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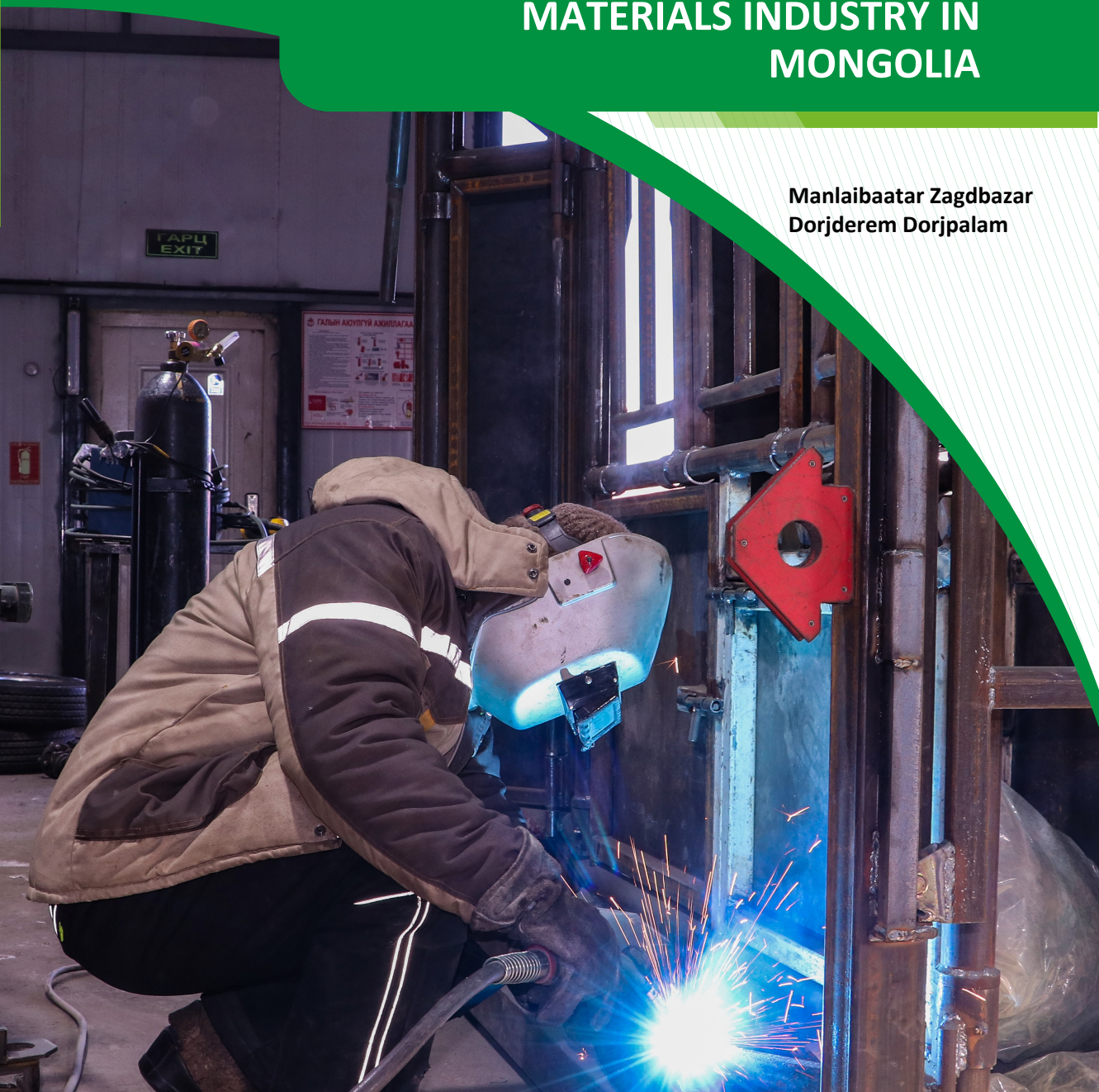
STUDY OF THE CONSTRUCTION MATERIALS INDUSTRY IN MONGOLIA



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Study of the Construction Materials Industry in Mongolia

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Abstract

This study investigates the current state of supply and demand in Mongolia's construction materials market, identifies key challenges faced by producers, and offers policy recommendations to support sector development. It includes a comparative analysis of domestic production versus imported materials, and evaluates factory capacity utilization. The research also examines the conditions of small and medium-sized enterprises (SMEs) operating in the sector, and explores future trends in construction material demand. Additionally, the study reviews existing policies related to the development and support of construction materials production and proposes targeted policy interventions to enhance sector performance.

January 2024

Disclaimer

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The contents of this report are those of the authors and do not necessarily reflect the views of USAID or the United States Government. Additionally, Development Solutions NGO served as the client representative for this study and does not bear any responsibility for the study's findings or conclusions.

LIST OF ABBREVIATIONS

BMMAM	Building Material Manufacturers Association of Mongolia
GDP	Gross Domestic Product
HSES	Household Socio-Economic Survey
MCUD	Ministry of Construction and Urban Development
MMHI	Ministry of Mining and Heavy Industry
MOF	Ministry of Finance
MRTD	Ministry of Road and Transport Development
NSO	National Statistics Office
SIC	Social Insurance Contribution
SME	Small and Medium-sized Enterprise
TVET	Technical and Vocational Education and Training

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ACKNOWLEDGEMENT

The Economic Research Institute has completed the “Study of Construction Materials Industry in Mongolia” within the framework of the “Business Excellence for Sustainability and Transparency” (BEST) program funded by the United States Agency for International Development (USAID). This study was conducted between November 2023 and January 2024, relying on domestic production statistics of construction materials, customs data, and construction material producers’ registration and related documents.

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1.INTRODUCTION

Study purpose

The purpose of this study is to clarify the current situation of the construction materials production sector, identify the problems faced by small and medium-sized businesses, explore opportunities for further development, and offer recommendations. In pursuit of these objectives, the following activities were carried out:

- Comparison of domestic production and imported supply of construction materials, calculation of capacity utilization of factories, and total supply of construction materials.
- Estimation of total building material usage and future demand trends.
- Study of the situation of small and medium-sized enterprises (SMEs) operating in the sector.
- Review and analysis of policies for the development and support of construction materials production and the development of policy recommendations.

Methodology

The following methods were used in this study. This includes:

- Analysis of secondary quantitative data on the construction materials sector.
- Analysis of primary quantitative data on the challenges faced by construction materials manufacturers.
- Analysis of primary data on household expenditures on construction materials.
- Document analysis of industry policy documents, research reports, presentations, and relevant qualitative data.
- Conducting in-depth interviews with government organizations, non-governmental organizations, industry experts, and manufacturers representing key stakeholders in the sector.

We used both industry-level aggregate statistics and enterprise-level micro-data to analyze the construction materials industry. Based on these data, we identified sector development trends, import substitution, market capacity, and challenges through appropriate statistical analysis.

Import quantity and price data of construction materials were sourced from the 2021-2022 customs records, while production volume and sales data were obtained from the 2021-2022 data of the Ministry of Construction and Urban Development (MCUD). (See Table-1)

A document analysis was conducted on policies, measures, programs, and projects implemented in the construction materials industry. This analysis aimed

to identify opportunities for improvement in the industry's long-term development strategies, policy documents, laws, regulations, and related standards that both support and restrict market activities. Additionally, an overview analysis of relevant research reports and concluding presentations in this field was conducted.

Table 1. Presentation of the data used in the quantitative analysis

Data	Source	Description
Information on enterprises registered with the technological instructions for the production of construction materials	Electronic database of the MCUD (www.mcud.gov.mn)	*(A total of 1,828 enterprises between 2003 and 2023)*
Information on enterprises licensed to manufacture construction materials	Electronic database of the MCUD (www.mcud.gov.mn)	*(Information of 277 enterprises in total)*
Quantities and values of imported construction materials	Customs electronic service system (www.customs.mn)	*Information on types of products used in construction (2021-2022)*
Production quantity and value of construction materials	The Ministry of Construction and Urban Development	*Information on the quantity and value of production of construction materials by type of product (data for 2021-2022)*
Census of enterprises	National Statistical Office (www.1212.mn)	*Primary data of enterprises operating in the industry of construction materials production in 2021*
Household Socio-Economic Survey	National Statistical Office (www.1212.mn)	*Primary data for household purchases of construction materials in 2021*

Limitations and problems of quantitative data

It should be noted that the following problems related to quantitative data were encountered during the study.

- Capacity records of construction materials factories are incomplete and not open. Only the information on the capacity of certain types of construction materials and products was open in the register of enterprises with a special license for the production of construction materials. Therefore, the utilization of the production capacity of construction material products was estimated based only on this registration data.
- In the open statistics of the Customs Office, the classification of imported products is reported with low precision (at the 4-digit level of the HS Convention). Therefore, it was difficult to combine the production and import data of some key materials such as rebar, structural steel, etc.

- Information about the prices of construction materials in previous years for each type was not available online. The National Statistics Office's website only records cement prices at specific intervals. Construction material information websites, such as Barilga.mn, update the prices of some goods, but market price analysis was not possible because historical data is not stored.
- In general, representatives of the sector emphasized that it has a significant hidden economy and is less involved in the tax registration system compared to other sectors, making detailed study difficult. For example, there is no requirement for enterprises to submit specific reports (known as X-report) to the tax office, nor to register the production volume of small construction material factories that are registered under partnerships and cooperatives. It is also common to assign different commodity classification codes to certain types of imported construction materials.

2.SUPPLY OF CONSTRUCTION MATERIALS

The supply of construction materials depends on a multitude of factors, including economic conditions, market demand, raw material availability, transportation logistics, and government regulations. Construction projects require a reliable and consistent flow of these materials to meet deadlines and quality standards. Suppliers and manufacturers are central to the construction materials supply chain, ensuring the timely delivery of the right materials in the correct quantities. The efficiency and reliability of this supply chain significantly impact construction project costs, evaluation, and, ultimately, the broader economy and inflation.

Mongolia's domestic building materials factories mainly produce cement, lime, concrete, reinforced concrete products, thermal insulation materials (foam, polystyrene panels, mineral wool, etc.), building decoration materials, ordinary bricks, some types of rebar, synthetic reinforcement, steel balls, and paving materials. In contrast, the construction sector imports cement, reinforcing steel, plastic doors and windows, sandwich panels, plasterboard, and stone panels. Whether a material is primarily domestic or imported varies. Although most construction materials are produced domestically to some extent, underutilization, and insufficient capacity necessitate imports to meet full demand. Some materials are entirely dependent on either imports or domestic production. This will be discussed in detail below.

In this study, it is assumed that the market supply and demand of building materials will be determined by the following equation.

$$Supply_i = Domestic\ production_i + Import_i = Demand_i$$

Here, i is a type of construction material.

The supply of a construction material type consists of domestic production and import. This supply should fulfill domestic needs or demand. In this study, we estimated the supply of each type of building material using detailed information on domestic production and import components. We calculated the ratio of domestic production to imports for each material, assessed the utilization of production capacity for some key materials, and identified possible constraints on domestic production.

A significant challenge encountered was determining the demand for construction materials. The study revealed a critical gap in information and record-keeping within the construction and infrastructure sector. This lack of data makes it difficult to accurately define the amount and price of construction materials needed.

In this study, construction materials were classified into 16 general categories and analyzed based on data on imports and domestic production from 2021 to 2022. To ensure comparability, the physical volume of production and import for each item was converted to the same unit, and prices were standardized to MNT.

Extensive studies on the construction materials market in Mongolia are rare.

One of the primary studies conducted in this field is the 2014 study on the price formation of construction materials commissioned by the Ministry of Economy (MEC, 2014). However, to date, no study has been published on the quantitative breakdown and percentage contribution of imports and domestic production to the total supply of construction materials.

Table 2 presents the total supply of construction materials (the sum of imports and domestic production) for 2021 and 2022.[1] See Table X4 in the Appendix for how the share of construction materials in the total supply has changed in 2021-2022 for each type of construction material.

Table 2. Supply of construction materials, billion MNT

№	HS code	Building materials	2021	2022
1	2517	Gravel and sand	13.2	18.1
2	2523	Cement	154.0	190.6
3	3506	Prepared glues and other adhesives	0.6	0.9
4	3824	Concrete chemical admixtures	2.3	32.9
5	3917	Plastic pipes	40.6	77.4
6	3925	Plastic windows and doors	36.3	54.1
7	4411	Wood and wood products	168.8	305.4
8	6806	Thermal insulation materials	15.4	23.7
9	6810	Concrete products	212.9	310.9
10	6902	Ceramic	5.3	11.5
11	7016	Glass and glassware	24.0	18.8
12	7213	Rolled metal	116.0	139.8
13	7214	Reinforcing steel	519.3	758.8
14	7208	Other steel products	107.8	191.8
15	7412	Copper wire	4.3	5.8
16	7610	Aluminum	33.7	54.7
		Total	**1,459**	**2,198**

Source: Researcher's estimate based on data from the Ministry of Construction and Urban Development and the General Customs Authority

As shown in Table 1, reinforcing steels, rolled metal, and other metal products collectively constitute over half of the total construction material supply. In 2021, for example, these materials accounted for MNT 743 billion out of a total supply of MNT 1.46 trillion. Similarly, in 2022, they comprised MNT 1.09 trillion of the MNT 2.20 trillion total supply.

On average, during 2021-2022, reinforcing steels accounted for 35.0%, rolled metal for 7.0%, and other metal products for 8.2% of the total supply of construction materials. Additionally, Concrete products (14.4%), wood and wood products (13.0%), and cement (9.4%) also represent significant portions of the supply. The remaining categories, including plastic pipes, windows, doors, and

1 Note: Import values were converted to MNT using the Bank of Mongolia's average annual exchange rate. For instance, in 2021, 1 USD was MNT 2,849, and in 2022, it was MNT 3,145.

insulation materials, generally contribute between 1.2% and 3.3% each. Copper wire, construction adhesives, and concrete additives each account for less than 1% of the total.

2.1. SHARE OF CONSTRUCTION MATERIALS PRODUCTION AND IMPORt

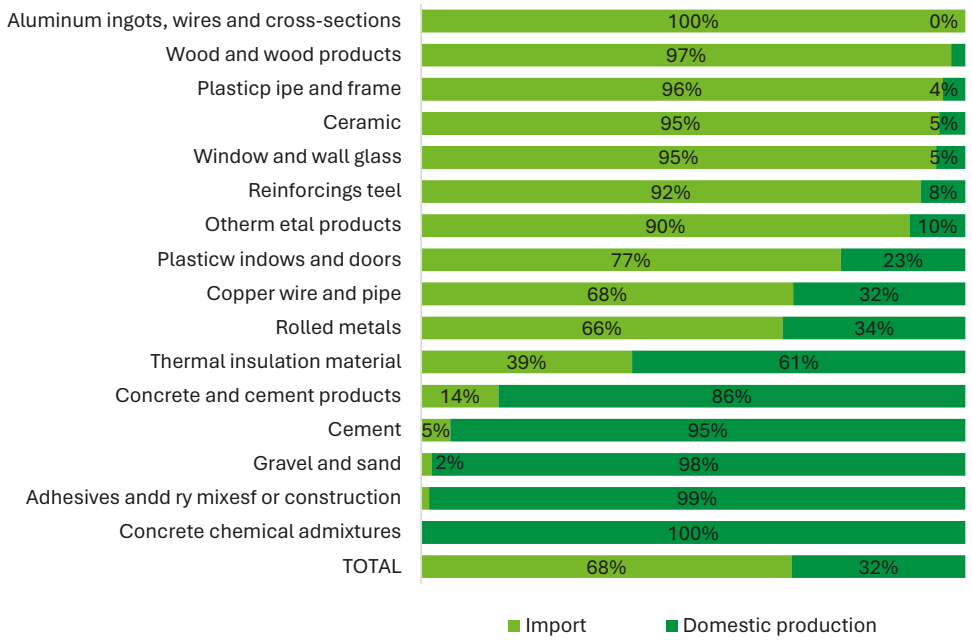
In 2021 and 2022, Mongolia relied heavily on imports for construction materials. Imports accounted for 68.2% of the total supply (MNT 1.48 trillion in 2021 and MNT 2.16 trillion in 2022), while domestic production contributed 31.8%. Figure 1 details the breakdown of imports and domestic production across different material categories.

In 2021-2022, imports accounted for 68.2% of the total supply of construction materials, while domestically produced materials constituted 31.8%. This indicates a high dependence on imports for construction materials supply.

Figure 1 illustrates the import dependence for various materials. In 2021-2022, some materials, like aluminum and over 90% of wood products, plastic pipes, frames, ceramics, and glass, were entirely imported. Reinforcing steel, other metals, and plastic windows/doors had a high import dependency, exceeding 66%.

Conversely, domestically produced materials included adhesives, dry mixes, concrete additives, gravel, and sand. Additionally, Mongolia produced a significant portion of cement (95%), concrete products (86%), and thermal insulation materials (61%).

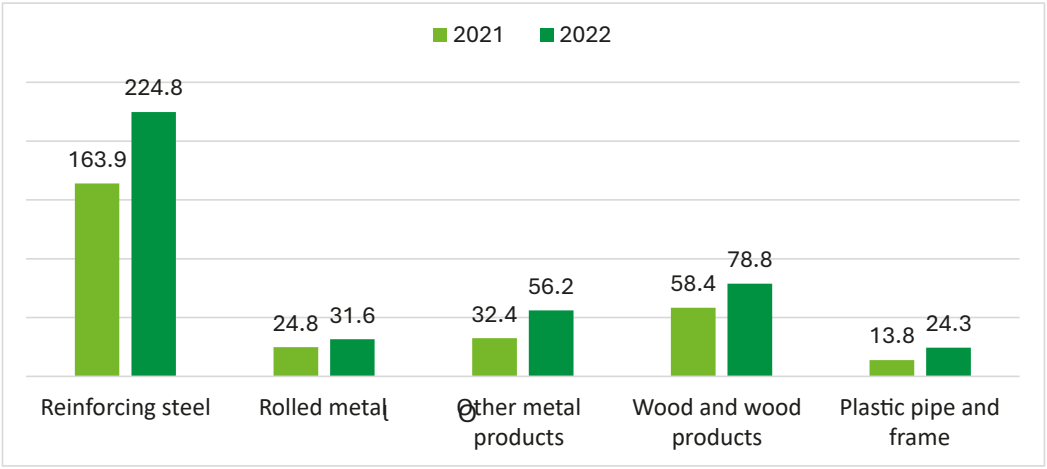
Figure 1. Average share of production and imports in the supply of construction materials, 2021-2022



Source: Researcher's estimate based on data from the Ministry of Construction and Urban Development and the General Customs Authority

In 2021, construction materials worth USD 337.7 million were imported, while in 2022, the import value surged to USD 483.7 million. Among these imports, reinforcing steel emerged as the primary construction material, with an import value of USD 224.8 million in 2022 (Figure 2).

Figure 2. Import of the main types of materials most used in construction, million US dollars



Source: General Customs Authority

Steel and steel products dominated Mongolia's construction material imports in 2021-2022, accounting for 65% of the total import expenditure (USD 87.8 million for rolled metal alone in 2022). Wood and wood products (17%) and plastic products (5%) were other significant import categories (See Appendix Table X1 for details).

This surge in imports coincided with Mongolia's post-pandemic economic recovery and relaxed border restrictions with China.

2.2. DOMESTIC PRODUCTION OF CONSTRUCTION MATERIALS

According to the Ministry of Construction and Urban Development (MCUD), the total domestic production of construction materials amounted to MNT 513.9 billion in 2021 and increased to MNT 645.4 billion in 2022 (refer to Appendix Table X2). Despite this increase, it represents a relatively small fraction, constituting just over 10% of the total expenditure on construction and capital maintenance work undertaken by domestic construction companies. For instance, in 2021, construction and capital maintenance work amounted to MNT 4,543 billion, while in 2022, it reached MNT 6,267 billion.

Cement production accounts for the largest share (28%) of domestic output, followed by concrete and cement products (39%).

In Mongolia, as of 2023, there are 1,828 enterprises registered with domestic construction material production technology guidelines[2], 513 enterprises holding

2 The process for obtaining a certificate of conformity is governed by the 'Review and Registration of Technological Instructions in the Building Materials Industry' procedure, as approved by Order No. A/257 of 2018 issued by the Director of the Construction Development Center.

certificates of conformity, and 277 enterprises operating with special licenses. Additionally, there is one construction material industrial complex with the potential for further expansion.

Domestic production of construction materials requires a special license for various materials, including cement, plastic, concrete and steel products, and filler materials. In accordance with the revision of the Construction Law in 2016, manufacturers of load-bearing structures, components, raw materials, as well as producers of flammable, chemically harmful, and energy-efficient products must obtain a special construction license.

Production Capacity of Construction Materials

A key limitation arises from the absence of information on production capacity for certain types of products due to legally mandated special licenses. This may result in our analysis excluding a portion of building materials actually produced.

Moreover, even for products requiring special licenses, the registration process may not capture all manufacturers, or inaccuracies may arise from errors or incomplete reporting by registered enterprises.

Therefore, it is imperative to refine and recalibrate this information in future assessments to achieve a more comprehensive understanding of production capacity within the building materials sector.

Table 3 shows the production capacity of building materials by major types, calculated based on the license registration data.

Table 3. The registered capacity of enterprises with a special license to manufacture construction materials, 2023

№	Types of building materials	Unit	Total capacity
1	Cement	M tons	5.2
2	Energy-efficient construction materials	K m^2	189.5
3	Plastic doors and windows	K m^2	80.9
4	Stone crushing and sorting	K tons	55.0
5	Filler materials and products	K tons	845.4
6	Sound and thermal insulating materials	K m^3	28.3
7	Polystyrene board	K m^3	859.8
8	Aerated concrete	K m^3	540.0
9	Self-compacting concrete	M m^3	12.4
10	Reinforcing steels and metal products	K tons	961.3
11	Load-bearing metal structures	K tons	134.0
12	Ceramic materials and products (silicate bricks)	M pcs	20.5

Source: MCUD and Researcher's estimate based on the information of enterprises with a special license for the production of construction materials

The utilization of installed capacity is crucial in the production of construction materials. Capacity utilization is measured by the ratio of production volume to installed capacity, as shown in Table 4.

The data indicates that in 2021-2022, the production of ceramic materials or bricks fully utilized their registered capacity. However, cement factories utilized only a quarter of their total registered capacity, at 25-26%. Concrete factories had an even lower utilization rate, ranging from 9-15%, while concrete chemical additive factories utilized 19-20% of their registered capacities. The plastic door and window industries performed slightly better, with utilization rates ranging from 39-53%.

Table 4. The ratio of production to registered capacity of some major types of construction materials

№	Types of building materials	Total registered capacity	The ratio of production to registered capacity	
			2021	2023
1	Cement	5.2M tons	25%	26%
2	Plastic doors and windows	80.9K m^2	39%	53%
3	Self-compacting concrete	11.6M m^3	9%	15%
4	Concrete chemical admixtures	96.1K tons	20%	19%
5	Ceramic	20.5M pcs	99%	114%

Source: Researcher's estimate based on the information of enterprises with a special license for the production of construction materials

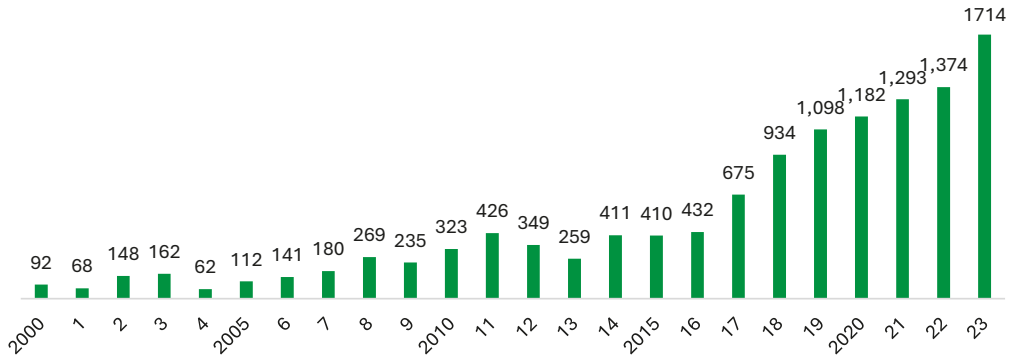
The capacity and utilization rate of domestic factories are critical factors in meeting the demand for construction materials and avoiding supply shortages. Comparing the current capacities of licensed key construction material producers reveals that concrete, cement, and lime production will operate at full capacity until 2030. However, domestic production capacity for reinforcing steels and reinforced concrete construction materials falls short, with demand projected to double from 2020 to 2030.

One of the primary reasons for the insufficient capacity utilization of factories is the low demand for their products, leading to financial inefficiency. A representative from the sectoral association explains that this situation arises because enterprises and citizens establish factories without conducting thorough preliminary research. Instead of contracting with existing factories when initiating projects, they opt to set up additional factories themselves.

For instance, in the case of cement production, a crucial building material, installed capacity has increased significantly. However, the utilization or production levels remain inadequate. Since the establishment of the first cement factory in our country over 60 years ago, four large factories capable of producing up to 1 million tons of cement per year have been operational since 2017. When combined with the capacities of smaller factories, the total annual domestic production capacity

reaches 5 million tons. Despite this capacity, utilization remains very low. For example, only 1.4 million tons of cement were produced in 2022 (see Figure 3)

Figure 3. Amount of cement production in Mongolia, thousand tons

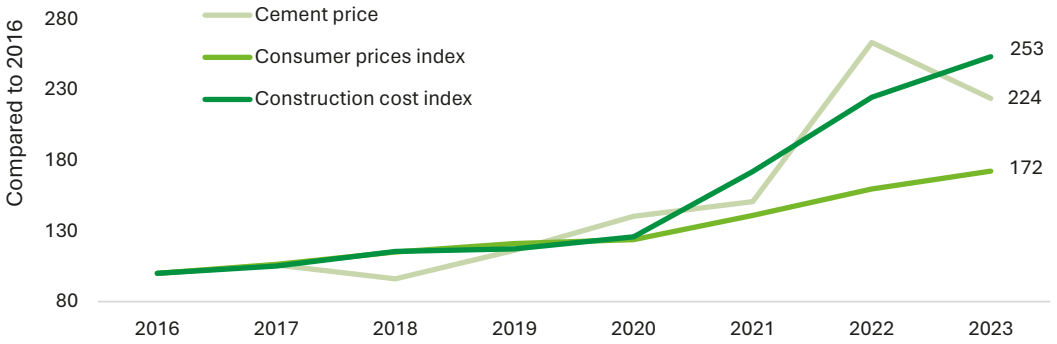


Source: NSO, Production of some major products in the Industrial sector

In 2013, cement production declined due to deteriorated equipment at older plants, leading to imported cement accounting for 85% of the total supply. To address this, the Development Bank has provided financing for establishing or expanding cement plants since 2010. Subsequently, new cement plants commissioned from 2015 onwards led to overcapacity in production.

However, despite the increase in production capacity, factories are not operating at full capacity, leading to disruptions in domestic supply and shortages in the market. This issue is reflected in the rising cement prices. Cement price data is compared with the basic consumer price index and the construction cost index in the following figure. Using 2016 as the base level of 100 allows for a comparison of the recent increase in cement prices with other price indices.

Figure 4. Cement price, construction cost index, and consumer price index (2016=100)



Source: NSO

Figure 4 reveals a dramatic increase in cement prices, which have risen 2.2 times over the past seven years since 2016. This growth was steady until 2020, followed by a sharp rise. The construction cost index also climbed significantly, increasing by 2.5 times, while the consumer price index saw a more moderate

increase of 1.7 times. These trends suggest that supply chain disruptions and pandemic-related factors significantly impacted construction material prices.

The vastness of Mongolia, especially transportation challenges in western provinces, further disrupts cement supply and contributes to price hikes.

Despite excess cement production capacity, the MCUD, CMMA, and producers are concerned about supplying cement for border development projects near Russia. Industry representatives are currently working on developing the necessary documents and standards.

3.TRENDS IN THE CONSUMPTION OF BUILDING MATERIALS

Limited data on domestic and market demand for specific construction materials exists. To address this, this section analyzes construction activity and household spending on building materials alongside construction material demand forecasts from the MCUD and CMMA.

3.1. CONSTRUCTION INDUSTRY OVERVIEW

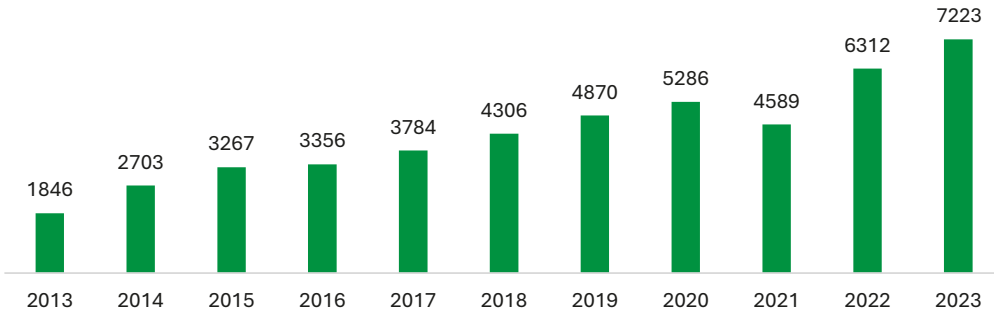
In 2023, Mongolia's gross domestic product (GDP) reached MNT 68.9 trillion at annual prices, with the construction industry accounting for MNT 2.1 trillion, or 3.0 percent of GDP.

The government has implemented policies to support housing for the population, such as mortgage loans with subsidized annual interest rates of 6-8% and housing price stabilization programs. Also, mainly due to the growth of the private sector and an increase in government investment expenditures related to construction and capital maintenance, the demand in the construction sector has been expanding.

However, the construction sector suffered during the COVID-19 pandemic, with a decline of 3.2% in 2020 and 22.8% in 2021. Although the construction sector grew by 8.2% in 2022, this growth slowed down to just 0.6% in 2023. It reflects a continued struggle in the sector. This has consequently impacted the demand for building materials.

Of the total 7.2 thousand enterprises operating in the construction sector, 6.0 thousand (83.6%) are located in Ulaanbaatar. The remaining enterprises are distributed across the western, Khangai, central, and eastern regions, holding shares of 3.5%, 6.2%, 5.0%, and 1.7%, respectively. Most of the operating enterprises are still concentrated in Ulaanbaatar.

Figure 5. Production of construction and capital maintenance, billion MNT



Source: NSO, www.1212.mn

This geographic concentration is mirrored in construction projects, with roughly 50% located in Ulaanbaatar and 30% in the central region, driven by factors like population density and the Oyutolgoi mine development in Umnogov province (central). However, recent trends suggest a potential shift, with a slight decrease in Ulaanbaatar's share and a rise in central region construction activity.

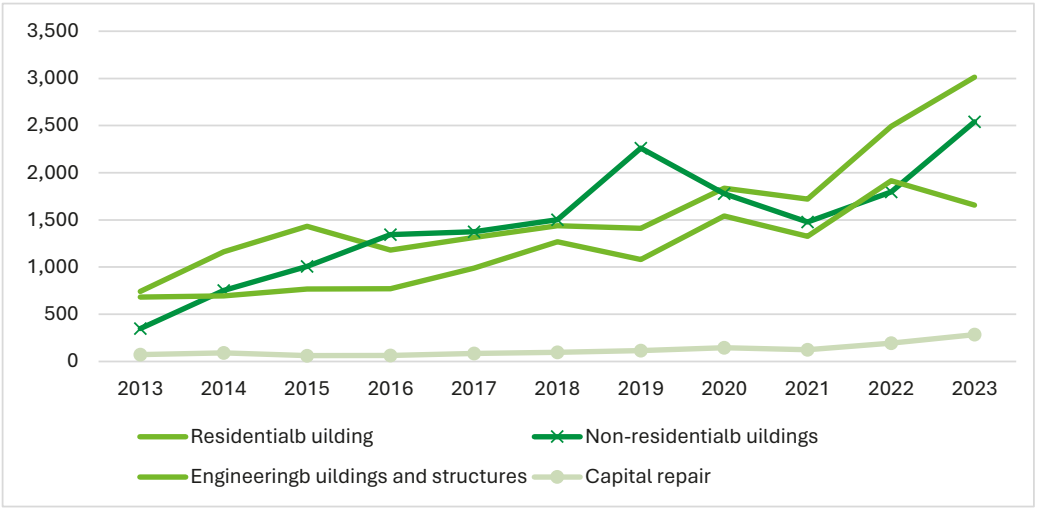
The construction sector's performance improved in 2022, with construction and capital maintenance reaching MNT 6.3 trillion, a significant 37.4% increase (MNT 1.7 trillion) compared to the previous year.

In the last ten years, the construction of residential and non-residential buildings, engineering buildings and facilities has been on the rise. Considering the performance of construction and capital repair in 2023, residential buildings account for 40%, non-residential buildings for 34%, engineering facilities for 22%, and capital repair for 4%.

Housing construction has taken center stage since 2021, surpassing non-residential projects that dominated the landscape between 2016 and 2019. This shift was driven by factors like the construction of industrial buildings, the Oyu Tolgoi mine in Umnogovi Province, and the Dornogovi Province oil refinery.

Large-scale railway projects have also significantly impacted the demand for construction materials. Notably, the construction and completion of three key railways—Tavan Tolgoi-Gashuun Suhait, Tavan Tolgoi-Zuun Bayan, and Zuunbayan-Khangi—occurred between 2020 and 2022.

Figure 6. Performace of construction and capital repair, billion MNT

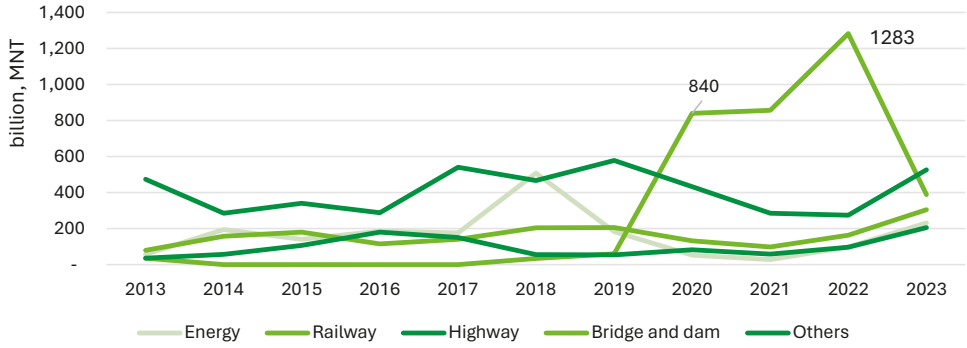


Highway construction saw significant progress between 2017 and 2019, with paved roads connecting Ulaanbaatar to provincial centers in Zavkhan, Govi-Altai, Hovd, Bayan-Olgii, and Uvs. These included stretches like Khovd-Bayan-Ulgii-Ulaanbaishint (189.7 km), Bayankhongor-Baydragi Bridge (129.4 km), and Tosontsengel-Uliastai (114 km).

Road construction achievements accelerated in 2022, with a nationwide total of 545.2 km completed—a substantial increase (331.7 km or 2.6 times) compared to 2021.

Interestingly, approximately 80% of road construction focuses on connecting Ulaanbaatar to rural areas, with the remaining 20% dedicated to projects within Ulaanbaatar itself.

Figure 7. Performance of engineering buildings and structures, by type of construction



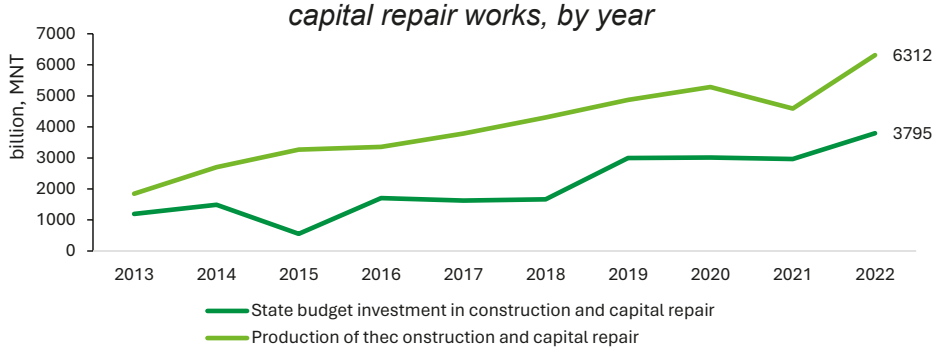
Source: NSO, www.1212.mn

Future government plans will significantly impact construction material demand. The “Port Revival Policy” aims to build 3,358 km of new railways to enhance freight traffic, exports, and Mongolia’s potential as a transit country. Additionally, the “New Revival Policy’s Urban and Rural Revival” program focuses on expanding and modernizing Ulaanbaatar’s road network, improving accessibility, and reducing traffic congestion. These projects are expected to drive construction material demand until 2030.

Historically, government involvement in infrastructure projects has significantly influenced construction material demand. Domestic companies account for 98% of construction and capital repair work funded by the state budget, highlighting the government’s role in stimulating domestic demand for construction materials.

State budget investments have financed roughly half of all construction work completed in the past decade (Figure 8). For instance, in 2022, while MNT 6.3 trillion was spent on construction and capital repairs, state budget investments and capital repair costs reached MNT 3.8 trillion.

Figure 8. Construction industry investment and completion of construction and capital repair works, by year



Source: NSO, www.1212.mn

State budget investments drive over half of construction and capital repair/ maintenance demand. Consequently, incorporating state budget plans becomes crucial when estimating and planning construction material needs.

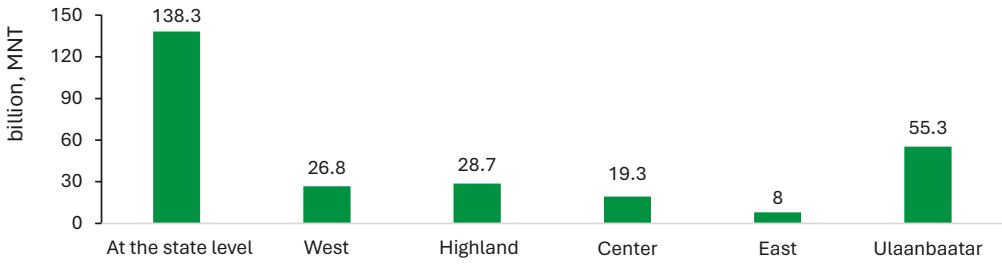
3.2. HOUSEHOLD'S NEEDS FOR BUILDING MATERIALS

A small percentage of the total need for building materials is accounted for by houses, apartment renovations, and private housing construction. Quantitative information to accurately calculate this percentage is limited, but an approximate estimate can be derived from household purchase data for construction materials. This study uses open numerical data from the "Household Socio-Economic Survey," conducted by the National Statistics Office, to estimate how much all households spend on building materials annually. However, it should be noted that these purchases are usually not registered in the VAT electronic registration system and take place in the shadow economy.

If household expenditures on construction materials in 2021 are scaled to the national level, they are estimated to be approximately MNT 138.3 billion. Regionally, households in Ulaanbaatar spent a total of MNT 55.3 billion, while households in the eastern provinces spent MNT 8 billion, and those in other regions spent between MNT 19 and 29 billion on construction materials.

Considering expenditures by housing type, households spent MNT 74.3 billion on detached houses, MNT 28 billion on gers, MNT 33.1 billion on apartments, MNT 1.6 billion on houses, and MNT 1.3 billion on common homes and other housing.

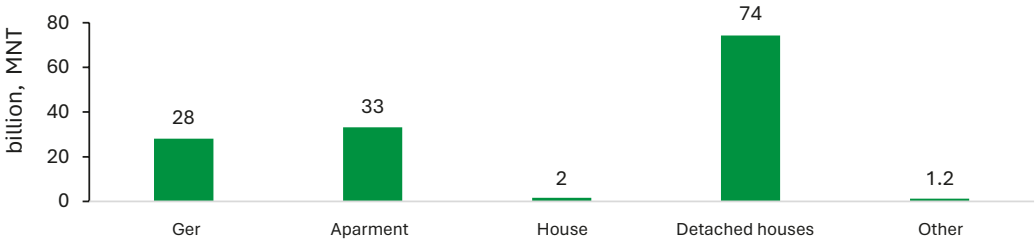
Figure 9. Household spending on building materials by region /2021/



Source: NSO, Researcher's estimates based on primary data from the Household Socio-Economic Survey

The figure below shows that detached houses account for the highest total expenditure on building materials, likely due to the large number of households living in detached houses. However, it's important to note that the figure also presents an average cost per household for each housing type, calculated by dividing the total expenditures by the total number of households, regardless of whether they actually purchased building materials in that year.

Figure 10. Building material costs of households by housing type /2021/



Source: NSO, Researcher's estimates based on primary data from the Household Socio-Economic Survey

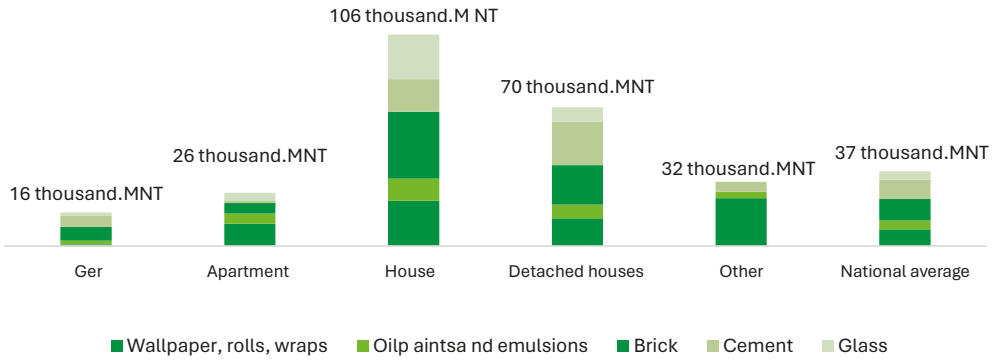
Interestingly, the average cost per household varies by housing type, with households in houses having the highest average spending, and those in gers the lowest. Material preferences also differ: houses and detached houses spend more on cement and bricks, while apartments and other buildings favor wallpaper and rolls.

"Other" remains the category with the highest overall spending, indicating a diverse range of materials used across household types.

While household spending pales in comparison to the construction and infrastructure sector, it represents a significant income source for micro and small businesses involved in building material production and sales.

Furthermore, considering the prevalence of informal purchases ("shadow market"), a comprehensive picture of Mongolia's building material market capacity, demand, and supply necessitates incorporating these household expenditures for accurate future estimations.

Figure 11. Average cost of building materials per household, by type of building materials /2021/

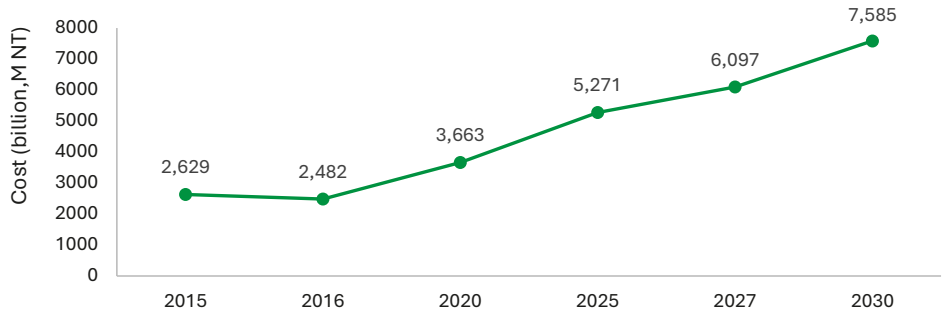


Source: NSO, Researcher's estimates based on primary data from the Household Socio-Economic Survey

3.3. FORECAST OF THE NEED FOR BUILDING MATERIALS

In the “Bulletin of Building Materials Industries,” prepared in cooperation with MCUD, MCMIA predicts the need for building materials until 2030. According to this forecast, the need for construction materials will increase 2.1 times from 2020 to 2030, reaching MNT 7,585 billion.

Figure 12. Forecast of the need for construction materials until 2030, billion MNT



Source: MCUD, CMMA, Bulletin of building materials industries-2023

Therefore, it is necessary to implement a long-term policy aimed at increasing the construction sector, including the production of construction materials.

Figure 12 predicts the total future demand for construction materials, while Table 5 shows the demand by 12 major types of construction materials.

Table 5. Demand for major building materials until 2030 (forecast)

№	Building materials	Unit	Year (physical size)				
			2017 base year	2020	2025	2027	2030
1	Reinforcing bar	K tons	176.2	2462.3	3543.2	4098.4	5098.5
2	Brick	M pcs	77.4	102.7	1477.8	160.4	199.5
3	Doors and windows	K m^2	325.9	432.1	621.8	674.8	839.5
4	Reinforced concrete	K m^3	239.9	318.1	457.7	496.8	618.0
5	Self-Compacting Concrete	M m^3	1.4	1.9	2.7	2.9	3.6
6	Cement	M tons	1.3	1.8	2.5	2.8	3.4
7	Lightweight concrete	K m^3	337.0	446.8	643.0	697.8	868.1
8	Mineral wool	K m^3	15.3	20.3	29.2	31.6	39.4
9	Polystyrene EPS	K m^3	353.3	468.4	674.1	731.6	910.1
10	Plastic pipe	K.km	1.5	2.1	3.0	3.2	4.0
11	Construction sand and gravel	M m^3	1.2	1.7	2.4	2.6	3.2
12	Lime	K tons	169.3	224.4	322.9	350.5	436.0

Source: MCUD, CMMA, Bulletin of building materials industries-2023

The current forecast, predicting a near-doubling of demand for all major construction materials by 2030, presents a limited view. To inform better policy decisions, a more granular forecast by material type is necessary.

This would require accurate calculations of building material needs for megaprojects (residential, non-residential, and engineering constructions) planned in Ulaanbaatar and local areas. Additionally, the forecast should consider the evolving characteristics of construction materials, including the adoption of new materials and technologies.

For instance, the rise of green buildings and renewable energy structures, which have different material requirements compared to traditional buildings, needs to be factored in.

Furthermore, incorporating various government policies and programs that can directly or indirectly impact construction material production and demand is crucial for a comprehensive forecast.

3.4. DEMAND FOR GREEN AND ENVIRONMENTALLY FRIENDLY BUILDING MATERIALS

One of the most important areas to pay attention to in the production and supply of construction materials in the near future is the production and use of environmentally friendly construction materials. A green building is a building and facility with planning and application phases that form the life cycle of a building with less harm to the environment, appropriate energy sources and consumption. Also, the concept of green building emphasizes the condition that the buildings in which we live and work should be efficient and economical in terms of economy or resources, have a relatively long period of use, and provide comfort. Green building materials have less negative impact on human health and the environment, and instead of using traditional light concrete and bricks, they employ waterproof concrete, thermal insulation, enlarged slabs, precast concrete structures, and renewable energy sources like geothermal heat, solar, and wind power.

Global building energy consumption is expected to grow by 37 percent by 2035, with 96 percent of this growth expected to occur in developing countries (Mongolian Builders Asscciation , 2020). Green buildings significantly reduce energy and natural resource use and carbon dioxide emissions, lowering energy consumption by 25% and water consumption by 11%. Many countries have joined efforts to combat negative environmental phenomena such as carbon dioxide emissions, global warming, and desertification. These efforts underscore the importance of increasing green buildings, which will drive future demand for green buildings and building materials.

Officials are also increasingly favoring a green transition for its savings benefits, boosting demand for products and services offering green business solutions. Research indicates that employers in green-certified buildings have higher hiring and retention rates, and improved indoor air quality and comfort boost employee productivity. (Mongolian Builders Association, 2020).

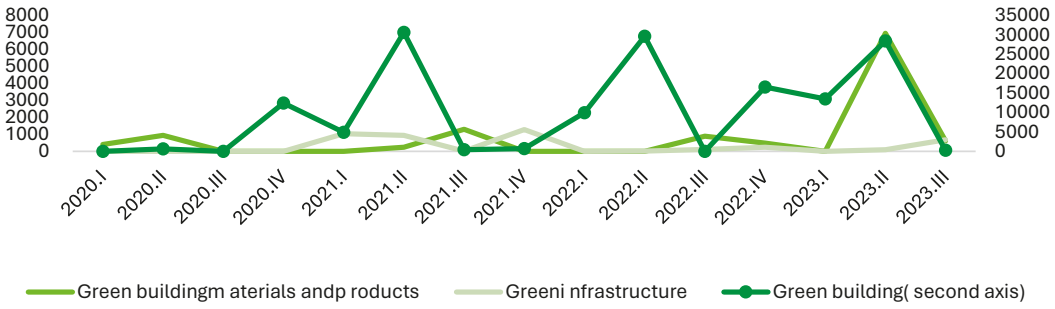
Although the initial financing of green building planning and construction is high, it has the advantage of relatively low long-term operating costs. For example, rainwater collection systems for non-drinking domestic and irrigation

needs require technologies and materials such as additional pipes, water storage tanks, filters, and settling tanks, but reduce the cost of clean water treatment by a certain percentage during the building's operation. Therefore, a green building incorporating optimal solutions can recover its initial costs relatively quickly.

Global demand for green buildings and materials is increasing yearly, proving effective in addressing global priorities like climate change, sustainable development, and economic growth. The benefits of green buildings and materials are becoming more significant in terms of environmental, economic, and social impact, increasing their share in Mongolia's construction industry. In Ulaanbaatar, where about 50% of the population lives, sustainable and green building planning is crucial. Countries selecting green building materials carefully study their hygienic parameters and characteristics, leading to a trend of using green building materials. However, green buildings and materials vary by country due to unique climates, cultures, traditions, building types, and economic and social conditions. In Mongolia, green building materials include silicate bricks, wood materials, sheep's wool products, foam glass, basalt rock wool, and ceramic roof tiles. This has the effect of changing the input of traditional building materials or reducing their demand.

The Green Development Policy, approved by Resolution No. 43 of the Great Khural of Mongolia in 2014, supports green building planning and production. Within this framework, commercial banks offer green loans to qualifying producers on favorable terms.

Figure 13. Newly issued loans, million MNT



Source: Bank of Mongolia, Green Credit Statistics

In recent years, green building financing systems have been developing rapidly around the world to support the green building industry. In this regard, the Bank of Mongolia started to register loan data for green building materials in 2020. Information about this is shown in the following images.

As shown in (Figure 13), the majority of loans granted to the construction sector, including green building materials and products, are granted in the second and third quarters of the year due to seasonality. The total green building materials and product loan balance decreased after 2020 but increased in 2023 to MNT 8.9 billion, though this is only 0.5% of the total construction industry loan balance. Green building and infrastructure loans currently represent a small share of the construction industry loan portfolio, ranging from 0.3% to 6.7%. However, this segment is demonstrating a promising upward trend in both loan amount and number, suggesting potential for significant future growth. (Bank of Mongolia, 2023)

4.CHALLENGES AND SUPPORTING POLICIES

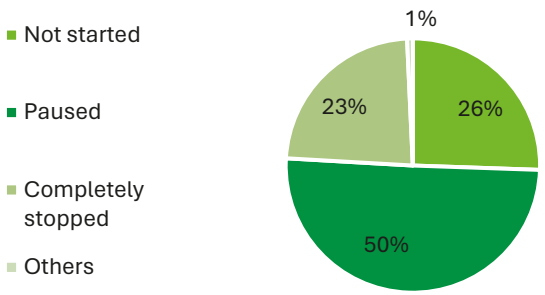
4.1. THE SITUATION OF CONSTRUCTION MATERIAL MANUFACTURERS

According to the Mongolian Chamber of Ulaanbaatar Designers (MCUD) and the Construction Materials Manufacturing Association (CMMA), the quality of domestically produced construction materials has significantly improved. This presents a dual opportunity: import substitution and potential exports. Furthermore, the inclusion of advanced and high-quality materials in construction plans and budgets is phasing out low-quality products lacking conformity certificates. Moreover, manufacturers are increasingly interested in adopting new technologies and localizing know-how, which bodes well for the future competitiveness of the domestic construction materials sector. (MCUD, CMMA, 2023).

Limited data hinders comprehensive research on the current state and challenges faced by Mongolia's building material manufacturers. To address this gap, an analysis was conducted using data from the National Statistics Office's (NSO) 2021 Regular Census of Enterprises. Unfortunately, the census lacked a dedicated category for "building materials production." Therefore, the study focused on sub-sectors potentially related to building material production within the two-digit economic sector classification. These sub-sectors included the production of rubber and plastic products, non-metallic mineral products, metal products (excluding machinery and equipment), and wood products (excluding furniture). This selection resulted in a sample of 1,486 registered enterprises referred to as "interviewed manufacturers."

The analysis revealed a significant impact of the COVID-19 pandemic on these manufacturers: half temporarily suspended operations, a quarter never started operations, and a concerning 23% ceased operations entirely.

Figure 14. Business interruption of interviewed manufacturers, as of 2021



Source: NSO, Researcher's calculations based on Enterprise Census data

These interviewed manufacturers also faced challenges beyond the pandemic, including disruptions to imported raw materials and significant increases in transportation costs.

When examining how the pandemic affected the 2021 revenue of these enterprises compared to their 2020 income, 580 companies responded to the survey. Of those, 198 (34%) reported no change in revenue, 85 (15%) experienced a decrease between 20% and 49%, and 59 (10%) saw an increase of up to 10%.

Table 6. Increase in operating income of interviewed enterprises and comparison with the end of the previous year, as of 2021

Rate of increase and decrease in income	Number of enterprises	In percent
Increased up to 10 percent	59	10%
Increased by 10-19 percent	25	4%
Increased by 20-49 percent	24	4%
Increased by 50 percent or more	13	2%
Reduced up to 10 percent	45	8%
Reduced by 10-19 percent	64	11%
Reduced by 20-49 percent	85	15%
Reduced by 50 percent or more	67	12%
Unchanged	198	34%
Total	580	100%

Source: NSO, Researcher's estimates based on Enterprise Census data

The pandemic had a negative impact on the operation of most enterprises.

Table 7.Impact of the pandemic on selected enterprises, in numbers and percentages /2021/

	Positive	Negative	No effect	Total
Numbers of Enterprises	49	507	24	580
In percent	8%	87%	4%	100%

Source: NSO, Researcher's estimates based on Enterprise Census data

Strict lockdowns significantly impacted operations, with 49% of companies ceasing operations and only 6% continuing as usual.

Table 8. Whether the interviewed enterprises were operating during the lockdowns in 2021

	Worked normally	Worked remotely	Worked within a limited scope	Completely stopped	Total
Numbers of Enterprises	35	31	229	285	580
In percent	6%	5%	39%	49%	100%

Source: NSO, Researcher's estimates based on Enterprise Census data.

The interviewed enterprises faced several challenges during the lockdown, including retaining jobs, meeting payroll, dealing with inefficient government decisions, and securing access to loans, raw materials, and essential utilities. Additionally, rent payments and transportation restrictions added to their burdens.

In response to these difficulties, the government implemented various measures to support businesses. Notably, 51% of enterprises received social security contribution discounts, 63% benefited from electricity, heat, and water discounts, and 40% qualified for CIT (Corporate Income Tax) exemptions. Details of these measures are provided in Table 9.

Table 9. Interviewed enterprises included in the measures taken by the government in 2021

Measures implemented by the government	Number of enterprises	In percent
Exemption of social security contributions	298	51%
Exemption of CIT with an income of less than MNT 1.5 billion	232	40%
Provide monthly support of MNT 200,000 to employees of companies who keep jobs	95	16%
To activate the operation of the Loan Guarantee Fund within the framework of relevant laws and regulations	24	4%
Postponing loan principal and interest payment	84	14%
Providing loans with a subsidized interest of 3% to maintain jobs	109	19%
Paying and discounting enterprises' electricity, heating, and water bills.	365	63%
Total	**580**	**100%**

Source: NSO, Researcher's estimates based on Enterprise Census data

Companies that remain operational face a dual challenge: temporary negative effects such as reduced sales and increased costs, as well as fundamental difficulties related to loans, financing, and human resource availability.

Loans and financing of construction materials production

The government does not currently offer specific low-interest loan programs targeted exclusively at building material manufacturers. However, they support businesses in the sector through broader initiatives aimed at small and medium-sized enterprises (SMEs) and job creation. For instance, during the COVID-19 pandemic, government support included extending loan repayment deadlines, offering low-interest (3%) job-retention loans, and providing discounts on utilities. According to the 2021 NSO Enterprise Census, 25% of interviewed manufacturers

have loans, mostly from commercial banks.

Table 10. Loan sources of the interviewed enterprise in 2021

Bank	Nonbank Financial Institution	Saving-Loan cooperative	From an individual	SME Development Fund	Other
285	41	4	44	59	5
(19%)	(3%)	(0.3%)	(3%)	(4%)	(0.3%)

Source: NSO, Researcher's estimates based on enterprise census data

However, among enterprises that did not take out loans, 44% reported that they either did not require financing or were not actively operating at the time. Challenges for those seeking loans included insufficient collateral, unmet creditworthiness criteria, limited access to credit, and bureaucratic lending processes.

Table 11. Reasons for not participating in the loan of the selected enterprise, in numbers and percentages /2021/

No requirement	Inadequate collateral and other credit criteria are not met	Poor availability of loans from lending institutions	Not a VAT payer	Bureaucracy of the lending institution	Others
652	348	109	41	93	4
(44%)	(23%)	(7%)	(3%)	(6%)	(0.3%)

Source: NSO, Researcher's estimates based on enterprise census data

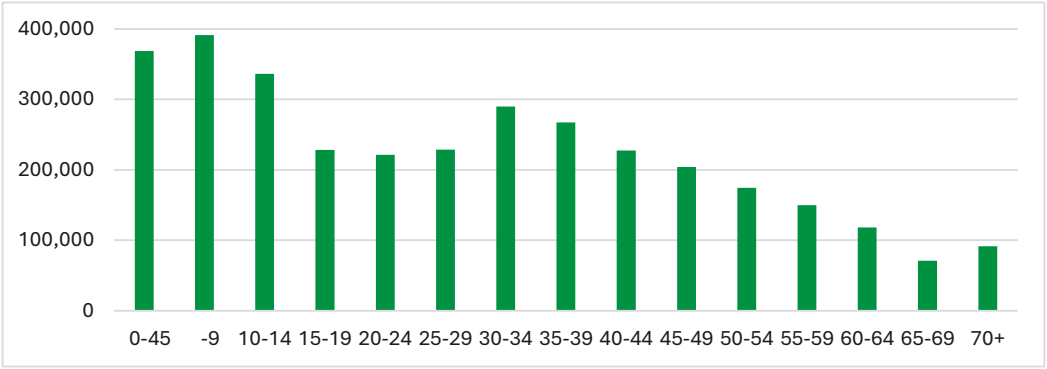
Human resources for the production of building materials

A skilled and reliable workforce is a cornerstone of domestic construction material production. These workers contribute their expertise and labor throughout the entire production cycle, from raw material extraction to final distribution.

Unfortunately, due to the lack of dedicated statistical data on the construction material sub-sector workforce, we must examine the broader challenges facing Mongolia's construction and manufacturing industries.

However, before examining the sector-specific situation, it is important to understand the overarching national demographic trends. As shown in the figure below, Mongolia experienced a significant decline in birth rates during the difficult market transition period (1991-2006). This resulted in a lower population of young people aged 15-29 today. This demographic shift represents the root cause of the recent sharp decline in young worker availability within the labor market. Consequently, the current labor shortage is projected to persist for another 5-10 years.

Figure 15.Population by age group, as of 2022



Source: NSO, Population living in Mongolia

A key constraint to increasing domestic building material production is the lack of a qualified workforce. As of the end of 2023, only 15.9% (190.7 thousand) of Mongolia's workforce (1.197 million) is employed in construction and manufacturing, with just 18% aged 15-29.

This demographic trend, characterized by a significant decline in the population under 30, is expected to create a persistent shortage of human resources in construction and manufacturing, particularly for skilled workers. Therefore, a critical challenge lies in preparing, training, and retaining a qualified workforce specifically for the construction and manufacturing industries.

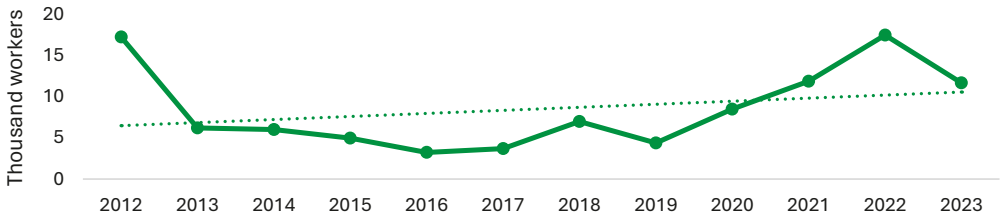
While Mongolia has 20 universities and colleges offering construction-related programs (with 9,875 students enrolled in the 2018-2019 academic year), the focus needs to shift towards vocational and technical education.

As of 2020, there were 75 vocational and technical institutions (46 state-owned and 29 non-state-owned) with 40,165 students. Within these institutions, 25 construction-related programs enrolled 4,575 new students and graduated 3,197 students (including Technical Education, Vocational Education, and Vocational Training). This translates to only 17% of Vocational Training Center graduates entering the construction field (Ministry of Labor and Social Security, 2020).

An average of 5,500 students graduate from construction programs annually, falling short of industry demand. Furthermore, the decline in young people aged 15-34, coupled with a growing need for skilled engineers and technicians, suggests a long-term human resource shortage in the construction sector.

To understand the labor force deficit better, the annual Labor Market Demand Barometer study by the Labor and Social Security Research Institute (LSSRI) provides valuable insights. (LSSRI, 2012-2023).

Figure 16. Labor shortages and trends in the construction and manufacturing sectors

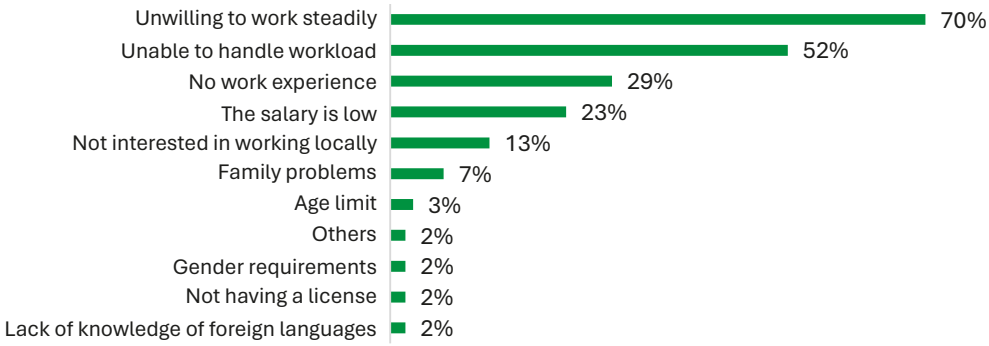


Source:LSSRI, Labor market demand barometric survey

While the labor shortage in Mongolia's construction and manufacturing sectors fluctuated somewhat between 2014 and 2019, it has been steadily rising since 2020. This trend is evident in the construction industry, where a significant shortage of workers persists. As of 2022, the industry faces a shortfall of approximately 8,300 employees, representing 11% of its workforce.

Data from the National Statistics Office's 2021 Enterprise Census sheds light on some of the reasons behind this human resource shortage. According to the survey, 30% of construction material manufacturing enterprises reported difficulty finding qualified workers. When asked about the specific challenges in recruitment, the majority of enterprises (70%) cited a lack of willingness among potential employees to commit to long-term, stable work. Additionally, 52% of enterprises indicated that the workload within the industry deters potential hires.

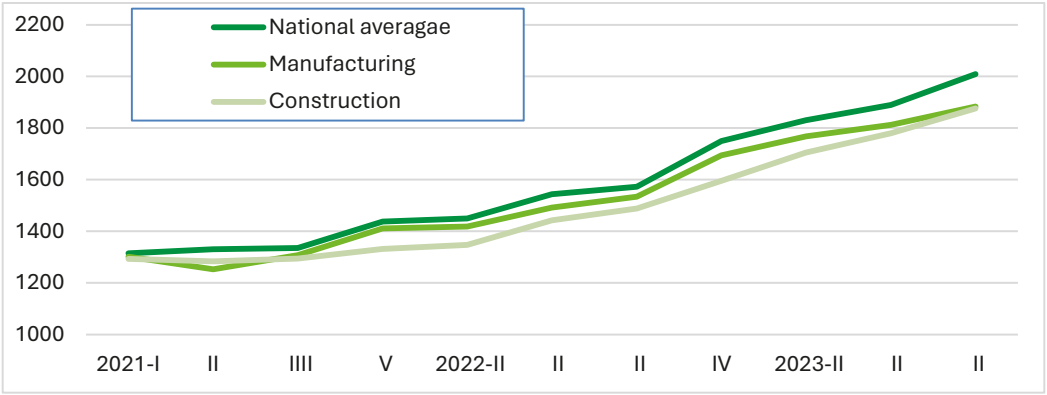
Figure 17.Reasons for not finding the necessary employees, in percent /2021/



Source: NSO, Researcher's estimates based on enterprise census data

Furthermore, wages in the construction materials industry add to the recruitment challenge, consistently falling below the national average. As illustrated in the figure, the gap between construction and processing industry salaries and the national average has widened in recent years.

Figure 18. Average monthly salary, thousand MNT. National average and related sectors



Source: NSO, Average monthly salary of Enterprise employees

Industry experts additionally point out two other challenges: delayed wage payments by some enterprises and increased labor market competition from new factories, which can affect workforce stability.

Other issues

Low Productivity. One major factor contributing to low wages in construction material production is low worker productivity. The national average productivity per worker in 2023 is MNT 24.8 million. This dips to MNT 23.9 million in the manufacturing sector and a concerning MNT 11.9 million in construction. Instead of solely focusing on dramatically increasing worker output, a more strategic approach is needed. This could involve prioritizing the development and selection of efficient building materials alongside technological innovation. Subsidizing inefficient products should be discouraged. To achieve this shift, stricter regulations are needed to prevent the establishment of new factories without proper feasibility studies. Additionally, fostering open access to research and information on construction material markets and successful practices of existing enterprises would be beneficial.

Tax Burden. Another significant challenge for construction material manufacturers is the Value Added Tax (VAT) burden. Many producers are small, medium-sized, and low-profit enterprises. The VAT placed on their sales significantly hinders their ability to compete with imported products that are not subject to VAT. The heavy burden of social security contributions and other taxes, on top of VAT, has reportedly led some manufacturers to resort to tax avoidance practices.

Barter System. A recent trend in the industry is the barter system, where construction material manufacturers receive apartments or office buildings instead of cash payments for their supplies to construction companies. This practice creates cash flow problems for manufacturers, especially when construction projects are delayed, or barter properties remain unsold.

Raw Material Depletion. Industry experts warn of potential raw material

depletion, particularly for common mineral deposits like sand and gravel around Ulaanbaatar. Limited exploration efforts haven't addressed this growing concern. However, representatives from the sector's non-governmental organizations believe this issue can be mitigated by establishing factories specializing in mountain gravel, processed sand, or mechanically produced sand.

Filler Material Factories. These factories provide essential raw materials for construction. However, they face their own set of challenges, including dust and clay pollution, limited supply of specific filler materials, workforce shortages, and a prevalence of barter sales. These issues contribute to material shortages and ultimately drive up the price of construction concrete and related products.

Overall, these challenges paint a complex picture for Mongolia's construction materials industry. Addressing these issues requires a multi-pronged approach involving government intervention, industry collaboration, and a focus on technological advancements and sustainable practices.

4.2. POLICY TO SUPPORT THE PRODUCTION OF BUILDING MATERIALS

Mongolia currently relies heavily on imported construction materials. To address this dependence, the government's 2020-2024 action plan prioritizes domestic production of cement, metal structures, and insulation materials to meet national needs.

Between 2021 and 2022, construction material imports amounted to USD 338-476 million, representing roughly 5% of the country's total imports during that period. This figure translates to approximately 10% of Mongolia's foreign currency reserves, highlighting the significant strain these imports place on the balance of payments and exchange rate stability.

Fueled by population growth and urbanization, Mongolia experiences a continuous rise in demand for building materials. To replace imports and achieve self-sufficiency in key construction materials, successive governments have incorporated policies and programs into their action plans.

Several short, medium, and long-term development policies and programs support domestic construction material production. These include the "National Heavy Industry Development Program" and "Vision-2050 Long-Term Development Policy."

The most recent government action plan (2020-2024) outlines a policy specifically designed to develop construction material production. This policy aims to:

- Reduce building costs
- Extend construction lifespans
- Minimize building weight
- Enhance heat retention
- Improve fire resistance

The plan identifies four key factory projects to support import substitution:

1. Domestic production of construction steel
2. Manufacturing building insulation materials using domestic mineral resources
3. Production of prefabricated building structures
4. Establishing cement production facilities in the western region

The following sections will provide a more detailed analysis of these policies.

Currently implementing policies

Policies and programs aimed at increasing the production of building materials are summarized in this section.

National Heavy Industry Development Program (approved in 2019)

This program prioritizes the development of the mineral processing industry. However, it also emphasizes supporting metal structures, machinery manufacturing, and construction materials production through investment, financial, and credit incentives. Additionally, the program encourages intensifying activities within production and technological complexes to advance the metal structures and machinery industries.

Vision-2050

This long-term policy (until 2050) incorporates specific goals for construction material production:

- By 2040 (Phase 2), the policy aims to achieve complete domestic self-sufficiency in construction materials production and establish an export-oriented industry.
- The policy emphasizes creating a legal framework for processing raw materials into final construction products to attract foreign investment.
- Supporting import substitution for construction materials is another key objective.
- Phase 3 of Goal 8.1 outlines the development of cluster centers for light industry and green technology-based building material production.

While these policies outline goals and measures for developing domestic construction material production, a formal assessment of their implementation is yet to be conducted. To gain valuable insights, it would be beneficial to examine the implementation process and lessons learned from similar industry policies enacted in the past.

Previously implemented policies

Several initiatives were previously implemented to increase the supply of building materials in Mongolia. These include Mongolia's National Security Concept, Mongolia's Development Concept, Master Plan for the Development of Building Materials Production in 2007-2015, and New Development medium-term target program, etc.

Building Materials Production Support Program. A "Building Materials Production Support Program" was established based on these policy documents. This program provided low-interest working capital loans to both construction material importers and domestic producers. The program aimed to achieve the following by 2016:

- Meet domestic demand for key building materials (cement, reinforcement, concrete, prefabricated structures, insulation, wall aggregates, and finishing materials).
- Substitute over 70% of imported building materials with domestically produced alternatives.
- Transition cement production entirely to dry methods, reducing fuel, electricity, and water consumption and ultimately lowering product prices.
- Establish a national laboratory testing system to monitor the quality and standards of both domestic and imported building materials.

The Ministry of Construction and Urban Development, along with the Building Material Manufacturer's Association of Mongolia, evaluated the program's implementation. The results of this evaluation are presented in the following table.

Table 12. Objectives of the program to support the production of building materials (2012-2016) and its implementation in percentage

№	Objectives	Fulfillment
1	Improving the legal and legal environment in the field of development of construction materials production and support of manufacturers.	**90%**
2	Creating a favorable business environment for construction material manufacturers.	**90%**
3	Increase the supply of raw materials for the production of building materials.	**70%**
4	Ensuring the quality and safety of building structures, materials, and raw materials.	**30%**
5	Improving the transportation and logistics network of building structures, materials, and raw materials.	**70%**
6	Include and introduce new advanced building materials and product standards in the construction plan budget.	**70%**
7	Creating conditions for the production of building materials to work smoothly throughout the year regardless of the cold season	**70%**
8	Formation in the field of construction materials production. Training of human resources and skilled workers.	**70%**

Source: Program to support the production of building materials, BMMAM

The implementation of programs like the "Construction Materials Industry Development Master Plan 2007-2015" (approved by Government Resolution No. 222 of 2007) and the "Building Materials Industry Support Program" (approved by Resolution No. 171 of 2012) led to the establishment of over 350 SMEs. These

programs enabled domestic production of over 70% of more than 40 types of building materials commonly used for residential construction.

A breakdown of the operational enterprises by product type reveals:

- 4 dry cement method factories with a capacity of up to 1 million tons per year
- 3 clinker milling workshops
- 4 lime factories with mine furnaces
- 187 ready-made concrete mortar facilities
- 16 concrete chemical additive producers
- 70 producers of concrete, reinforced concrete, and prefabricated houses
- 72 producers of various thermal insulation materials and sandwich panels
- 73 facilities for crushing and sorting sand and gravel
- 73 facilities for crushing
- 21 enterprises focused on various building decorations (interior and exterior)
- 22 autoclave lightweight concrete producers
- Over 10 producers of various wall bars and panels
- 56 ceramic brick producers
- 5 enterprises focused on import substitution and export orientation
- Around 10 metal construction enterprises
- 156 plastic window and door manufacturers
- 2 raw input material producers
- 8 new plastic pipe factories

As a consequence of these initiatives, production capacity has significantly increased compared to 2015. Cement production has grown sixfold, concrete production has quadrupled, brick production has increased by 50%, light concrete production has doubled, and other production sectors have seen increases ranging from 100% to 500%. However, as previously mentioned, these factories are not operating at full capacity.

Housing Price Stabilization Sub-Program

In collaboration with the Bank of Mongolia, the Ministry of Construction implemented a sub-program titled “Support the Construction Industry, and Thus Stabilize Housing Prices” within a larger medium-term program established in 2012. This sub-program, launched in January 2013, focused on three key areas:

- Ensuring a stable domestic supply of essential construction materials.
- Eliminating seasonal shortages of imported building materials (cement and reinforcement metal).
- Supporting the production of environmentally friendly building materials using advanced technologies.

The primary objective of this sub-program was to stabilize housing prices and rental costs by balancing housing supply and demand.

The program aimed to create a foundation for long-term stability in the domestic supply of key construction materials. It also sought to establish the groundwork for reducing pressure on housing prices, stabilizing rental costs, and increasing access to middle-class housing.

In an effort to achieve these goals, MNT 174.7 billion was allocated in 2013 to 71 companies producing construction materials. This funding provided concessional working capital loans to expand production and eliminate seasonal import restrictions for cement and reinforcement metal. Banks additionally granted loans totaling MNT 125.4 billion to 55 companies, bringing the total program funding to MNT 301.6 billion.

The program demonstrably stabilized cement prices for the first six months of 2013, although volatility increased in subsequent months. Reinforcement bar prices remained stable throughout 2013 as participating companies fulfilled their contractual obligations by selling reinforcement metal at agreed-upon prices.

As a result of the program, the construction sector experienced a significant growth of 66.5% in 2013, essentially filling the gap left by the mining sector. The Bank of Mongolia concluded that the program played a crucial role in maintaining double-digit real GDP growth and protecting jobs within the labor market.

Working capital loans provided to domestic building material manufacturers demonstrably supported domestic production, resulting in a continuous rise in the domestic production rate relative to total building material demand.

Since 2013, the need to finance the import of cement and reinforcement metal to address seasonal shortages has been eliminated. Following the cessation of import financing, banks issued only MNT 3 billion in loans to domestic construction material manufacturers in the first quarter of 2014. No further program loans have been disbursed since then.

Table 13. Loan balance of the price stabilization program (in billions MNT)

		2013	2014	2015	2016
Sub-programme to support the construction industry and thus stabilize housing prices	Support domestic production of key types of construction materials	169.7	211.7	148.3	19.7
	Eliminate seasonal shortages of imported building materials	99.4	0	0	0
	Support the production of environmentally friendly building materials using advanced technologies	0	0	0	0

Source: Bank of Mongolia

As a result, the program successfully stabilized construction material prices and achieved some degree of domestic production for certain materials. However, a comprehensive report on import substitution levels and the overall impact on

domestic demand fulfillment is not available.

The Bank of Mongolia's annual reports indicate positive outcomes. Their 2015 report highlights a 38% decrease in building material imports attributed to increased domestic production. Similarly, the 2016 report shows a USD 190 million reduction in import costs due to this factor.

An external study by Ts. Batsukh and D. Boltogtoh B. Oyu-Erdene (2015) raises an important concern. Their research, titled "Analysis of factors affecting domestic prices," found that the program successfully lowered the prices of targeted products. However, it also observed an increase in the overall inflation rate. The study suggests that focusing solely on stabilizing the prices of specific goods is not sustainable. While printing money might temporarily stabilize prices within a particular sector, it can lead to inflation through rising exchange rates and price increases in other commodities due to increased aggregate demand. In essence, while the program stabilized construction material prices, it potentially contributed to inflation in other sectors.

Additional Policy Measures. Favorable business conditions were created for the construction material industry from 2009-2014 through the exemption of customs and value-added tax on equipment for SMEs.

In 2015, the government approved a list of approximately 30 construction material types produced domestically that meet quality standards. This list was established according to the "Law on Procurement of Goods, Works and Services with State and Local Funds."

Additionally, Resolution 332 of 2015 ("On Determining the Rate of Customs Duty on Some Imported Goods") increased the customs duty rate on cement and clinker from 5% to 20%, essentially halting their import. Government Resolution No. 185 of 2015 further expanded this list to include lightweight concrete, silicate brick, ceramic brick, railway concrete sleepers, and other concrete and reinforced concrete components.

CONCLUSIONS AND RECOMMENDATIONS

Based on the study findings, the following conclusions are made.

Growing Demand and Import Reliance. Government spending on housing, infrastructure development, and construction investment is steadily increasing. This, coupled with private sector growth, translates to a rising demand for construction materials, particularly residential and non-residential buildings, roads, and bridges. Current and planned policies, annual state budget allocations, and construction growth all point toward a continued rise in demand.

Meeting this demand necessitates construction material imports. On average, between 2021 and 2022, imports accounted for 10% of Mongolia's foreign currency reserves. This annual dollar outflow strains the balance of payments and contributes to exchange rate increases, ultimately impacting construction and other goods prices.

Policy Gaps and Underutilized Capacity. While policies exist to support construction material production, they lack clear objectives and coordination. These policies often intertwine with those for construction, mining, heavy industry, and SMEs. Soft credit policies aimed at increasing housing affordability stimulate construction sector demand through real estate, but this demand primarily translates into imports (~70%). Monitoring and evaluation of existing policy implementation remain insufficient.

Heavy Import Dependence and Opportunities for Domestic Production. Mongolia imported USD 814.4 million worth of construction materials in 2021-2022, reflecting a 68.2% import share. Several factors contribute to this heavy reliance, including underdeveloped domestic production, limited product availability, and underutilized factory capacity.

Developing the steel industry, which accounts for over half of total construction material imports (reinforced steel, rolled steel, and other metal structures), could significantly reduce import dependence. However, efficient steel industry operations are contingent on high installed capacity utilization.

Cement and lime factories, despite significant investments, operate below half their capacity. Full utilization could potentially meet domestic demand. Similarly, plastic production needs to be increased as only half of its current capacity is being used.

Sand, gravel, and other common mineral extraction are low, particularly concerning dwindling sand and gravel reserves near Ulaanbaatar. The Building Material Manufacturing Association's suggestions regarding exploring high-density, high-hardness underground rock deposits, processing mountain rock into 0-5 mm stone chips, and exempting necessary processing equipment from customs and value-added tax merit consideration. Additionally, the decision to close sand and gravel quarries in the Tuul River basin could be revisited.

While the domestic ceramic industry operates at full capacity, it contributes

only a small percentage to the total supply. Most aluminum products, plastics, ceramics, glass, wood products, reinforcing bars, and other metal products are imported.

A comprehensive study to assess the potential, advantages, and disadvantages of developing domestic production for these products is yet to be conducted.

Human Resource Challenges and Green Construction Trends. The construction materials industry, like other sectors, faces a long-term human resource shortage. The average annual graduation rate of construction professionals (around 5,500) falls short of demand due to a demographic decline among young adults (18-30 years old) from the low birth rates of the 1990s and 2000s. Furthermore, salaries in this sector are below the national average, further hindering workforce attraction. A rising demand for specialized engineers and technicians is anticipated, suggesting a continued workforce shortage. Efforts to train construction material industry professionals, revise human resource policies and strategies, and improve labor productivity are crucial.

Insufficient funding hinders production activities. Limited access to low-interest, long-term loans and stringent collateral requirements pose challenges. The COVID-19 pandemic further exacerbated this issue, reducing operating revenue for 50% of construction material producers. This translates to a lack of working capital and financing difficulties, ultimately limiting production potential.

While the demand and loan scale for green construction, green construction materials, and products are currently low, a growing trend is present. High initial construction costs for green buildings are hindering demand for green construction loans. However, green construction materials offer several advantages compared to traditional materials, and over time, they will likely become a cost-effective option for consumers. Additionally, green financing sources and availability are increasing, suggesting a potential rise in demand for green construction loans and related materials.

Data Gaps Hinder Policy Development. Incomplete and inconsistent data within the construction materials industry pose a challenge for future policy development and program evaluation. Firstly, discrepancies exist between construction industry stakeholder terminology and the codes/types on the customs register for certain construction materials. Secondly, there is insufficient price data for key construction materials beyond cement. This lack of information hinders analysis and prediction regarding the price competitiveness of domestic vs. imported construction materials, the impact of tax rates on prices, and future price trends. Thirdly, there is a lack of information related to the demand and consumption of construction materials. This absence of data on the types and quantities of materials required for construction projects significantly hinders effective planning and resource allocation.

Recommendations

Based on the above conclusions, the following recommendations are provided:

- **Policy Coordination.** Construction material production policies need to be coordinated, prioritized based on importance and feasibility and jointly

evaluated for implementation risks and obstacles.

- **Domestic Manufacturing Focus.** To reduce reliance on imports and improve balance of payments, domestic construction material production should be increased. Policy focus should prioritize products with the strongest competitive advantage.
- **Tax and Customs Policy Review.** Analyze the recent impact of tax and customs policies on construction material production. Compile necessary quantitative data for key materials, including price, production, and sales figures.
- **Cement Production Strategy.** Fully utilize domestic cement production capacity to meet domestic demand and explore export opportunities. Focus on regions with competitive transportation costs, such as bordering areas of China, Russia, Korea, and Japan, which emphasize carbon emission reduction.
- **Green Construction Materials.** Introduce green technology and energy-efficient materials in construction material production. Develop relevant standards and train engineers early. Encourage construction material manufacturers to adopt green construction material production techniques.
- **Labor Efficiency.** Considering the anticipated long-term human resource shortage, prioritize technological advancements that reduce manpower needs, improve productivity, and develop high-efficiency, low-labor sectors within the industry.
- **Demand Forecasting.** Establish a system to track construction material demand. Utilize existing databases like ESTIMATOR and residential building data. Calculate demand based on planned construction projects from the Ministry of Construction and Urban Development, the Office of the Capital City Governor, and the Ministry of Road Transport.
- **Addressing the Informal Economy.** Study the hidden economy within construction material production and demand. Investigate the possibility of unregistered construction materials being classified as other inventory or substitutes to avoid taxes and standards. Encourage registration of construction materials produced by private sellers. Disclosing underground economic activities will broaden the tax base, promote fair market competition, and support legitimate businesses.

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APPENDIX

Table A1. Construction material import, volume and value

№	HS code	Construction material	Name of goods and material	Unit	2021		2022	
					Volume	Value, thous. dollar	Volume	Value, thous. dollar
1	2517	Gravel and sand	Gravel sand, crushed stone	ton	668	148.1	317.8	64.5
2	2523	Cement	Cement	ton	4798	417.7	53085	5486.1
3	3506	Prepared glues and other adhesives	-	-	-	-	-	-
4	3824	Concrete chemical admixtures	-	-	-	-	-	-
5	3917	Plastic pipes	Tubes, pipes and hoses, of plastics.	ton	4354	13813.1	15621	24339.9
6	3925	Window and doors	Builders' ware of plastics.	-	-	10112.4	-	13027.6
7	4407	Wood and wood product	Sliced or peeled wood	K м3	2.7	574.7	3.1	642.4
	4409		Strips and friezes for parquet flooring, not assembled, continuously shaped	K м3	11.9	3647.6	15.9	6498.1
	4410		Particle board	M l n . м2	7.5	21947.8	6.3	23230
	4411		Fibreboard of wood	M l n . м2	5.4	21653.6	5.0	23779.3
	4412		Plywood	K.м3	15	4595.2	44.4	12416.6
	4413		Densified wood in blocks	м3	-	-	643.7	237.5
	4418		Builders' joinery and carpentry of wood	-	-	6029.5	-	11952.8
8	6806	Thermal insulation materials	Rock-wool, mixtures and articles of heat-insulating, sound-insulating mineral materials	K ton	2.4	2571.1	6.8	5624.7
9	6810	Cement and concrete products	Articles of cement, of concrete or of artificial stone, whether or not reinforced	-	-	8527.2	-	15913.9

10	6902	Ceramic	Refractory bricks, blocks, tiles and similar refractory ceramic constructional goods	K ton	2.8	1722.8	15.9	3550
11	7016	Glass and glassware	Paving blocks, tiles and other articles of pressed or moulded glass,	K pc.	40	590.6	345	548.9
	7019		Glass fibers, glass wool	K ton	2.2	3650.4	2.9	4781.9
	7004		Sheets of glass	K м2	1778	3889.6	42.5	183.8
12	7213	Rolled metal	Bars and rods, hot-rolled, in irregularly wound coils, of iron or non-alloy steel.	K ton	34.4	24766.1	41	31641.3
13	7214	Reinforcing steel	Other bars and rods of iron or non-alloy steel,hot-rolled, hot-drawn or hot-extruded	K ton	223.8	163887.4	287	224808.9
14	7208	Other steel and iron product	Flat-rolled products of iron or non-alloy steel, hot-rolled	K ton	20.4	12387.6	21.0	15965.8
	7209		Flat-rolled products of iron or non-alloy steel, cold-rolled	K ton	3.2	2586.7	2.0	1647.3
	7215		Bars and rods, of iron or non-alloy steel, cold-formed	ton	951	760.7	3265	2809.2
	7216		Angles, shapes and sections of iron or non-alloy steel	K ton	17.1	11202.9	26.3	21470.6
	7217		Wire of iron or non-alloy steel, in coils	K ton	3.8	3136	6.5	5060.5
	7227		Bars and rods of alloy steel other than stainless, hot-rolled, in irregularly wound coils	ton	990	938.2	1330	1170.3
	7228		Hollow drill bars and rods, of alloy or non-alloy steel	K ton	1.6	1348.3	4.9	7934.1
	7229		Wire of alloy steel other than stainless, in coils	ton	6.7	17.1	134.9	152.7

15	7408	Copper	Copper wire	kg	960.6	14.5	4007.4	50
	7412		Copper tube or pipe fittings	ton	52.6	900.4	65.4	1216.8
	7413		Stranded wire, cables, plaited bands of copper	ton	3.9	67.1	2.3	40.9
16	7604	Aluminum	Aluminium bars, rods and profiles	ton	606	3157.1	1295	6497.7
	7605		Aluminum wire	ton	40.3	90.7	81.3	175
	7610		Aluminium structure,parts	K ton	1.2	6296.4	1.6	8157.8
	7614		Stranded wire, cables, plaited bands of aluminium	K ton	1.1	2298.3	1.0	2583.4
		Total				**337746.9**		**483660.3**

Source: Customs General Authority

Table A2. Domestic production of construction materials, volume and value (billion MNT)

№	HS code	Construction material	Name of material	Unit	2021		2022	
					Volume	Value, thous. dollar	Volume	Value, thous. dollar
1	2517	Gravel and sand	Gravel	K. м3	505.2	7.4	1246.8	10.6
			Pebbles	K. м3	400.4	3.8	456.3	5.8
			Natural sand	K. м3	150.1	1.6	120.4	1.5
			Crushed stone	K. м3	247.2	7.4	181.4	4.8
2	2523	Cement	Portland cement	Mln.tn	1.3	152.8	1.4	173.4
3	3506	Prepared glues and other adhesives	Wall putty	Mln.tn	4.4	0.3	2.0	0.4
			Black wall putty	ton	720.7	0.2	1404.8	0.3
			Prepared glue	ton	204.3	0.06	762.4	0.2
4	3824	Concrete chemical admixtures	Concrete chemical admixtures	Mln.tn	20.0	2.3	18.2	32.9
5	3917	Plastic pipes	Plastic tubes and pipes	Mln. pc	0.72	1.2	1.6	0.9
			Plastic ceiling frame	м2	105.3	0.4	194.4	2.5
6	3925	Plastic window and door	Builders' ware of plastics	K м2	31.3	7.5	43.0	13.2
7	4411	Wood and wood products	Модон байшингийн хийц	K pc.	54.2	1.2	44.3	1.1
			Барилгын шалны банз	м3	322	0.06	188.2	53.3
			Doors	K м2	4.0	0.6	4.0	1.1
8	6806	Thermal insulation material	Multi-joint steel flats with mineral wool and polystyrene foam (PS) insulation	-	-	-	-	-
			Styrofoam board	K м3	37.4	5.5	20.3	2.9
			Polyurethane board	K м3	51.0	2.6	447.6	3.1
			Polyurethane coating	-	-	-	-	-
9	6810	Cement and concrete products	Concrete slabs for road pavement	K м2	45.1	0.8	46.4	1.0
			Wall concrete bars	K pc.	0.6	0.09	0.9	0.2

			Ceramic bricks and ingots	Mln.pc	20.4	3.9	23.4	6.8
			Precast reinforced concrete structures for wells	Mln.pc	154	17.5	107	9.1
			Building basement walls and foundation bars	K м3	195.1	32.5	244.3	35.4
			Reinforced concrete pipe	K м3	53.7	20.4	57.5	32.4
			Concrete trough for underground heating pipes	K м3	19.8	3.1	11.7	2.3
			Concrete	K м3	608	106.4	823	171.1
			Reinforced concrete cone poles for high-voltage overhead power lines	-	-	-	-	-
			Autoclave aerated concrete ingots	K м3	24.1	3.9	11.8	2.6
10	6902	Ceramic	Plumbing items such as ceramic and porcelain sinks, atriums, sinks, sinks, hot tubs	pc.	1019	0.4	713	0.4
11	7016	Glass and glassware	Glass wall of the building	K м2	2.6	0.8	5.6	1.5
12	7213	Rolled steel	Hot-rolled round iron	K ton	35.9	45.4	25	40.4
13	7214	Reinforcing steel	Reinforcing bar for ferroconcrete structure	K ton	35.57	52.3	26140.9	52.6
14	7208	Other steel products	Iron pipes and plumbing fixtures	ton	203.5	1.4	67.2	0.2
			Iron and steel doors and windows	K м2	5.4	2.4	5.5	2.7
			Steel structures	K ton	4.1	11.7	3.7	12.3
15	7412	Copper	Copper wire	ton	62.7	1.5	71.1	1.7
16	7610	Aluminum	Aluminum	-	-	-	-	-
		Total				**513.9**		**645.4**

Source: Ministry of Construction and Urban Development

Table A3. Share of import and domestic production in the supply, by type of construction material

#	HS code	Construction material	2021		2022	
			Import (%)	Domestic production (%)	Import (%)	Domestic production (%)
1	2517	Gravel and sand	3%	97%	1%	99%
2	2523	Cement	1%	99%	9%	91%
3	3506	Prepared glues and other adhesives	0%	100%	0%	100%
4	3824	Concrete chemical admixtures	0%	100%	0%	100%
5	3917	Plastic pipes	97%	3%	99%	1%
6	3925	Plastic window and doors	79%	21%	76%	24%
7	4411	Wood and wood products	99%	1%	81%	19%
8	6806	Thermal insulation materials	47%	53%	75%	25%
9	6810	Concrete products	11%	89%	16%	84%
10	6902	Ceramic	92%	8%	97%	3%
11	7016	Glass and glassware	97%	3%	92%	8%
12	7213	Rolled metal	61%	39%	71%	29%
13	7214	Reinforcing steel	90%	10%	93%	7%
14	7208	Other steel and iron products	86%	14%	92%	8%
15	7412	Copper wire	65%	35%	71%	29%
16	7610	Aluminum	100%	0%	100%	0%
		Total	66%	34%	69%	31%

Source: Researcher's calculation based on data from Customs Authority and MCUD

Table A4. Share of each material in total supply of construction material

#	HS code	Construction material	2021	2022	Average
1	2517	Gravel and sand	0.9%	0.8%	0.9%
2	2523	Cement	10.6%	8.7%	9.4%
3	3506	Prepared glues and other adhesives	0.1%	0.1%	0.1%
4	3824	Concrete chemical admixtures	0.2%	1.5%	1.0%
5	3917	Plastic pipes	2.8%	3.5%	3.2%
6	3925	Plastic window and doors	2.5%	2.5%	2.5%
7	4411	Wood and wood products	11.9%	14.0%	13.2%
8	6806	Thermal insulation materials	1.1%	1.1%	1.1%
9	6810	Concrete products	14.6%	14.1%	14.3%
10	6902	Ceramic	0.4%	0.5%	0.5%
11	7016	Glass and glassware	1.6%	0.9%	1.2%

13	7213	Rolled metal	7.9%	6.4%	7.0%
14	7214	Reinforcing steel	35.6%	34.5%	35.0%
12	7208	Other steel and iron products	7.4%	8.7%	8.2%
15	7412	Copper wire	0.3%	0.3%	0.3%
16	7610	Aluminum	2.3%	2.5%	2.4%
		Total	100%	100%	100%

Source: Researcher's calculation based on data from Customs Authority and MCUD