GREEN Action Task Force

Sustainable Infrastructure Development for a Low-Carbon Transition in Central Asia and the Caucasus: Mapping of Potentially High-impact Infrastructure Projects and Needs Assessment

Strategic Infrastructure Planning for Sustainable Development in Mongolia

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6. Strategic infrastructure planning for sustainable development in Mongolia

Overview

Mongolia is a lower-middle income country located between the Russian Federation and the People’s Republic of China, and the least densely populated country in the world, with more than 50% of its population living in the capital Ulaanbaatar. Its economy is highly dependent on the mining sector, which represents 20% of GDP but employs only 2% of its workforce, while agriculture employs a third but accounts for only 13% of GDP. China is Mongolia’s primary trade partner by far (76% of exports and 32% of imports), followed by the Russian Federation.

Mongolia has undertaken reforms in its investment regulatory framework to attract foreign direct investments, increase transparency and put domestic and international investors on more equal footing. However, the country is still considered to be a risky investment destination, and ranks 74th in the World Bank’s Ease of Doing Business index. One of the main issues in Mongolia is its level of public debt that rose from 62.1% of GDP in 2015 to 87.6% of GDP in 2016. China plans to extend approximately USD 30 billion of credit to Mongolia for projects related to the Belt and Road Initiative, but such a loan could exacerbate Mongolia’s risk of sovereign default, which is already considered as extremely high. Metal, coal and natural gas absorb more than 80% of current FDI.

Mongolia’s transport, water and energy infrastructure suffer from considerable deficiencies due to underinvestment in maintenance. Mongolia is a strategic hub for freight transport between the Russian Federation and China: 90% of freight transport between the two countries relies on Mongolia’s national rail service. The three countries signed a programme to develop the China-Mongolia-Russia economic corridor, including four rail and three road corridors through Mongolia. Mongolia also invested massively in its national road network that increased threefold over the past two decades. Most of the current planned transport projects in Mongolia aim at transporting coal and other minerals from various mines to China and its seaports.

Mongolia’s energy infrastructure is also insufficient: investments have failed to keep pace with the country’s rapid economic growth, with 11.4% of losses along the electric grid, and more than 10% of the population with no access to electricity. Less than 25% of the population has access to direct heating, and the population relies on coal-fired boilers and cook stoves leading to very high air pollution in the capital during winter months. Despite the rising share of renewable energy from 1% to 7% of the electricity mix by 2018, coal remains the main source of electricity (93%). Moreover, coal power plants continue to represent 95% of current planned investments, leading to further carbon lock-in. This focus on coal is not in line with the country’s Sustainable Development Vision 2030 strategy document, which aims to increase the use of renewables for electricity generation by 30% and start using electricity from nuclear power plants by 2030.

Environmental protection and climate change-related policies are central to Mongolia’s vision of long-term development, and is reflected in several long-term strategic planning documents with a coherent structure and stated goals. However, the country’s stated
environmental focus fails to materialise in current investment plans. This is due partly to poor climate and monitoring capacities in government bodies, and a high turnover among ministry staff.

6.1. State of play: economy, investment and climate change in Mongolia

Economy and trade

Table 6.1. Key indicators on Mongolia’s economy

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (2018)</td>
<td>3 170 208</td>
</tr>
<tr>
<td>Urbanisation rate (2018)</td>
<td>68%</td>
</tr>
<tr>
<td>Annual population growth (2018)</td>
<td>1.8%</td>
</tr>
<tr>
<td>Surface area</td>
<td>1 564 120 km²</td>
</tr>
<tr>
<td>GDP (USD, current price, 2018)</td>
<td>13 010 million</td>
</tr>
<tr>
<td>GDP per capita (USD, current price, 2018)</td>
<td>4 104</td>
</tr>
<tr>
<td>Real GDP growth (year-on-year change, 2019)</td>
<td>6.3%</td>
</tr>
<tr>
<td>Inflation (average consumer price, y-o-y change, 2018)</td>
<td>6.8%</td>
</tr>
<tr>
<td>Exports of goods and services (% of GDP, 2018)</td>
<td>60.3%</td>
</tr>
<tr>
<td>Imports of goods and services (% of GDP, 2018)</td>
<td>63.5%</td>
</tr>
<tr>
<td>FDI, net inflows (% of GDP, 2018)</td>
<td>16.7%</td>
</tr>
<tr>
<td>General government net lending/borrowing (% of GDP, 2018)</td>
<td>-5.5%</td>
</tr>
<tr>
<td>Unemployment (% of total labour force, 2018)</td>
<td>6.3%</td>
</tr>
<tr>
<td>Remittances (% of GDP, 2018)</td>
<td>4.4%</td>
</tr>
<tr>
<td>Transparency, accountability and corruption in the public sector rating (1= most corrupt, 6 = least corrupt, 2017)</td>
<td>3.5</td>
</tr>
</tbody>
</table>


Economy and demographics

Mongolia is a lower-middle income country located between the Russian Federation and the People’s Republic of China. Its population of more than 3 million is distributed over a vast territory of over 1.5 million km², which makes Mongolia the least densely populated country in the world (2 people/km²). Mongolia’s population has grown steadily over the past several decades. Its rate of growth was slightly higher between 1960 and 1987 (2.8% annually on average) before falling to 0.8% in 1994 and recovering over the following two decades (2.1% annually on average since 2010). Mongolia’s population is overwhelmingly urban, with 68% of Mongolians living in urban centres, and almost half the population living in the capital Ulaanbaatar.

Mongolia, unlike the other countries in the present study, was never formally part of the Soviet Union, although it did have important economic links to it. Therefore, Mongolia’s economy contracted following the break-up of the Soviet Union but not as dramatically as the Union’s constituent republics. Between 1989 and 1994, Mongolia’s GDP contracted by 22.5% (falling from USD 4.0 billion to USD 3.1 billion) and then
recovered, surpassing its 1989 levels by 2001. The economy has since grown rapidly and, by 2019, was more than three times larger than in 1989 (USD 12.4 billion).

Services accounted for 40.3% of Mongolia’s GDP in 2018, while the mining sector accounted for a further 23.7%. Agriculture, particularly animal husbandry, is also a key component of the Mongolian economy: Agriculture accounted for 10.9% of GDP in 2018 (Mongolian Statistical Information Service, 2019[3]) and 35% of the country’s working population earn their income through animal husbandry (FAO, n.d.[4]).

**Trade**

Mongolia has been a member of the World Trade Organisation since 1997. Mongolia’s government has actively pursued free trade agreements with important trading partners. Free trade agreements are under discussion with China (Asia Regional Integration Center, 2010[5]) and Korea (Asia Regional Integration Center, 2008[6]), and an economic partnership agreement with Japan entered into force in 2016 (Ministry of Foreign Affairs of Japan, 2016[7]).

Most of Mongolia’s exports fall into two categories: mineral products (particularly coal briquettes and copper ore, which account for 33% and 24% of Mongolia’s exports respectively) and metals (especially gold, which make up 18% of exports) (see Figure 6.1(c)). Mongolia also produces a third of the global supply of cashmere from its sizeable population of cashmere goats. The expansion of the cashmere industry and concurrent pressures on soils from overgrazing have contributed to land degradation and accelerated desertification in certain districts of the country (Shmitz, 2016[8]).

Mongolia imports a wide variety of products (see Figure 6.1(d)). Unlike many of its hydrocarbon-rich Central Asian neighbours, Mongolia relies on imports of refined petroleum (18% of imports) and electricity (3% of imports) to meet its energy needs. Cars and delivery trucks are also important imports, accounting for 5.9% and 3.9% of imports respectively.

China is by far Mongolia’s most important trading partner. It is Mongolia’s largest export market, accepting over three quarters of Mongolia’s exports, and the origin of a third of Mongolia’s imports (see Figure 6.1(a) and (b)). Mongolia’s other geographical neighbour, the Russian Federation, supplies 28% of its imports but is an export market of only modest importance (1%). Other important trading partners include Switzerland (a major gold importer) and the European Union (11% of exports, 12% of imports). Mongolia’s trade with most of the countries in the present study is limited, but Kazakhstan is a relatively important source of imports to Mongolia (1.6%).

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**Figure 6.1. Trade of Mongolia**

<table>
<thead>
<tr>
<th>(a) Export destinations (2017)</th>
<th>(b) Import origins (2017)</th>
</tr>
</thead>
</table>

Unclassified
Investment climate

Due to its location near major markets such as China and the Russian Federation and its vast mineral deposits, Mongolia has potential to develop further as a destination for foreign direct investment (FDI). The government, faced with severe fiscal constraints and the imposition of an IMF (2017) reform package under the Extended Fund Facility (EFF), has turned to FDI to make up for the shortfall in investment capital for important infrastructure projects. It has therefore pursued reforms to its investment regulatory framework to increase transparency and put domestic and international investors on more equal footing (US Embassy in Mongolia, 2018). In 2019, Mongolia ranked 74th on the World Bank’s Ease of Doing Business index, just between the Kyrgyz Republic (70th) and Uzbekistan (76th), but considerably lower than regional leaders Georgia (6th), Azerbaijan (25th) and Kazakhstan (28th). While Mongolia ranked relatively well on metrics such as ease of getting credit (22nd) and construction permits (23rd) as well as protecting minority investors (33rd), it was near the bottom of the rankings for getting electricity (148th) and resolving insolvency (152nd) (IBRD, 2019).

Despite improvements in the country’s Doing Business rankings, investors still consider Mongolia a high-risk investment environment due to frequently revised regulations and poor access to regulatory information (World Bank, 2018[13]).

Until 2016, the Invest Mongolia Agency helped resolve investment disputes with the government, register companies and promote Mongolia as an attractive destination for foreign investment. The National Development Agency, the body that replaced the Invest Mongolia Agency in 2016, is still in the process of developing its capacity to fulfil its role as an investment promotion and protection agency as effectively as its predecessor. As part of its continued development, the National Development Agency launched a one-stop service centre in February 2019 (Montsame News Agency, 2019[14]). An additional body, the Investment Protection Council, was also created to assist in investment disputes with the Mongolian government, but its performance has been hampered by resource constraints (US Embassy in Mongolia, 2018[11]).

Canada, whose mining companies are highly active in Mongolia, is Mongolia’s most important source of foreign direct investment (FDI), accounting for 46% of total inflows between 2011 and 2018 (see Figure 6.2). To strengthen investment ties, the governments of Canada and Mongolia signed a Promotion and Protection of Investments Agreement that entered into force in 2017 (Government of Canada, 2016[15]). Other important investors include the European Union (17.3%, primarily Luxembourg, accounting for 12%) and China (14.7%, from People’s Republic of China, 9.4%, and Hong Kong, China 5.3%). The Russian Federation is a comparatively small investor, making up only 0.5% of FDI.

Mongolia’s public debt has risen in recent years, from 62.1% of GDP in 2015 to 87.6% of GDP in 2016, and is projected to rise. The risk of Mongolia defaulting on its loans is considered to be extremely high (Hurley, Morris and Portelance, 2018[16]). China plans to extend approximately USD 30 billion of credit to Mongolia for projects related to the Belt and Road Initiative (BRI), which will exacerbate Mongolia’s risk of sovereign default (ITF, 2019[17]). The government recognises the growing debt problem in Mongolia and, in Mongolia Sustainable Development Vision 2030 (for more information on Mongolia’s strategic documents, see section 6.3), it set targets to reduce foreign debt to 58.6% of GDP by 2020, less than 50% by 2025 and below 40% by 2030 (State Great Hural of Mongolia, 2016[18]). Given the current trends in Mongolia’s foreign debt, its 2020 target seems unlikely to be met.
Mongolia’s investment performance has varied widely over the past decade, following the evolution of commodity prices. From 2009 to 2013, Mongolia received considerably more FDI as a percentage of GDP than other lower-middle income countries, and in 2012, FDI flows to Mongolia amounted to 14% of GDP. More recently, however, FDI flows fell below the average in lower-middle income countries in 2014 and 2015 (World Bank, 2018[13]).

A key reason for this volatility is the concentration of FDI in the country’s mining sector and the resulting link between commodity prices and FDI attractiveness. The mining sector attracted 71% of FDI in Mongolia in 2017, while the country’s tourism and recreation sector received only 2%. Diversifying FDI flows could help achieve the Mongolia’s stated goal of economic diversification, and Mongolia has several industries with the potential to attract considerable FDI, such as tourism, agribusiness and e-commerce (World Bank, 2018[13]).

Mongolia has attracted around USD 14.3 billion of announced cross-border greenfield FDI projects between 2003 and 2017, which is higher than Turkmenistan, but lower than Georgia’s USD 16.9 billion and Uzbekistan’s USD 26.8 billion. FDI is very concentrated into two sectors, namely metal, which attracts USD 7.7 billion or 54% of total greenfield FDI, and coal and natural gas with USD 4 billion (28%). A very small share of 4% goes into alternative or renewable energy. Infrastructure-related investments have been very limited. For instance, transportation receives around USD 61 million of total greenfield FDI (see Figure 6.3).
Figure 6.3. Greenfield FDI in Mongolia by economic activity, 2003-2017

Cumulated greenfield FDI capital between January 2003 and September 2017 in USD million

Note: Other includes Automotive Components, Consumer Products, Software & IT services, Medical Devices, Electronic Components, Real Estate, Industrial Machinery, Equipment & Tools


Climate change

Due in part to the small size of its economy and population, Mongolia emitted only 0.0006% of total greenhouse gas (GHG) emissions in 2012. Unlike the other countries in the present study that were formally part of the Soviet Union, Mongolia’s GHG emissions did not face the dramatic decline in the 1990s. However, given the importance of the Russian Federation to Mongolia as a trading partner, the country’s GDP did contract by 20% between 1990 and 1993, and its GDP did not surpass its 1990 levels until 2001 (see Figure 6.4). Although there have been sizeable fluctuations in Mongolia’s GHG emissions over the past two decades, they follow a broadly downward trend while the country’s economy has risen steadily since the mid-2000s. The result of this decoupling is a dramatic decline in the emissions intensity of Mongolia’s economy: Mongolia emitted 18.8 kg of CO₂e per USD of GDP in 1994, but by 2014, this figure had dropped to 3 kg of CO₂e (Mongolian Statistical Information Service, 2018; World Bank, 2019). This makes Mongolia’s economy less emission-intensive than some Central Asian economies (notably Kazakhstan and Turkmenistan), but Mongolia’s economy still emits 7.5 times more GHG than the OECD average to produce USD 1 of GDP. Mongolia’s per capita emissions were 11.8 tCO₂e in 2014, which is just below the OECD average of 12.9 tCO₂e (World Bank, 2019).
Figure 6.4. GHG emissions and GDP of Mongolia (1990-2017)

Source: World Bank Indicators (GDP data and GHG data until 2010); Mongolian Statistical Information Service (2018) for GHG data from 2011 to 2014

Agriculture is responsible for the largest share of Mongolia’s GHG emissions. In 2014, agriculture accounted for 48.4% of total emissions, compared to 27.5% from energy industries. Other major contributors were manufacturing industries and construction (6.7%), transport (5.8%) and fugitive emissions from fuels (3.4%) (Ministry of Environment and Tourism of Mongolia, 2018[22]).

Climate change is already impacting Mongolia’s water and forest resources as well as its soil and biodiversity. Mongolia’s lakes are gradually drying up and disappearing, while many of the country’s native species are losing their habitats to desertification and land degradation. According to a 2015 study, desertification and land degradation already affect 76.8% of Mongolia’s territory, and rising temperatures and agricultural intensification are expected to exacerbate the situation (Ministry of Environment and Tourism of Mongolia, 2018[22]).

6.2. Mongolia’s infrastructure needs and current plans

Mongolia’s infrastructure, particularly its transport and water infrastructure, suffer from considerable deficiencies (see Figure 6.5), but the government has undertaken several large-scale infrastructure development projects to improve infrastructure service delivery. There has been almost no private sector participation in infrastructure projects, even in the form of public-private partnerships (PPPs), and the state continues to play an outsized role in the energy, transport and water sectors. The government does not allocate sufficient funds to the maintenance of existing infrastructure assets, prioritising greenfield projects instead. This has led to a cycle of ‘build-neglect-rebuild’ characterised by inefficiencies in spending as well as infrastructure service delivery (World Bank, 2018[23]).
Out of the USD 62.9 billion of investment projects tracked in recent years, energy projects account for over 38% (USD 23.8 billion) of total investments, which are divided into electricity generation (over USD 22.4 billion or 94% of the total energy projects) and electric power transmission and distribution (USD 1.4 billion or 6%). Mining and quarrying projects follow suite, accounting for 32% (USD 20.4 billion) of investment projects (see Figure 6.6). Such mining projects reflect Mongolia’s attractiveness as second in the world in terms of copper reserves, with over 8,000 individual deposits containing over 440 different minerals (SES Professionals, n.d.). Mongolia’s projects planned and under construction in the transport sector also account for over 20% or USD 12.7 billion, while manufacturing projects account for over USD 5.9 billion (or 9%). Finally, water supply and sanitation projects only account for USD 150 million of investment projects planned and under construction.
Figure 6.6. Investment projects in Mongolia, by sector

Planned and under construction

In USD million

- Electric power transmission and distribution, 1 405
- Transport, 12 719
- Mining and quarrying, 20 412
- Electricity generation, 22 350
- Manufacturing, 5 902
- Water supply and sanitation, 150

Note: Electric Power Transmission and Distribution includes district heating projects, central transmission and distribution networks, double circuit transmission lines, Electricity generation projects include solar PV and wind projects, coal-fired, hydro, and natural-gas electric power plants. Manufacturing projects include cement, chemicals, coke and refined petroleum, basic metals, and other transport equipment. Mining and quarrying includes metal ores and coal and lignite extraction; Transport projects include intermodal projects, railways and roads. Water supply and sanitation projects include wastewater expansion, water, waste-water and sanitation investment programmes.

Source: OECD analysis based on accessed databases as of June 2019.

Transport

The poor quality of Mongolia’s transport infrastructure contributes to high trade costs and prevents the country’s integration into global value chains (GVCs). While it costs approximately USD 30 on average for one tonne of German goods to reach 20% of global GDP, it costs about USD 175 for one tonne of Mongolian goods to have the same market access. Even compared to the landlocked countries of Central Asia, that all perform poorly on this measure of connectivity, Mongolia’s access to global GDP is particularly limited (ITF, 2019[17]).

Underinvestment, especially in maintenance, is a major factor in poor transport infrastructure and, consequently, increased costs. While other middle-income countries spend on average 0.75% of GDP on road maintenance, Mongolia’s spending only amounts to 0.15% of GDP (ITF, 2019[17]). This spending gap is even larger than it appears. For example, due to the country’s low population density and challenging climate conditions, road maintenance costs are considerably higher in Mongolia than in more densely populated countries with milder climates (World Bank, 2018[23]).

To maintain even its current levels of network performance, Mongolia will need to increase its current road capacity by 84% by 2030 and by 284% by 2050, while its rail capacity must increase by 65% and 306% over the same period. Due to geographical location, Mongolia’s rail network, run by Ulaanbaatar Railways, transports 90% of
freight between China and the Russian Federation, which makes Mongolia’s transport infrastructure of strategic importance not only domestically but also internationally (ITF, 2019[17]).

Cooperation among China, Mongolia and the Russian Federation has intensified in recent years. In 2015, the three countries’ governments agreed to set up a joint railway transportation and logistics company (World Bank, 2018[23]). In 2016, they signed a programme laying out plans to develop the China-Mongolia-Russia economic corridor, including four rail and three road corridors through Mongolia. The programme’s scope would extend beyond transport infrastructure to cooperation in energy, industry, agriculture and environmental protection (Ministry of Foreign Affairs of Mongolia, 2017[26]). Mongolia is also a key component of CAREC Corridor 4, which overlaps in part with the planned China-Mongolia-Russia transport corridors.

Recognising the country’s transportation shortcomings, the government invested heavily in major initiatives such as “The Millennium Road” and, as a result, the length of Mongolia’s national road network increased threefold over the past two decades. However, considerable infrastructure provision gaps remain. As of 2016, the national rail network extended to only seven of the country’s 21 administrative regions (aimag), and only 16 benefit from paved road connections to the capital city (World Bank, 2018[23]).

Mongolia’s transport infrastructure projects amount to about USD 12.7 billion, and consist mostly of railway projects (57% or around USD 7.3 billion) (see Figure 6.7). Investments in roads come second at around USD 5.3 billion (or 42%), followed by very small investments in intermodal projects such as logistics centres (1% or USD 122 million). Investment projects in the railways sector are mainly focused on domestic segments of regional infrastructure projects or railway infrastructure to carry mining products from Mongolia to China’s border.

Figure 6.7. Transport projects in Mongolia, by sub-sector
In terms of the size of investments, the roads sector dominates the projects under construction while the railways dominate the planned projects (Table 6.2). Among the most significant transport projects currently under construction, the 1 000 km Altanbulag-Ulaanbaatar-Zamyn-Uud highway and the 547 km Erdenet-Ovoot Railway are considered vital to provide a link to economic and social opportunities, as well as to reduce Mongolia’s high transport costs. The cost of the Altanbulag-Ulaanbaatar-Zamyn-Uud highway is around USD 3.5 billion and is considered one of the mega projects in Mongolia developed through a Public-Private Partnership (PPP) arrangement that would create more than 50 000 jobs (GoGo Mongolia, 2015[27]). The project’s construction follows European standards, and it will be the main route connecting Asia and Europe. Another significant project currently under construction is the Western Regional Road Corridor, consisting of 290 km of roads connecting Mongolia’s remote western region to a transport corridor that links Mongolia to Russian Federation in the north and China in the south. The project has long been part of Mongolia’s national development strategy, and is financed by the ADB, which is the largest development partner in Mongolia.

Almost all of the most significant planned transport projects in Mongolia are promoted by Mongolia’s National Development Agency, and mostly aimed at transporting coal and other minerals from various mines to the seaports in China. Such railway projects are very important to establish new transit routes for Mongolian mining companies that have low productivity and cannot compete in global markets. For example, the Ukhaa Khudag (South Gobi) - Gashuun Sukhait (Omnogovi) railway is expected to transport over 30 million tonnes of freight per year from Ukhaa Khudag to the Mongolia-China border of Gashuun Sukhait.

Such planned rail projects, while they aim at reducing the transportation costs, they are not mentioned in the long-term strategy document *Sustainable Development Vision 2030* and instead they seem to be undertaken with the business purpose of improving the transportation of mining products. *Sustainable Development Vision 2030* focuses on logistics centres, as well as roads and railroads. It aims to create transportation and logistics centres in Zamiin-Uud, Khushigii Khundii and Atanbulagby 2020, extend asphalt roads for international and domestic travel by 1600 km (by 2020), an additional 800 km (by 2025) and an additional 470 km (by 2030). In the railroads sector, it also aims to build and operate the Ukhaa Khudag to Gashuun Sukhait line by 2020, complete Erdenet-Ovoot to Bogd khan (by 2025), as well as build new regional train lines by 2030. *Sustainable Development Vision 2030* also aims to reduce transportation costs in general, introduce a new modern public transit system in Ulanbaatar by 2025, and develop the air transport by completing the Khushig Khundii international airport by 2025 as well as develop airports in smaller cities.

**Table 6.2. Hotspot projects in the transport sector in Mongolia**

<table>
<thead>
<tr>
<th>Name</th>
<th>Sub-sector</th>
<th>Description</th>
<th>Project value (USD million)</th>
<th>Funding source</th>
<th>Type of investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altanbulag (Selenge)-Ulaanbaatar-Zamyn-Uud (Dornogovi) Highway (PPP)</td>
<td>Road</td>
<td>Development of 1 000 km highway that will pass through 24 soums of six provinces and two districts of Ulaanbaatar. It is constructed</td>
<td>3 500</td>
<td>Chinggis Land</td>
<td>Greenfield</td>
</tr>
</tbody>
</table>
in line with European standards and it will be the main route connecting Asia and Europe. The railway line will be used to link the Ovoot coking coal power plant of Aspire Mining to the Trans-Mongolian Railway at Erdenet. The railway line will also improve freight links between Russia, Mongolia and China.

Urban Transport Development Investment Program - Tranche 1

The Investment Program – Tranche 1 aims to (i) develop the bus rapid transit (BRT) infrastructure and system; (ii) apply traffic management measures to increase traffic flow efficiency and safety; (iii) develop and implement parking, traffic and travel demand management policies; (iv) develop an efficient and sustainable public transport system; and (v) improve the public transport management and quality of services. The investment program will be implemented over a period of 10 years starting in 2012.

Western Regional Road Corridor Investment Program - Tranche 2

Links Mongolia to the Russian Federation in the north and People’s Republic of China in the south. The outputs of Tranche 2 will include 189.7 km of paved road constructed between Khovd and Ulaanbaishint, as well as three bridges (0.49 km) and 14.9 km of urban roads rehabilitated in the towns of Khovd and Ulgii.

(b) Planned

<table>
<thead>
<tr>
<th>Name</th>
<th>Sub-sector</th>
<th>Description</th>
<th>Project value (USD million)</th>
<th>Funding source</th>
<th>Type of investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ukhaa Khudag (South Gobi) - Gashuun Sukhait (Omnogovi) Rail (Construction)</td>
<td>Railway</td>
<td>Construction of 225 km of rail, stretching from Ukhaa Khudag to the Mongolia-China border of Gashuun Sukhait. This rail line will be important for heavy-duty transportation, predicted to export 30 million tonnes of freight per year.</td>
<td>970</td>
<td>BNP Paribas, EBRD</td>
<td>Greenfield</td>
</tr>
<tr>
<td>Tavantolgoi-Gashuun Sukhait railway base infrastructure</td>
<td>Railway</td>
<td>Construction of 240 km long railway that will pass through the territories of Tsogtsetsii, Manlai, Bayan-Ovoo and Khanbogd. The railway will transport coal and copper from Tavantolgoi coal deposit and Oyu-Tolgoi copper mine to ports of Gashuunsukhait and Sehe. Expected freight per annum is 30 metric tonnes.</td>
<td>1 070</td>
<td>Shenhua Group, Sumitomo Corporation</td>
<td>Greenfield</td>
</tr>
<tr>
<td>Bogd Khan Railway Bypass Investment Program</td>
<td>Railway</td>
<td>Development of the transport network in Ulaanbaatar. The rail line will extend 170 km, and is estimated to transport 15-30 million tonnes of freight per year.</td>
<td>500</td>
<td>ADB, Government of Mongolia</td>
<td>Brownfield</td>
</tr>
<tr>
<td>250 km Special Proposed Road between Tavantolgoi and Gashuun Sukhait</td>
<td>Road</td>
<td>This project aims to curtail the cost of transport associated with the mining industry, and increase exports within the Umnugovi province. A preliminary feasibility study carried out in 2014 has been completed and the construction of the road is planned to be finished by 2021.</td>
<td>256</td>
<td>N/A</td>
<td>Greenfield</td>
</tr>
<tr>
<td>Nariinsukhait-Shiveekhuren Railway Base Infrastructure</td>
<td>Railway</td>
<td>The railway will transport coal freight from Nariinsukhait coal deposit through Shiveekhuren border to the People’s Republic of China. The project is located in</td>
<td>145</td>
<td>N/A</td>
<td>Greenfield</td>
</tr>
</tbody>
</table>
Note: Refer to the Preamble for the present report’s definition of ‘hotspot’ and other information on how the projects above were selected and prioritised. ADB = Asian Development Bank; EBRD = European Bank of Reconstruction and Development


Energy

Mongolia’s energy infrastructure is insufficient, and investments have failed to keep pace with the country’s rapid economic growth. For instance, the country’s total installed electricity generation capacity only barely covers peak demand, without necessary capacity expansion, growing demand could become too large for the combined capacity of domestic generation and electricity imports from the Russian Federation (World Bank, 2018[23]). The poor quality of Mongolia’s electric grid, which leads to losses of 11.4% along transmission and distribution networks, exacerbates the situation (World Economic Forum, 2017[24]).

Unlike the other countries in the present study, all of which were constituent republics of the Soviet Union, Mongolia has not achieved universal electricity access; almost a tenth of the population has no access to electricity (World Economic Forum, 2017[24]). Less than a quarter of the population has access to central or district heating, and the population instead rely on coal-fired boilers and cook stoves for heat during Mongolia’s extremely cold winter months. Due in part to inefficient heating methods, the capital suffers from very poor air quality (World Bank, 2018[23]).

Mongolia generates the vast majority (93%) of its electricity from coal-fired thermal power plants (see Figure 6.8), most of which were built between 1960 and 1980 and run on outdated technology. Many will soon need to be decommissioned. While Mongolia’s overall GHG emissions have followed an irregular, broadly downward trend, its emissions from the energy sector have been rising steadily: They increased by approximately 50% between 1990 and 2016. Renewable energy sources, including hydroelectric dams, wind and solar, have made modest gains in recent years thanks to generous feed-in tariffs, increasing from just 1% in 2013 to about 4% in 2016 and almost 7% by 2018 (World Bank, 2018[23]).
Figure 6.8. Electricity generation by fuel (GWh, 2016)

Mongolia is a net exporter of energy, primarily due to its abundant coal deposits, but it is a net importer of electricity. It relies on coal not only as a source of domestic electricity generation but also for exports. Mongolia exported 9.8 Mtoe and 16.1 Mtoe of coal in 2015 and 2016 respectively (IEA, 2018[32]), and coal briquettes accounted for 33% of Mongolia’s exports by value in 2017 (Observatory of Economic Complexity, 2017[9]). Mongolia has a small oil industry that usually covers domestic demand. In 2015, Mongolia was a net importer (0.05 Mtoe), but in 2016 it was a net exporter (0.10 Mtoe). To satisfy periods of heightened demand, Mongolia relies on electricity imports from the Russian Federation, importing 0.12 Mtoe of electricity in both 2015 and 2016 (IEA, 2018[32]).

In terms of investment projects in electricity generation, 95% of the investments by capacity are in coal-fired electric power plants (or 9,854 MW), while hydro power plants only account for 3% of the total (see Figure 6.9). Coal-fired power plants feature prominently among Mongolia’s largest infrastructure projects in the energy sector, but a few capital-intensive renewable projects are also under construction (Tables 6.3). Among the projects under construction, the Baganuur Coal-Fired Power Plant and the Buuruljurt Coal-Fired Power Plant have capacity of 700 MW and 600 MW respectively, and each costing USD 1 billion. Mongolia has also planned several other large-scale large coal-fired plants with values ranging from USD 5.8 billion for the 5 280-MW Shivee Ovoo Project, to USD 1 billion for the 600-MW Tevshin Gobi Mine Mouth Power Plant. By comparison, the country’s renewable projects are much smaller and contribute much less to generation capacity: The Tsetsii wind farm is valued at USD 501 million and has a capacity of only 50 MW, while the Sainshand wind farm costs USD 120 million and has 55 MW of capacity. The purpose of wind projects is to reduce the carbon intensity of Mongolia’s economy and energy systems and diversify away from coal, but current investments closely resemble historical development patterns and do not contribute meaningfully to diversification goals. Such projects do not align with the Sustainable Development Vision 2030 strategy document, which aims to increase
the use of renewables for electricity generation by 30% and start using electricity from nuclear power plants by 2030.

Figure 6.9. Electricity generation projects in Mongolia, by fuel

![Diagram of electricity generation projects in Mongolia, by fuel.](image)

Source: OECD analysis based on accessed databases as of June 2019.

Table 6.3. Hotspot projects in the energy sector in Mongolia

<table>
<thead>
<tr>
<th>Name</th>
<th>Sub-sector</th>
<th>Description</th>
<th>Project value (USD million)</th>
<th>Capacity (MW)</th>
<th>Funding source</th>
<th>Type of investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baganuur Coal Fired Power Plant</td>
<td>Coal-fired power plant</td>
<td>Construction of a coal plant in Baganuur, east of the capital Ulaanbaatar. The power plant will incorporate two coal-fired power generator units with a capacity of 350 MW per unit. The power plant is expected to begin its operations in 2021.</td>
<td>1 000</td>
<td>700</td>
<td>Baganuur Power LLC (100%)</td>
<td>Greenfield</td>
</tr>
<tr>
<td>Buuruljut Coal Fired Power Plant</td>
<td>Coal-fired power plant</td>
<td>Construction of a coal-fired power plant 120 km from Ulaanbaatar, in Dundgovi Province. The source of the coal will originate from the nearby Buuruljut mine, which supplies brown coal. The project aims to build the power plant in two phases (2 x 300 MW), one unit will be built by 2019 and the second</td>
<td>1 000</td>
<td>600</td>
<td>Bodi International Group, China State Construction Engineering Group</td>
<td>Greenfield</td>
</tr>
</tbody>
</table>
unit will be completed by 2022.

**Tsetsii Wind Farm Phase II**  
Wind farm  
Construction of a wind farm with a capacity of 50 MWe. When constructed the project will become the second largest in Mongolia, following the 50 MWe Salkhit wind farm.  
Newcom Group (51%), SoftBank (49%)  
Greenfield

**KEPCO KDN-Mongolia Solar PV Park 1, 2, 3**  
Solar PV  
Construction of 25 Vestas V110 2.2 MW turbines, located 450 km southeast of Ulaanbaatar near Sainshand city. The wind farm is expected to produce 190 GWh of electricity per annum, and is being constructed in line with EBRD’s ‘Green Economy Transition Approach’.  
EBRD, EIB  
Greenfield

### (b) Planned

<table>
<thead>
<tr>
<th>Name</th>
<th>Sub-sector</th>
<th>Description</th>
<th>Project value (USD million)</th>
<th>Capacity (MW)</th>
<th>Funding source</th>
<th>Type of investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shivee Ovoo Project</td>
<td>Coal-fired power plant</td>
<td>Construction of a coal-fired electric power plant in the Gobi-Sumber province, 260 km southeast of Ulaanbaatar. The power generated by the proposed power plant is expected to be exported to China.</td>
<td>4 000</td>
<td>5280</td>
<td>Erdenes Shivee Energy LLC (Mongolia)</td>
<td>Greenfield</td>
</tr>
<tr>
<td>Tavan Tolgoi power station (Rio Tinto)</td>
<td>Coal-fired power plant</td>
<td>Construction of a 300 MW coal-fired power station to provide power for the Oyu Tolgoi copper mine in Mongolia. It is projected to be in service by 2023.</td>
<td>1 500</td>
<td>300</td>
<td>Oyu Tolgoi LLC</td>
<td>Greenfield</td>
</tr>
<tr>
<td>Ulaanbaatar Thermal Power Plant-5</td>
<td>Coal-fired power plant</td>
<td>The CHP5 coal-fired combined heat and power plant is located in Ulaanbaatar, Mongolia. The power plant has a capacity of 415 MW of power and 567 MW of steam. The plant’s output will be purchased by the Mongolian government via power purchase agreement and the steam produced will be used for city heating in Ulaanbaatar. The operations were expected to begin in 2017.</td>
<td>1 200</td>
<td>415</td>
<td>Sojitz Corporation (30%); POSCO (30%); Newcom Group (10%); GDF Suez (UAE) (30%)</td>
<td>Greenfield</td>
</tr>
<tr>
<td>600 MWe Chandgana Power Plant</td>
<td>Coal-fired power plant</td>
<td>Construction of a coal-fired electric power plant, 300 km east of Ulaanbaatar in Murun soum. The plant will be situated near the Chandgana Tal coal deposit with an estimated reserve of 124 million tonnes of coal. The power plant is planned to be</td>
<td>1 000</td>
<td>600</td>
<td>Prophecy Coal Corporation (100%)</td>
<td>Greenfield</td>
</tr>
</tbody>
</table>
Industry and mining

Over the past few years the mining sector was responsible for about 20% of Mongolia’s GDP, 60% of its industrial output and 80% of total exports, even though it only employs about 2% of the country’s total labour force. By contrast, agriculture, including Mongolia’s sizeable herding industry, employs about a third of the labour force but represents only about 13% of GDP. Raw hair fibres from cashmere goats are one of Mongolia’s most important non-mineral exports, but Mongolia’s role in finished textiles and higher value-added textile products is limited. The rise of the mining sector and relative decline of agriculture and other sectors have led to a chronic lack of economic diversification, with exports relying heavily on mining products to one market, China (World Bank, 2018[23]).

Recognising the vulnerability of the economy to commodity price shocks and other risks associated with the dominance of a single industry, the government has made diversification a priority in its strategy, Mongolia Sustainable Development Vision 2030. The strategy aims to increase the share of manufactured and processed goods in Mongolia’s exports to 15% by 2020 and to 25% by 2025. Within the textile industry, the government has set a goal of increasing the share of processed products in the exports of leather, wool and cashmere goods to 15% of total textile exports by 2020 and 80% by 2030. It also aims to develop domestic gold refining and copper smelting industries rather than exporting raw ore and gold, and it aims to increase the domestic manufacturing capacity of chemical fertilisers (State Great Hural of Mongolia, 2016[18]).

Most investments in Mongolia’s industry and mining sectors are concentrated in mining projects (Table 6.4). Such projects represent large and long-term investments that are expected to help Mongolia become one of the world’s leaders in mining. For example, the Oyu Tolgoi copper-gold mine project has an estimated investment amount of USD 7 billion and is expected to function for approximatively 100 years, and to become the world’s third largest copper producer at peak metal production by the year 2025. Other projects such as the Tavan Tolgoi reserve is estimated to contain 7.5 billion tonnes of high-grade coking coal, but in recent years its development has been slowed due to funding issues and concerns over the role that foreign firms are expected to play in this project. Projects contributing to Mongolia’s diversification goals are absent from current large-scale investments and further entrench the country’s reliance on coal and lignite mining (see Figure 6.10).

Note: Refer to the Preamble for the present report’s definition of ‘hotspot’ and other information on how the projects above were selected and prioritised. EBRD = European Bank of Reconstruction and Development; EIB = European Investment Bank

## Table 6.4. Hotspot projects in the industry and mining sector in Mongolia

<table>
<thead>
<tr>
<th>Name</th>
<th>Sub-sector</th>
<th>Description</th>
<th>Project value (USD million)</th>
<th>Status</th>
<th>Funding source</th>
<th>Type of investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tavan Tolgoi Coal Mine Project</td>
<td>Mining and quarrying</td>
<td>Largest undeveloped coking coal mine in the world, with 7.4 billion tonnes of estimated reserves. It is located in the south of Mongolia, 240 km north of the Chinese border.</td>
<td>7 000</td>
<td>Planned</td>
<td>Shenhua Group Corp Ltd, Peabody Energy Corp</td>
<td>N/A</td>
</tr>
<tr>
<td>Oyu Tolgoi Copper-Gold Mine</td>
<td>Mining and quarrying</td>
<td>Located 80 km north of the Mongolia-China border, it has the potential to function for approximately 100 years from five known mineral deposits. The Oyu Tolgoi reserve contains a total of 2.7 billion tonnes of iron-ore, including more than 1 000 tonnes of gold and 25.4 million tonnes of copper. The mine will produce 430 000 tonnes of copper and 425 000 ounces of gold annually. It is expected to become the world’s third largest copper producer at peak metal production by the year 2025.</td>
<td>5 800</td>
<td>Under construction</td>
<td>Turquoise Hill Resources (60%), Government of Mongolia (34%)</td>
<td>Brownfield</td>
</tr>
<tr>
<td>Tavan Tolgoi Coking Coal Mine</td>
<td>Mining and quarrying</td>
<td>Situated 240 km from the Chinese border in south Mongolia. The Tavan Tolgoi reserve is estimated to contain 7.5 billion tonnes of high-grade coking coal. However, development has been repeatedly slowed due to financing difficulties and concerns related to the role played by foreign firms.</td>
<td>4 000</td>
<td>Under construction</td>
<td>Government of Mongolia (100%)</td>
<td>Greenfield</td>
</tr>
<tr>
<td>Tsagaan Suvarga Copper Mine Project</td>
<td>Mining and quarrying</td>
<td>Fourth largest mine in Mongolia, located in the Dornogovi province, 300 km from the Chinese border. The mine is owned by the Mak Company. The project involves the installation of a 14.6 million tonne per annum copper-molybdenum concentrator, as well as other related infrastructure, such as a 280 km power line.</td>
<td>869</td>
<td>Planned</td>
<td>Mongolyn Alt (MAK) Group</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Note:** Refer to the Preamble for the present report’s definition of ‘hotspot’ and other information on how the projects above were selected and prioritised.

**Source:** OECD based on EBRD (n.d.[33]), IJGlobal (2019[20]), Thomson One (2019[37]) as of June 2019.
Figure 6.10. Mining projects in Mongolia

Source: OECD analysis based on accessed databases as of June 2019.

**Water**

Mongolia’s water supply and sanitation infrastructure is of very poor quality. Almost 20% of the country’s population is exposed to unsafe drinking water, while the reliability of its water supply ranked 100th out of 140 countries in the World Economic Forum’s Global Competitiveness Report, much lower than other countries of its income category (World Economic Forum, 2017[24]). In *Mongolia Sustainable Development Vision 2030*, the government aims to increase access to clean drinking water to 80% by 2020, 85% by 2025 and 90% by 2030. It also aims to increase the share of the population using improved sanitation and hygiene to 40% by 2020, 50% by 2025 and 60% by 2030 (State Great Hural of Mongolia, 2016[18]).

Mongolia’s average national rates of per capita freshwater abstraction are very low, but due to the scarcity of water, withdrawals regularly exceed renewable water supply by as much as 50% annually. In the Ulaanbaatar capital region and in the southern Gobi Desert the deficit is even greater. Mongolia’s main industries, mining and herding, have considerable negative impacts on water availability and quality (World Bank, 2018[23]). Out of the USD 62.9 billion of investments tracked in Mongolia over recent years, the water sector accounts for a small share of investments, which are mostly for water supply and sanitation, totalling USD 150 million.

6.3. Strengths and weaknesses of existing institutional set-up for sustainable infrastructure planning

**Strategic planning and links between long-term goals, infrastructure plans and environmental considerations**

Mongolia has produced a plethora of strategic documents with environmental concerns playing a central role, notably a long-term strategy, Mongolia Sustainable Development Vision 2030 (for a list of Mongolia’s strategic documents, see Table 6.5), was adopted
in 2016. In addition to setting clear, quantitative goals for overall economic development, climate change mitigation and sectoral transformation (e.g. renewable energy penetration, transport link improvements), the strategy explicitly identifies state officials responsible for particular actions. It also mandates biennial monitoring, evaluation and reporting on progress towards the Vision’s goals and establishes a standing committee within the State Great Khural (Mongolia’s unicameral parliament) to oversee implementation (State Great Hural of Mongolia, 2016[18]).

Mongolia has made environmental protection and climate change-related policies central to its vision of long-term development. The Mongolia Sustainable Development Vision 2030 complements Mongolia’s green development policy, Action Plan, Green Development Policy of Mongolia (2014-2030), which it adopted in 2014. Both strategies focus on economic diversification, participation of Mongolian firms higher up global value chains in key high-employment industries (e.g. textiles, agriculture) and safeguarding the environment through improved regulations and increased resource and energy efficiency. The Green Development Policy lays out a step-by-step action plan for achieving long-term mitigation goals and specifies the government bodies responsible for implementation and possible funding sources, but it does not provide budget estimates (Ministry of Environment, 2014[38]).


However, the transport sector, which has been identified as a priority for better integrating the Mongolian economy into international trade, does not have a plan of similar scope. In collaboration with the Asian Development Bank, Mongolia adopted a strategy, Road Sector Development to 2016, in 2011, but a follow-up strategy in line with the country’s 2030 development vision has not yet been adopted. Transport-related objectives on road, rail and air infrastructure feature in the Mongolia Sustainable Development Vision 2030, but the transport sector does not have a detailed sector-specific action plan for future development.

Moreover, Mongolia has not yet elaborated a long-term vision extending to the mid-century. Mongolia should develop a vision for its long-term transition through, for example, the creation of a long-term low-emission development strategy as encouraged by Article 4 paragraph 19 of the Paris Agreement. Considering Mongolia’s continued construction of coal-fired power plants, a long-term vision for emissions reduction and a transition towards more sustainable energy sources could better inform the government of the risks of its decisions to approve such coal plant projects.

Overall, Mongolia’s strategic document system is coherent and has a clear hierarchical structure. Mongolian legislation clearly defines a three-level hierarchy of planning documents consisting of 15-20 year development concepts, 8-10 year policy documents (state policies, regional development policies) and 3-5 year plans (government action plans, regional action plans, national programmes). Mongolia also publishes one-year policy documents that define budgets and short-term interventions (UNECE, 2018[39]).
This system does not, however, allow for the longer-term, mid-century planning process that the UNFCCC recommends for defining and scaling up national ambitions to address climate change.

**Institutional set-up and decision making processes**

Mongolia’s government bodies lack sufficient capacity to carry out long-term planning exercises effectively and, crucially, to monitor implementation. Civil society organisations have also criticised existing accountability mechanisms, facilitating influence from vested interests (World Bank, 2018\[^{[23]}\]). Institutional instability and high staff turnover also impair the government’s ability to deliver on policy objectives. Incoming governments regularly replace most policies and staff in government bodies following parliamentary elections, and efforts to enhance the country’s long-term planning capabilities are limited to single 4-year terms. After the 2012 elections, for instance, a Ministry of Economic Development was created explicitly to support long-term planning, but after the 2016 elections the ministry ceased to exist (Bertelsmann Stiftung, 2018\[^{[40]}\]). A high staff turnover rate is a particularly difficult challenge in the Ministry of Environment and Tourism, which struggles to comply with international obligations due to capacity constraints and poor institutional memory (UNECE, 2018\[^{[39]}\]).

Even though government bodies suffer from instability and major capacity constraints, Mongolia has developed consistent frameworks of environmental legislation and strategic planning documents. However, implementation and enforcement of such policies remains a major challenge. For instance, the government has striven to improve mining policies and legislation with environmental requirements such as mandatory environmental impact assessments (EIAs). The EIAs, however, are deficient because they occur late in the permitting process, and information is rarely disclosed on agreements between mining companies and local authorities on environmental protection measures (UNECE, 2018\[^{[39]}\]). EIAs on mining operations in Mongolia often do not capture the impacts of related infrastructure projects on wellbeing and other economic activities. Mining-related service roads, for instance, threaten rangelands required for the herding industry and contribute to land degradation and air pollution (World Bank, 2018\[^{[23]}\]). Additionally, obligatory strategic environmental assessments (SEAs) have been part of Mongolia’s legislation on EIAs since 2012 but as of 2017 no SEA has ever been carried out in compliance with the law (UNECE, 2018\[^{[39]}\]).

**List of relevant strategic documents**

<table>
<thead>
<tr>
<th>Status</th>
<th>Time Horizon</th>
<th>Sectoral Coverage</th>
<th>Main objectives</th>
</tr>
</thead>
</table>
| First Nationally Determined Contribution (NDC) | Submitted in 2016 2016-2030 Economy-wide | • Target: a 14% reduction in total national greenhouse gas emissions (excluding LULUCF) by 2030  
• Main sectors for emission reduction: Energy sector (increase renewable electricity capacity from 7.62% in 2014 to 20% by 2030, reduce electricity transmission loss from 13.7% in 2014 to 7.8% by 2030), Transport sector (improve national paved road network, increase the share of hybrid road |
<table>
<thead>
<tr>
<th><strong>Mongolia Sustainable Development Vision 2030</strong></th>
<th>Adopted in 2016</th>
<th>2016-2030</th>
<th>Governance, transport, energy, water, industry</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Create a favourable business and investment environment</td>
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<td></td>
<td></td>
<td></td>
<td>• Supply 90% of the population with safe drinking water and 60% with improved sanitation by 2030</td>
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<td></td>
<td></td>
<td></td>
<td>• Decrease greenhouse gas emissions by 14%, by introducing more renewable energy sources</td>
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<td></td>
<td></td>
<td></td>
<td>• Increase the share of recycled waste to 40% of the total waste produced</td>
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<td></td>
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<td></td>
<td>• Expand environmentally protected areas to 30% of the country’s territory and increase forest cover to 9% of the total territory</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Ensure social equality through inclusive economic growth</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th><strong>Action Plan, Green Development Policy of Mongolia</strong></th>
<th>Adopted in 2014</th>
<th>2014-2030</th>
<th>Governance, transport, energy, water, industry</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Promote resource efficient, low-carbon intensive production and consumption</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Advocate for investment in clean, environmentally friendly technology</td>
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<td></td>
<td></td>
<td></td>
<td>• Increase productivity whilst ensuring ecologically safe and minimal-waste production</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Introduce 38 green development indicators to measure progress and ensure they are actively used</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Maintain an ecosystem balance and mitigate environmental degradation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>State Energy Sector Policy</strong></th>
<th>Adopted in 2015</th>
<th>2015-2030</th>
<th>Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Decrease greenhouse gas emissions by 20% in the energy sector by 2020</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Increase the share of renewable energy sources by 30%, by 2030</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Ensure a secure and reliable supply of energy on a national scale</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Develop mutually beneficial relationships with neighbouring countries to ensure regional energy security</td>
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<td></td>
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<td></td>
<td>• Ensure the transition of the energy sector towards the private sector</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Introduce new, efficient and environmentally friendly technology to the energy sector</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Governmental Action Programme for the period 2016-2020</strong></th>
<th>Adopted in 2016</th>
<th>2016-2020</th>
<th>Governance, transport, energy, water, industry, mining</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Promote “green” development in line with the Green Development Policy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Introduce waste-water recycling technology (e.g. to be re-used in industrial production processes)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Promote a favourable investment climate for the geology and mining sector</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Ensure the development of education standards in both urban and rural spaces</td>
</tr>
<tr>
<td>Programme</td>
<td>Adopted in</td>
<td>Period</td>
<td>Key sectors</td>
</tr>
<tr>
<td>-------------------------------------------------------------</td>
<td>---------------------</td>
<td>-----------------</td>
<td>----------------------------</td>
</tr>
</tbody>
</table>
| National Programme on Reduction of Air and Environmental Pollution | 2017                | 2017-2025       | Governance, transport, energy, water, industry | • Introduce environmentally friendly and advanced technology in all economic sectors to reduce pollution  
• Enhance legal environmental measures and create a more accountable government system  
• Ensure the prohibition of raw coal usage  
• Increase community participation in reducing environmental pollution  
• Improve urban planning and policy making to reduce air pollution, especially in Ulaanbaatar |
| National Action Programme on Climate Change                  | 2011                | 2011-2021       | Governance, transport, energy, water, industry | • Encourage research related to climate change to inform policy makers  
• Increase the participation of the population in mitigating the adverse effects of climate change  
• Introduce innovative technologies to all economic sectors |
| National Ozone Layer Protection Programme for the period 1999-2030 | 1999                | 1999-2030       | Governance, transport, energy, water, industry | • Implement a licensing and quota system for HCFC imports and exports |
| National Action Programme to Combat Desertification for the period 2010-2020 | 2010                | 2010-2020       | Water                      | • Strengthen the institutional capacity and develop a policy framework to combat desertification  
• Rehabilitate degraded and vulnerable areas affected by desertification |
| Green Belt National Programme                               | 2005                | 2005-2035       | Water                      | • Create a "green belt" between the Mongolian Gobi and Steppe regions through the process of afforestation  
• Reduce the present loss in forest reserves  
• Mitigate desertification and associated sand storms |
| National Biodiversity Programme for the period 2015-2025     | 2015                | 2015-2025       | Governance, energy, water, industry | • Conservation of biodiversity in the country  
• Sustainable and rational use of natural resources |
| Water National Programme                                     | 2010                | 2010-2021       | Water, Industry            | • Ensure the protection, conservation and natural replenishment of water resources  
• Provide the population with drinking water that complies with necessary health standards  
• Improve the supply of water to the agricultural and industrial sector |
| Waste Management Improvement Programme for 2014-2022         | 2014                | 2014-2022       | Governance, Industry, Water | • Increase the number of waste sites that meet sanitary requirements from 3 in 2013 to 40 by 2022  
• Increase the share of recycling from 4.4% of total waste in 2013 to 12% by 2022  
• Restore degraded environmental areas caused by waste contamination |
National Implementation Plan for the Convention on Persistent Organic Pollutants
- Adopted in 2006
- 2006-2030
- Energy, water, industry
- Reduce the release of persistent organic pollutants (POPs) into the environment and atmosphere
- Phase out the use of polychlorinated biphenyl

Gold-2 National Programme
- Adopted in 2017
- 2017-2020
- Mining, Industry
- Intensify gold exploration and mining activity
- Ensure the long-term development of the gold industry
- Develop legislation for the gold industry

National Strategy on Ensuring Road Traffic Safety for the period 2012-2020
- Adopted in 2012
- 2012-2020
- Transport
- Decrease the number of deaths and injuries occurring on roads by 50% by 2020
- Implement effective traffic and road network planning

National Tourism Development Programme
- Adopted in 2015
- 2016-2025
- Governance, transport, energy, water, industry
- Develop tourism into a leading economic sector in line with international standards
- Promote eco-tourism and ensure environmental protection in the tourist industry
- Construct an efficient road network to allow for ease of mobility

<table>
<thead>
<tr>
<th>Table 6.6. Other relevant documents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Status</td>
</tr>
<tr>
<td>Time Horizon</td>
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