated with higher domestic value addition.

A.2. Solar and Wind Energy Generation

A.2.1 *Private Investment*

A.2.1.1 APPROACH AND METHODOLOGY

This report estimates potential private investment in solar and wind power generation, as well as associated employment impacts, under scenarios with and without implementation of the recommendations. The analysis projects power generation capacity additions and associated investment needs. All estimates are expressed in constant 2025 US dollars, using an exchange rate of Tog 3,479 per US dollar, unless otherwise noted. Investment costs reflect overnight capital costs and do not include replacement costs.

A.2.1.2 ASSUMPTIONS

Because the government's least-cost geospatial power development plan, or integrated resource plan, was not publicly available at the time of writing in late 2025, the analysis projects capacity additions based on assumed annual peak demand growth rate of 8.1 percent during 2024–35. This is the average of the historical growth rate of 5.7 percent during 2000–24 and the government's estimated growth rate of 10.5 percent during 2024–35, and is used as a conservative assumption.¹³⁷

In the without-reform scenario, capacity additions include about 2 GW of combined heat and power plants, 380 MW of reservoir hydropower, 100 MW of pumped-storage hydropower, 30 MW of run-of-river hydropower, and government-planned auctions for 330 MW of solar photovoltaic (PV) and 200 MW of wind power.¹³⁸ The without-reform scenario assumes electricity imports from China and the Russian Federation continue to bridge the gap between planned domestic capacity and projected demand growth. Under this scenario, however, electricity demand is projected to be 5 percent lower, reflecting this analysis's assumption, discussed in the next section) of reduced foreign investment, particularly in mining, that would otherwise seek access to lower-carbon power sources.

In the with-reform scenario, additional investment beyond the without-reform scenario comprises 100 MW each of wind power and solar PV power capacity, as well as a BESS of 100 MW of power capacity and 400 megawatt-hour (MWh) of storage capacity. These additional investments are estimated based on projected capacity requirements under the assumed average annual peak load growth rate of 8.1 percent during 2024–35. The analysis assumes that the additional solar PV, wind, and BESS capacity would reduce electricity imports and demand curtailment. In 2024, electricity imports accounted for 18 percent of winter peak load, while demand curtailment accounted for 2 percent.¹³⁹ All other domestic capacity assumptions are the same as in the without-scenario.

A.2.1.3 RESULTS

This analysis estimates investment costs using installation costs of US\$708 per kilowatt (kW) for solar PV, US\$1,067 per kW for wind power, and US\$125 per kilowatt-hour (kWh) of usable BESS capacity.¹⁴⁰ Under these assumptions, the with-reform scenario could unlock approximately US\$230 million in additional investment.

A.2.2 *Jobs*

A.2.2.1 APPROACH AND METHODOLOGY

This analysis assesses job impacts from the perspective of the industrial sector, where electricity supply is a key production input. This approach is consistent with the International Finance Corporation's power sector job impact assessment methodology of investment projects, reflecting the temporary nature of equipment installation jobs and the relatively limited operation and maintenance (O&M) jobs associated with utility-scale power projects.¹⁴¹ Because Mongolia imports solar PV, wind, and BESS equipment as of 2025, the analysis does not estimate domestic manufacturing jobs of such equipment. It also does not rely on job estimates from other countries, which vary by context.¹⁴²

A.2.2.2 ASSUMPTIONS

By expanding electricity supply for the industrial sector using domestic renewable energy sources, the with-reform scenario is expected to increase direct employment in the industrial sector. The employment assessment focuses on mining, given its dominance in the economy. The mining sector accounted for 56 percent of final electricity consumption in 2024¹⁴³ and attracted around 74 percent of foreign direct investment in Mongolia during 1990–2024.¹⁴⁴ Given the growing importance of environment, social, and governance mandates for mining investors, the assessment conservatively assumes that 10 percent of potential new mining investment would not materialize in the without-reform scenario, which is characterized by no or limited solar and wind power capacity.

Under these assumptions, annual average power supply for the industrial sector increases by 197 gigawatt-hour (GWh), equivalent to a 4 percent increase from the 2023 level. Historical data for 2000–23 indicate that a 1 percent increase in industrial power supply is associated with a 1.3 percent increase in industrial value added. Based on this association, the assessment indicates a 5 percent increase in industrial value added in the with-reform scenario.¹⁴⁵

The following assumptions are applied:

- Job creation is estimated using a multiplier approach based on the number of jobs per US\$1 million revenue.¹⁴⁶
- Power generation is modeled over 27 years, from 2028 to 2054, assuming an economic

life of 25 years for solar and wind assets and 12.5 years for PV inverters and BESS.

- Solar PV is assumed to have a capacity factor of 21 percent, a DC-AC derate factor of 80 percent, and annual degradation of 0.5 percent.¹⁴⁷
- Wind power is assumed to have a capacity factor of 25 percent, inverter efficiency of 90 percent, and annual degradation of 0.6 percent.¹⁴⁸
- BESS is assumed to provide four hours of storage, with round-trip efficiency of 85 percent and degradation addressed through fixed O&M costs.¹⁴⁹

A.2.2.3

RESULTS

During 2022–24, value added accounted for roughly 60 percent of total industrial sales on average, and mining represented 76 percent of total industrial sales. Applying the assumption that the with-reform scenario would enable 10 percent of otherwise forgone mining investment, the scenario is estimated to generate US\$57 million in additional mining sector revenue. Using the mining sector's employment multipliers of 19 direct jobs, 8 indirect jobs, and 8 induced jobs per US\$1 million in revenue, or 35 jobs in total, the with-reform scenario is estimated to generate approximately 2,000 jobs, including 1,100 direct jobs. This is equivalent to about 1 percent of total mining sector employment in 2024.¹⁵⁰

The analysis also applies two alternative estimation approaches. A log-log elasticity model indicates that a 1 percent increase in power generation for the industrial sector is associated with a 1.15 percent increase in industrial value added. As previously mentioned, implementation of the reforms is estimated to increase average annual power supply to the industrial sector by about 197 GWh, equivalent to a 4 percent increase relative to the 2023 level. Applying this elasticity implies an approximate 4 percent increase in industrial value added, resulting in an estimated 1,700 jobs, including 900 direct jobs. A third approach, using a linear relationship between industrial electricity supply and sector value added, also produces an estimate of approximately 1,700 jobs, including 900 direct jobs, 400 indirect jobs, and 400 induced jobs.¹⁵¹ This analysis uses the most conservative estimate of job creation in the mining industry under the power generation model over 27 years, during 2028–54. This estimate is equivalent to approximately 1.2 percent of mining sector employment in 2024.¹⁵²

A.2.3

Avoided Carbon Dioxide emissions

This analysis estimates avoided carbon dioxide emissions from replacing electricity imports using a weighted average of carbon dioxide emissions factor of 0.72 MT of carbon dioxide per MWh for electricity imported from China and the Russian Federation.¹⁵³ Applying this emissions factor to total power generation over the 27-year period yields cumulative total avoided emissions of around 5 million MT of carbon dioxide, or an annual average of about 190,000 MT of carbon dioxide.

A.3. Mineral Exploration for Energy Transition Minerals

A.3.1 *Private Investment*

A.3.1.1 APPROACH AND METHODOLOGY

This report presents estimates of potential private investment in the mineral exploration and mining sector under a scenario in which policy and regulatory reforms improve exploration conditions and strengthen the project development pipeline. The analysis estimates additional private exploration spending over the medium term and the associated longer-term mining capital investment that could be enabled through increased discovery and project conversion. Three complementary analytical approaches are applied.

First, a cross-country benchmarking analysis examines the relationship between land area and the number of operating mines, using negative binomial and linear regression models. These models consistently indicate that land area has strong predictive power in estimating the expected number of mines across countries and that Mongolia has fewer producing mines than would be expected given its land area, suggesting unrealized development potential. The models are tested across multiple data sets, including the International Council on Mining and Metals Global Mining Dataset, both public and nonpublic versions, September 2025 release, and specifications, including sensitivity checks for population, landlocked status, and the inclusion and exclusion of coal mines. This benchmarking exercise is used as an indicative reference point rather than as a mechanical target.

Second, historical exploration expenditure data for 2000–24 are used to assess long-run trends and recent stagnation in private exploration spending. Compiled from the Mineral Resources and Petroleum Authority of Mongolia and previous World Bank reports, the data show a marked decline and stagnation since 2012. Given limited recent growth, the baseline scenario is anchored in average expenditure observed during 2020–24, while the reform scenario reflects plausible projected growth rates of 25 percent, 30 percent, and 35 percent over the next five years from this recent low base. The most conservative growth rate of 25 percent is also extended to seven years. These assumptions are informed by observed postreform exploration growth in countries such as Argentina, the Democratic Republic of Congo, Malawi, Papua New Guinea, and Uganda.¹⁵⁴ In 2023, approximately 56 percent of Mongolia's total exploration investment targeted energy transition minerals (ETMs). To remain conservative, this same share is applied to projected totals under the reform scenario, even though future demand trends suggest that the share could rise.

Third, cross-country comparisons of exploration expenditure intensity, measured in US dollars per square kilometer, are used to benchmark current exploration spending against top mineral-producing jurisdictions and ensure that the spending projected under the

reform scenario remains reasonable relative to other countries. In 2023, Mongolia's exploration intensity, at approximately US\$79 per square kilometer, was substantially below that of leading developing-country producers such as Chile, Côte d'Ivoire, Ecuador, Ghana, and Guinea, which typically range from US\$250 to US\$1,100 per square kilometer. This indicates scope for increased investment under improved conditions. Even under the most optimistic projected reform scenario, in which total annual exploration spending—not only ETM exploration spending—reaches US\$621 million over the medium term, Mongolia would also remain below these competitors in exploration intensity per square kilometer, suggesting that projected increases are still reasonable relative to peer benchmarks.

Over the longer term, international benchmarks indicate that advancing an exploration project to economic discovery costs around US\$230 million,¹⁵⁵ suggesting that cumulative additional exploration spending of approximately US\$500 million could support one to two viable discoveries. Developing a medium- to large-scale copper mine can typically require US\$1 billion in upfront capital investment and US\$16 billion–US\$18 billion in lifetime operating expenditures, while generating US\$1 billion in annual revenue. These estimates are drawn from three sources: (1) a sample of 48 copper mines across Chile, the Democratic Republic of Congo, and Zambia;¹⁵⁶ (2) a prefeasibility study for a copper project in Mongolia, with revenue imputed using current copper and gold prices; and (3) published revenue data from a large operating copper mine in Mongolia.

A.3.1.2

ASSUMPTIONS

All monetary values are converted using the 2025 exchange rate of Tog 3,479 per US dollar and expressed in constant 2025 US dollars.

Projected increases in annual private exploration spending assume that 56 percent of total exploration spending is in ETMs, as was the case in 2023. However, given data limitations, exploration intensity benchmarking is based on total country-level private exploration spending and is not limited to ETM exploration.

The analysis uses estimated cumulative additional private exploration investment over the medium term as the basis for downstream projections. This level of spending is translated into expected discoveries using international average exploration success rates observed during 2011–21, which may differ from outcomes in Mongolia depending on mineral type, geology, and project maturity. In addition, mining investment and employment effects materialize over longer time horizons, reflecting the progression from exploration to discovery and development. The estimated one to two additional mines should therefore be interpreted as indicative of impacts originating from an initial five-year period of elevated exploration rather than as a ceiling on long-term potential.

Estimates of additional annual revenue from one to four mines are anchored in a representative Mongolia copper-gold project based on a published prefeasibility study. This serves as a simplifying modeling proxy that assumes all new mines follow a copper-type profile, although in practice the pipeline may be more diversified across ETMs with different cost structures, scale, and revenue dynamics. The focus on copper is reasonable given Mongolia's known geology, although recent developments, such as investment in the Orano uranium mine expected to begin production in 2028 and require US\$500 million in development, indicate that capital requirements for other ETMs may fall within a comparable range.

A.3.1.3 **RESULTS**

Under the reform scenario, improved investment conditions could support cumulative additional private ETM exploration investment of US\$200 million–US\$500 million over the medium term.

Over the longer term, this additional cumulative exploration spending could plausibly, although with no guarantee, lead to one to two additional mines. If developed successfully, these mines could generate US\$1 billion–US\$2 billion in additional annual revenue, subject to successful project development and sustained reforms.

A.3.2 *Jobs*

A.3.2.1 **APPROACH AND METHODOLOGY**

Job creation potential is assessed by applying an international jobs-per-dollar benchmark to incremental annual exploration spending under the reform scenario.

Employment multipliers for exploration are derived by comparing observed job intensity in mineral exploration and mining production in two mining jurisdictions: British Columbia, Canada, and Western Australia. These benchmarks are then adapted to Mongolia's context. In British Columbia, direct exploration employment intensity is 10.1 jobs per US\$1 million of exploration spending; in Western Australia, the intensity is 2.6 exploration jobs per US\$1 million of exploration spending. A final direct exploration employment intensity of four jobs per US\$1 million is selected as a conservative midpoint between the British Columbia and Western Australia benchmarks. This acknowledges that reforms could gradually shift Mongolia toward a more grassroots, discovery-oriented profile closer to British Columbia, while deliberately erring on the side of caution to avoid overstating employment effects. To estimate indirect and induced jobs, the direct exploration employment multiplier of four jobs per US\$1 million is scaled proportionally using the exploration-to-mining production direct-intensity ratio of four to 16, based on internal mining production multipliers. This ensures that indirect impacts remain aligned with the relatively lower labor intensity of exploration compared with mining production.

A.3.2.2

ASSUMPTIONS

Due to limited data on exploration-specific spillovers, revenue-based mining production multipliers are used as a proxy to scale the expenditure-based indirect and induced exploration job multipliers, anchored in the direct exploration employment estimates. This assumes that exploration spending generates supply chain and consumption effects broadly comparable in structure to those observed during production, while allowing the magnitude of exploration spillovers to be lower, consistent with the relatively thinner supply chains associated with exploration.

A.3.2.3

RESULTS

Using this approach, the incremental annual exploration spending under the medium-term reform scenario in Mongolia would support about 700–1,400 direct, indirect, and induced jobs.

Over the longer-term, applying Mongolia-specific mining job multipliers, additional annual mining revenue of US\$1 billion–US\$2 billion could translate into 40,000–90,000 jobs additional direct, indirect, and induced jobs across mining, processing, and related services.

Appendix B

Table B.1

Standards and Codes of Practice Used in Mongolia

Name of standard	Scope	Users	Commodity	Stage	Chapter/ requirement	Type
Responsible Nomads COP, MNS 6891:2020	Covers animal health, welfare, breeding, environment, feed, water supply, and water use for goats, sheeps, horses, camels, and cattle.	Pastoralist producers and producer organizations; used for training and by conformity assessment bodies.	Meat, milk, hides and skins, and fiber.	Production	5/118	General requirements; process.
Sustainable Fibre Alliance Animal Fibre Standard, version 1.01	Comprises five main principles: effective management, decent work, biodiversity and land use, goat welfare, and fiber-quality improvement.	Entities, including herder organizations, and sites, including herders and farmers.	Cashmere.	Production	5/188	General requirements; process.
Sustainable Textile Production COP, MNS 6926:2021	Covers environmental protection, reduced water use, waste and wastewater management, electricity and chemicals consumption, and fair working conditions.	Textile producers and conformity assessment bodies.	Fiber.	Processing	13/61	Guidance; process.
Sustainable Fibre Alliance Clean Fibre Processing COP, C003	Covers health, safety and hygiene; human resources management; supply chain management;	Processors.	Cashmere.	Processing	9/88	General requirements; process.

(Table continues next page)

Table B.1

Standards and Codes of Practice Used in Mongolia (*continued*)

Name of standard	Scope	Users	Commodity	Stage	Chapter/ requirement	Type
	quality; and environmental management. Also includes processing requirements for sorting, scouring, dehairing, and sampling.					
Woven and Knitwear Finished Products Made of Cashmere, Camel, and Yak Hair, MNS 6809:2020	Covers quality testing of knitted and woven products made of cashmere, camel wool, and yak wool.	Manufacturers.	Cashmere, yak wool, and camel wool.	Product	2/24	Technical requirements; product.
Sustainable Fibre Alliance Chain of Custody Standard, version 1.1	Covers handling, storage, processing, recording, transactions, and traceability of SFA-certified fiber throughout the supply chain, including claims on certified content.	Producers, processors, traders, manufacturers, brands, and retailers that physically possess SFA-certified fiber.	SFA-certified cashmere	Product	11/60	General requirements; process and product.

Note: COP = code of practice; MNS = Mongolian National Standard; SFA = Sustainable Fibre Alliance.

Appendix C

Table C.1

Comparative Analysis of Standard Requirements

	Requirement	Responsible Nomads COP	SFA Animal Fibre Standard	Sustainable Textile Production COP	SFA Clean Fibre Processing COP	Woven and Knitwear Finished Products Made of Cashmere, Camel, and Yak Hair	SFA Chain of Custody Standard
Production: Animal husbandry and fiber harvesting							
1	Effective management	✓	✓				
2	Record keeping	✓	✓				
3	Decent work	✓	✓				
4	Health and safety		✓				
5	Rangeland management plan	✓	✓				
6	Rights of Indigenous community		✓				
7	Biodiversity conservation		✓				
8	Nutrition and water supply	✓	✓				
9	Housing and enclosures	✓	✓				
10	Dietary and fodder	✓	✓				
11	Breeding	✓	✓				

(Table continues next page)

Table C.1

Comparative Analysis of Standard Requirements (*continued*)

	Requirement	Responsible Nomads COP	SFA Animal Fibre Standard	Sustainable Textile Production COP	SFA Clean Fibre Processing COP	Woven and Knitwear Finished Products Made of Cashmere, Camel, and Yak Hair	SFA Chain of Custody Standard
12	Animal health protection	✓	✓				
13	Slaughter	✓	✓				
15	Working animals		✓				
16	Fiber harvest	✓	✓				
17	Fiber quality	✓	✓				
Processing: Fiber processing and manufacturing							
1	Health and safety			✓	✓		
2	Human resources management			✓	✓		
3	Corporate responsibility			✓			
4	Supply chain management				✓		
5	Quality management				✓		
6	Environmental management			✓	✓		
7	Raw fiber sorting				✓		✓
8	Scouring				✓		✓
9	Dehairing				✓		✓
10	Sampling				✓		✓

(Table continues next page)

Table C.1

Comparative Analysis of Standard Requirements (*continued*)

	Requirement	Responsible Nomads COP	SFA Animal Fibre Standard	Sustainable Textile Production COP	SFA Clean Fibre Processing COP	Woven and Knitwear Finished Products Made of Cashmere, Camel, and Yak Hair	SFA Chain of Custody Standard
11	Spinning						✓
12	Knitting						✓
13	Weaving						✓
14	Dying						✓
15	Packaging						✓
16	Animal rights			✓			✓
Products: Raw cashmere, processed cashmere, and final products							
1	Traceability						✓
2	Storage						✓
3	Transport						✓
4	Transaction						✓
5	Record keeping						✓
6	Quality of finished product					✓	
7	Quantity						✓
8	Claims on content						✓
9	Traceability system	✓ ^a					✓ ^b

Note: COP = code of practice; SFA = Sustainable Fibre Alliance.

a. Mobile application: Responsible Nomads Traceability System

b. Web-based platform: SFA Threads

Notes

1. World Bank (2020c).
2. The United Nations Environment Program defines ETMs as aluminum, cobalt, copper, graphite, lithium, nickel, and REEs. These minerals are key inputs for electric vehicles and batteries, energy storage systems, solar photovoltaic panels, wind turbines, power grids, and transmission infrastructure, and the broader electrification of industry and transport.
3. Appendix A presents the methodology underlying these estimates, including the longer-term mining production impact figures.
4. Around half of the population lives in Ulaanbaatar, the capital.
5. World Bank (2023b).
6. World Bank (2020d).
7. World Bank (2025a).
8. National Statistics Office of Mongolia, *Statistical Yearbook*, External Trade Tables.
9. "Export by Main Commodities, by Year," National Statistics Office of Mongolia, https://www.1212.mn/en/statcate/table-view/Economy,%20environment/Foreign%20Trade/DT_NSO_1400_006V2_year.px.
10. "Mongolia," Atlas of Economic Complexity, Growth Lab, <https://atlas.hks.harvard.edu/countries/496/None>.
11. World Bank (2023b).
12. Between 2014 and 2019, FDI inflows averaged 1.7 percent of GDP. The period 2014–17 coincided with economic recession. In 2018–19, macroeconomic conditions improved rapidly due to the commodity upcycle and prudent policies, which boosted investor confidence. COVID-19 disrupted this recovery, but conditions have been improving since.
13. Structural and aspirational peers are drawn from the *Mongolia Country Economic Memorandum* (World Bank 2020d) using filters that include GDP per capita, endowments, economic structure, and human capital. This approach benchmarks Mongolia against both similar economies, or structural, and more advanced but structurally comparable economies, or aspirational. Aspirational peers are Australia, Canada, Chile, Malaysia, and Qatar; all others are structural peers.
14. NSO (2023).
15. World Bank (2020b).
16. World Bank (2022). The five structural peers used to compare labor productivity were Armenia, Azerbaijan, Colombia, Thailand, and Viet Nam.
17. World Bank (2024f).
18. These include Vision 2050 and the New Recovery Plan, a 10-year economic development strategy released in 2021 to support implementation of Vision 2050.
19. The government's Action Plan for 2024–28 includes 14 megaprojects aimed at enhancing infrastructure, boosting industrial capacity, and promoting sustainable growth.
20. Invest Mongolia (2025).
21. World Bank (2024b).
22. "Banking and Fintech: Flexible Regulations Relating to Foreign Investors," Investment and Trade Agency of Mongolia, <https://investmongolia.gov.mn/banking-and-fintech/>.
23. ADB (2021); Institute for Capital Market Research, Malaysia.
24. EBRD (2023).
25. "On Trading in Government Securities," Bank of Mongolia, <https://www.mongolbank.mn/en/p/government-bond>.
26. "Stock Market, in December of 2024," National Statistics Office of Mongolia, <https://beta.nso.mn/en/dissemination/93289592>.
27. IMF (2017; 2025b).
28. World Bank (2024b).
29. Transparency International (2024).
30. "The Mongolian Law on Land," Official Translation,

- Faolex, <https://faolex.fao.org/docs/pdf/mon4919E.pdf>.
31. Minerals Law, article 42.1.
 32. "Mongolia Local Agreement Briefing," Natural Resource Governance Institute, 8, <https://development.resourcegovernance.org/sites/default/files/documents/nrgi-mongolia-agreement-briefing-english.pdf>.
 33. NSO (2022).
 34. World Bank (2025e).
 35. World Bank (2023a).
 36. World Bank (2023b).
 37. World Bank (2022).
 38. The Logistics Performance Index reports "grouped rankings" rather than precise ordinal rankings because differences in scores across many countries are not statistically significant; countries within the same group have broadly comparable logistics performance outcomes.
 39. Cashmere fiber production involving (a) responsible sourcing, (b) ethical animal welfare, (c) eco-friendly processing, (d) traceability, and (e) social responsibility.
 40. MWCA (2023).
 41. NSO (2025).
 42. MWCA (2023).
 43. Technavio (2023).
 44. "Technical Regulation for Cashmere Processing and Trading," Government Resolution No. 46/2025.
 45. EBRD (2023). More broadly, garment manufacturing, including both cashmere and wool processing, is consistently characterized by female-intensive employment, with no evidence of systematic gender differences across the two subsectors.
 46. World Bank (2020c); ERC (2025).
 47. Mongolia and Inner Mongolia in China provide the most suitable environments for cashmere production, yielding the finest fibers. Other producers include Afghanistan and the Islamic Republic of Iran.
 48. Following the raw cashmere exports ban, introduced in February 2025 and discussed later in this section, and the launch of the White Gold program, washed cashmere exports ceased. Mongolia exported 4,000 tons of combed cashmere in 2025, valued at US\$330.6 million, compared with 4,700 tons of washed cashmere in 2024, valued at US\$256.7 million. Despite lower export volume, export value rose by 28.7 percent, reflecting higher-value-added processing.
 49. Technavio (2023).
 50. Grand View Research (2022).
 51. In addition to the Sustainable Fibre Alliance standards and certifications, *Agronomes et Vétérinaires Sans Frontières* and the Green Gold Animal Health Project's Responsible Cashmere Resource Center have developed a sustainable cashmere Code of Practice. It is based on Mongolia's national Responsible Nomad requirements and was designed with technical support from Ecocert, a leading international certification body for organic and sustainable practices. The certification scheme introduces globally recognized sustainability principles adapted to Mongolia's seminomadic herding systems, aiming to strengthen market access and credibility for responsibly produced cashmere.
 52. The 2024 event was similar in nature to the *dzud* that occurred in 2010.
 53. Based on the national average price of cashmere, white and brown, during the main harvesting season from March to June, the 2024 average was Tog 137,761 per kilogram, or US\$40.05 per kilogram.
 54. See appendix B for an overview of sustainable cashmere standards and certifications in Mongolia and appendix C for a comparative analysis of their requirements.
 55. Domestic firms could not compete in procurement. They faced seasonal cash flow pressures and high interest rates, while Chinese buyers used low-interest-rate financing, around 3 percent, to outbid them, leaving Mongolian plants undersupplied.
 56. Sharavdemberel (2023).
 57. European Commission (2024).
 58. These include upstream issues related to herder practices, animal breeding, veterinary services, pasture management, and raw fiber quality, which directly affect the quality, traceability, and sustainability of processed cashmere.
 59. FAO (2022).
 60. European Commission (2024).
 61. Ibid.
 62. World Bank (2025e).

63. The International Labour Organization and Korea Labor and Employment Service conducted a nationwide survey between March and November 2025 under the Youth Employment Promotion Project in Mongolia.
64. The Mongolia Country Climate Development Report highlights that overgrazing and climate change have led to significant pasture degradation, impacting the sustainability of the livestock sector.
65. MOFALI partnered with the Mongolian University of Life Sciences, the National Center for Animal Genebank, the Ministry of Nature and Tourism, and Japan-based Setsuro Tech Inc. to improve cashmere fiber.
66. Regional fragmentation leads to differing breeding protocols across *aimags*, causing inconsistent fiber quality, uncontrolled crossbreeding, and incompatible data systems. Without unified national standards and harmonized implementation, Mongolia cannot achieve the consistent, high-quality breeding outcomes required for premium markets.
67. The regulation defines dehaired, or primary processed, cashmere and requires that cashmere intended for export comply with the technical standards applicable to this product category. Only dehaired cashmere that meets minimum technical thresholds, including limits on coarse and intermediate hair content, grease content, and moisture levels, is eligible for export.
68. International experience indicates that commodity exchanges operate most effectively when commercial operations are insulated from direct government influence and supported by independent governance and oversight, transparent and enforceable trading rules, robust disclosure, and market-based price-discovery mechanisms. Reforms can range from strengthened governance and operational autonomy—including greater board independence and clearer accountability arrangements—to broader ownership reforms, including privatization. The recommendations 2C through 2F identify minimum reforms to strengthen MCE's market orientation and operational autonomy.
69. The built-in sunset refers to a predefined temporary mechanism under which the extended loan tenor would be withdrawn once agreed indicators, such as expanded domestic processing capacity, are reached.
70. This will need to be accompanied by targeted improvements in data quality, authentication, and verification protocols, because access alone would not be sufficient to meet international requirements
71. UNDP (2025).
72. SWITCH-Asia (n.d.).
73. Processing 1 ton of raw cashmere into finished products requires approximately 1.5–1.8 full-time equivalent employees, reflecting the labor-intensive nature of this segment.
74. The estimates are over the modeled 27-year period, 2028–54.
75. World Bank (2020c).
76. World Bank (2024a).
77. The majority of urban residents live in Ulaanbaatar (World Bank Group 2025).
78. ERC (2025). Russian imports supplement domestic generation shortfalls, while Chinese imports primarily supply mining operations.
79. ERC (2025).
80. These include (a) a 220 kilovolt (kV) double-circuit transmission line Baganuur to Choir, with expansion of associated grid facilities, expected to be completed in 2029; and (b) construction of a 220 kV double-circuit transmission line from Mandal to Uvurkhangai, a 110 kV line connecting Uvurkhangai to existing infrastructure, and construction or expansion of related facilities at Mandal, Uvurkhangai, Arvaikheer, and Bayankhongor, expected to be completed in 2030 (World Bank 2025a; 2024b)
81. Ulaanbaatar Energy LLC completed and commissioned a BESS with 50 MW of power capacity and 200 MWh of storage capacity in December 2024, and National Power Transmission SOC commissioned an 80 MW and 200 MWh in 2023 (Önöbold 2024; World Bank 2025a).
82. ERC (2025).
83. This range comprises levelized cost of energy figures shared by investors for grid-connected projects: US\$3.5 per kWh for projects in the 800 MW range and US\$7.9 per kWh for a legacy project in the 200 MW range. It is consistent with neighboring

Kazakhstan, where a mature auction system and foreign currency exchange-indexed PPAs are in place. There, the winning price for a 100 MW solar PV project reached US\$3.4 per kWh, or T 15.93 per kWh, in 2024, while a 100 MW wind project attracted US\$2.2 per kWh, or T 11.49 per kWh, in 2025 (Quazaq Green 2024; 2025). Even after applying a potential premium of US\$1.0–1.5 per kWh to reflect Mongolia-specific challenges, such as higher transportation costs and engineering installation costs due to weather variation, renewable energy can still be competitive.

84. Calculated based on trade-volume data from World Integrated Trade Solution 2024 Electrical Energy Exports to Mongolia.
85. In 2024, mining and processing industries, excluding the Mongolian-Russian joint venture Ulaanbaatar Railway, paid about US\$8 per kWh on average, with time-of-use pricing ranging from US\$4.7–13.9 per kWh. Adding the capacity charge, the effective industrial tariff is likely near US\$8–9 per kWh (ERC 2025).
86. In 2016, the Buurulujuut 600 MW Power Plant signed a 28-year PPA with an initial price of US\$7 per kWh in the first year and US\$8.9 per kWh for the remaining 27 years (Enkhmaa 2024).
87. Lohmeyer, Nyamaa, and Otgonbaatar (2025).
88. Transmission services, or wheeling, should be priced and remunerated under a transparent, cost-reflective tariff that provides a predictable revenue stream to the transmission system operator.
89. Anecdotal evidence includes a direct corporate PPA being negotiated by one major mine, which could set a standard for future captive renewable energy projects.
90. The Mongolian government planned to develop 380 MW of reservoir hydropower, 100 MW of pumped storage hydropower, and 30 MW of run-of-river hydropower during 2023–29.
91. A clear allocation of investment responsibilities between the public and private sectors includes specifying which assets each sector is expected to finance, who bears the cost of grid connection and network upgrades, and what guarantees underpin public commitments.
92. Between 2013 to 2019, seven individual power producers were connected to the CES: three wind

farms and four solar power plants (Namkhainyam and Senshaw 2020; Global Green Growth Institute, *Development of Green Energy Systems and Energy Efficiency in Mongolia*, 2020).

93. The reform lowered solar tariffs from US\$18 to US\$12 per kWh and wind from US\$9.5 to US\$8.5 per kWh, and removed the minimum tariff floor (GoM 2019).
94. For instance, the government's move to renegotiate solar PPAs after global prices fell exposed investors to retroactive tariff reductions, raising concerns about revenue stability and undermining lender confidence. In addition, the shift from relatively generous feed-in tariffs to capped tariffs and a planned transition to auction-based procurement around 2018–19 led to requests to revisit agreed PPA terms for projects developed under earlier regimes (World Bank 2020a).
95. Mission interviews; Oyundelger (2024).
96. New templates are being developed for solar and wind auctions following the first auction in June 2026.
97. The purchaser's unrestricted right to curtail or limit plant output without compensation poses major concerns for lenders; investors will price this risk into higher tariffs to ensure recovery of fixed costs (CLDP 2015; Beshara 2012).
98. Provisions should allow sufficient flexibility to transition to future market mechanisms, including balancing responsibility, exposure to imbalance pricing or short-term price signals for unscheduled energy, participation in balancing product markets, and conversion of a PPA into a contract for difference.
99. Direct jobs are generated within the sector as a result of the investment. Indirect jobs arise through backward linkages, where increased demand for intermediate inputs boosts employment in supplying sectors. Induced employment are created when higher household incomes from direct and supply-chain jobs lead to greater consumption. For more details, see appendix A.
100. The United Nations Environment Program defines ETMs as aluminum, cobalt, copper, graphite, lithium, nickel, and REEs. These minerals are key inputs for electric vehicles and batteries, energy storage systems, solar photovoltaic panels, wind

- turbines, power grids, and transmission infrastructure, and the broader electrification of industry and transport.
101. Accelerating mineral exploration is a core recommendation of the *Mongolia - Country Climate and Development Report* (World Bank 2024a), given its critical role in enabling downstream private investment and supporting economic repositioning away from coal, particularly in light of projected declines in Chinese coking coal demand and associated stranded asset risks.
 102. The International Energy Agency defines magnet rare earths as neodymium, praseodymium, dysprosium, and terbium; demand for these elements accelerated from 1 percent annual growth during 2015–19 to 10 percent during 2021–24 (IEA 2025c).
 103. Ibid.
 104. Ibid.
 105. The government has indicated that mining licenses outnumber exploration licenses by about 2:1—an even wider gap once inactive licenses are excluded—illustrating how few early-stage prospects are progressing toward development.
 106. Mongolia launched a new state-financed geological survey in 2023, starting in the Gobi and southern regions, to collect high-resolution airborne magnetic and gravity data that will guide future exploration licensing rounds. Continued budget support will be needed to expand coverage to other prospective regions.
 107. Global Business Reports (2024); EITI (2020).
 108. Mongolia's exploration intensity in 2023 was approximately US\$80 per square kilometer, compared with over US\$300 per square kilometer in Mexico, about US\$390 per square kilometer in Peru, and more than US\$1,100 per square kilometer in Chile, despite Mongolia having one of the higher mining production-to-GDP shares among peers.
 109. In Mongolia, 25 percent of land is unrestricted for mining purposes. About 3.2 percent of the country's land is under active exploration licenses, equivalent to about 15 percent of unrestricted land (based on consultations with MRPAM).
 110. This includes deposits like rare earths at Khotgor and Khalzan Buregtei, graphite at Khukh Tag, and lithium-bearing basins in the Gobi.
 111. These firms typically operate on a subcontracting basis, including for foreign conglomerates, but rarely advance projects beyond basic fieldwork due to lack of capital, equipment, and drilling capability.
 112. US Department of State (2025).
 113. Data show that exploration investment decisions are driven roughly 60 percent by geology and 40 percent by policy (Fraser Institute 2024; World Bank 2025).
 114. Bauer and Namkhajantsan (2019).
 115. Firms expect, at minimum, geological maps at a scale of 1:200,000 and ideally at finer scales, such as 1:100,000 or 1:50,000, in GIS-compatible format. Access to historical exploration reports and physical samples improves assessment of prospectivity. These precompetitive datasets are typically funded or cofunded by the public sector to derisk exploration and attract private capital, while firms finance higher-risk drilling and finer-scale surveys once targets are defined (World Bank 2012).
 116. Based on data from MonGeoCat database.
 117. Mongolia scores below structural comparators with higher rankings on the quality of their geological database, including Kazakhstan, Ecuador, Guyana, Colombia, Namibia, Botswana, Chile, and Peru (Fraser Institute 2024).
 118. The current bid-spread rule, under which a bid is deemed valid if the gap between the highest and second-highest bids is below 20 percent, combined with a relatively low withdrawal penalty of 10 percent of the starting price, creates a structural risk of coordinated bidding strategies. In theory, an artificially high bid can be used to set the benchmark and then withdrawn at low cost, followed by a second bid that appears competitive under the spread rule, allowing the parties to benefit through subcontracting or side arrangements.
 119. Mongolia is administratively divided into 21 *aimags*, or provinces, and the capital city, Ulaanbaatar. Outside Ulaanbaatar, *aimags* are subdivided into *soums*, which serve as district-level administrative units, and *soums* are further subdivided into *bags*.
 120. More than 900 court cases have been filed by license holders since 2010, which is high relative to the approximately 1,500 mining and exploration

- licenses in total (based on consultation with legal firm).
121. Although slow courts, weak contract enforcement, and discretionary local authority are cross-cutting issues in the business environment, their impact is amplified in exploration, where broader public skepticism toward mining is high and a blocked site can render a license effectively unusable.
 122. World Bank (2025d).
 123. A 2024 Mongolia mining investment environment survey found about half of investors rated protection of investor rights as poor or very poor, and 60 percent called for clearer, more stable laws and stronger enforcement (MRPAM 2024).
 124. According to MoF Order No. 302 of 2019 and A/191-2023, for category A (high confidence) and category B (explored) reserves, or where a feasibility study exists, income-based method, based on discounted cash flow or net present value, is mandated (Methodology §§ 3.1.2, 7.2). The tax base for arm's-length transactions is the average of the transaction price and computed value (§ 3.3); the authority may disregard deal price (§ 2.2).
 125. USGS (2023); EITI (2022).
 126. AmCham Mongolia (2025).
 127. This geodata platform should be linked to the mineral licensing cadastre and support machine-readable, API-enabled data access. API, or application programming interface, access allows the same data to be accessed programmatically by software, rather than just manually by users. Exploration companies can connect their own GIS platforms, geological modeling tools, or internal databases directly to the repository, allowing data to stream in automatically. API access is one of the features that makes platforms such as the Geoscience Australia Portal and the US Geological Survey data systems attractive for exploration and research purposes.
 128. World Bank Group (2025). For example, negative results prevent costly duplication of effort and contribute to a national geological knowledge base that helps target exploration elsewhere in the country; previous results can also be reinterpreted using newer techniques.
 129. A draft Minerals Law amendment under parliamentary consideration as of mid-2026 could, if enacted and effectively implemented, create a new pathway for privately financed early-stage geological work in unlicensed areas, offering an alternative to the current tender-based system. Its final scope and practical effectiveness remain subject to the parliamentary process and subsequent implementation.
 130. First-come, first-served basis would still require technical and financial review and evaluation.
 131. The Minerals Law grants subsurface rights, but surface rights are allocated separately under the Land Law by *soum* governors, with no uniform procedure.
 132. *Soum*-level input should be coordinated through *aimag* authorities in line with existing administrative arrangements, with the *aimag* responsible for consolidating and transmitting inputs to MRPAM.
 133. The land-status note should be provided within the same period allowed for *aimag*-level review.
 134. World Bank Group (2021); NRGi (2024).
 135. "State participation" means the forms through which the state may hold or exercise an interest in a mining project following strategic designation, whether through direct equity ownership, participation through an SOE, or the exercise of governance, management, control, or economic rights.
 136. Morton et al. (2024).
 137. World Bank (2025).
 138. GEM (2025a; 2025b); GlobalData (2024); GoM (2024; 2026); UBIM (2025).
 139. ERC (2025).
 140. Investment cost data specific to Mongolia are not available. The analysis therefore uses the global weighted average installation costs for solar PV systems and wind power plants in 2024 (IRENA 2025), adjusted from 2024 US dollars to constant 2025 US dollars. Inverter costs are based on the average across 33 countries in 2023, also adjusted to constant 2025 US dollars (IRENA 2025). BESS costs reflect the cost of utility scale BESS in 2025 and are based on competitive import procurement of Chinese-manufactured equipment (Rangelova and Jones 2025).
 141. IFC (2024).
 142. For example, see Aldieri et al. (2020); Cameron and van der Zwaan (2015); Hanna, Heptonstall, and

- Gross (2024); IEA (2020); IRENA (2024); Rutovitz et al. (2025).
143. ERC (2025); IEA (2025a); Amrida (2025).
 144. MIPA, MNMA, and Mongolia Inc. (2025).
 145. Estimated from IEA (2025a); World Bank Group (2025).
 146. These multipliers are derived from value-added multipliers and employment elasticities from Burgi, Hovhannisyan, and Mondragon-Velez (n.d.). The value-added multipliers are estimated using a social accounting matrix multiplier approach, which relies on the 2017 version of the Global Trade Analysis Project database. They include estimates of direct and indirect jobs created. Direct jobs represent the employment contribution of investment in the sector. Indirect jobs include (a) backward supply chain linkages, through which increased domestic demand for intermediate inputs raises employment in other sectors; and (b) consumption spillovers, or induced employment, resulting from higher household income generated by increases in direct and supply chain employment and income.
 147. Feldman et al. (2025); Harrucksteiner et al. (2023).
 148. Clean Energy Business Council (2025); Meerts, Casselman, and Agnot (2025); Astolfi and Pandit (2022); Mathew, Kandukuri, and Omlin (2022); Hamilton et al. (2020); Harrucksteiner et al. (2023).
 149. Cole and Karmakar (2023).
 150. ILO (2025a).
 151. The total number of jobs is rounded to around 40,000.
 152. The compound annual growth rate (CAGR) of mining sector employment during 2014–24 was 6.6 percent, compared with 2.1 percent for total employment (ILO 2025a). Using 2024 as the base year for projecting CAGR of mining sector employment during 2028–54, the estimated 2,200 direct jobs would represent a 0.04 percent contribution attributable to implementation of the recommendations.
 153. MEE (2024); IEA (2025b).
 154. World Bank (2010).
 155. Calculated by dividing global exploration expenditures by global discoveries over the 2011–20 period (MinEx Consulting 2023).
 156. World Bank (2024).

Acronyms

BESS	battery energy storage systems	MoF	Ministry of Finance
C&I	commercial and industrial	MOFALI	Ministry of Food, Agriculture and Light Industry
CPSD	Country Private Sector Diagnostic	MonGeoCat	Mongolia Geoscience Catalog
EAP	East Asia and Pacific	MRPAM	Mineral Resources and Petroleum Authority of Mongolia
ERC	Energy Regulatory Commission	MT	metric ton
ETM	energy transition mineral	MW	megawatt
FDI	foreign direct investment	MWh	megawatt-hour
FTE	full-time equivalent	NDC	National Dispatching Center
GAVS	General Authority for Veterinary Services	NGS	National Geological Survey
GDP	gross domestic product	NPTG	National Power Transmission Grid
GIS	Geographic Information System	NRGI	Natural Resource Governance Institute
GW	gigawatt	NSO	National Statistics Office of Mongolia
GWh	gigawatt-hour	O&M	operation and maintenance
IPP	independent power producer	PPA	power purchase agreement
kg	kilogram	PV	photovoltaic
kWh	kilowatt-hour	REE	rare earth element
MAHIS	Mongolian Animal Health Information System	SOE	state-owned enterprise
MCE	Mongolian Commodity Exchange	T	Kazakhstani tenge
MCGA	Mongolian Customs General Administration	Tog	Mongolian tughrig
MMHI	Ministry of Mining and Heavy Industry	TWh	terawatt-hour
MNS	Mongolian National Standard		
MoE	Ministry of Energy		

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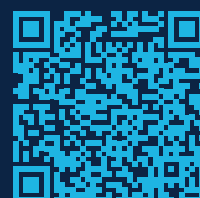
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