

## Chapter 1. Overview

*This chapter presents the regional situation of infrastructure investments in Central Asia and the Caucasus, including the gap between growing infrastructure needs and sluggish investment flows, and the resulting challenges for trade integration and regional connectivity. It describes regional infrastructure development initiatives, including the CAREC corridors and the Belt and Road Initiative, and their potential role in improving connectivity. The chapter also discusses the role of private sector investments and the climate change-related risks and opportunities of current infrastructure investment patterns. Lastly, it presents the makeup of current infrastructure investments in eight countries in Central Asia and the Caucasus (Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Mongolia, Tajikistan, Turkmenistan, Uzbekistan), focusing on the transport and energy sectors.*

## 1.1 The infrastructure gap in Central Asia and the Caucasus

### *Poor quality infrastructure has hampered regional integration connectivity and economic development*

Despite increased levels of infrastructure investment in recent years, the infrastructure gap in Central Asia and Caucasus countries remains high, which impedes further development of trade and the economy. The region's investment needs are 492 USD billion (6.8% of GDP) or an annual average of 33 USD billion between 2016-2030 (Table 1.1). The gap expands to 7.8% of GDP if climate change adjustments are taken into account (Fay et al., 2019<sup>[1]</sup>). In the 1990s and during most of the 2000s, infrastructure spending in Central Asia was typically under 0.5% of GDP which is significantly below international trends, especially for rapidly growing countries (Fay et al., 2019<sup>[1]</sup>). Current spending levels are at around 4% of GDP, and need to be scaled-up.

**Table 1.1. Estimated Infrastructure Needs by Region, 2016-2030 (USD billion in 2015 prices)**

	Projected Annual GDP Growth	Baseline Estimates			Climate-adjusted Estimates		
		Investment Needs	Annual Average	Investment Needs as % of GDP	Investment Needs	Annual Average	Investment Needs as % of GDP
Central Asia and Caucasus	3.1	492	33	6.8	565	38	7.8
East Asia	5.1	13 781	919	4.5	16 062	1 071	5.2
South Asia	6.5	5 447	365	7.6	6 347	423	8.8
Southeast Asia	5.1	2 759	184	5.0	3 147	210	5.7
The Pacific	3.1	42	2.8	8.2	46	3.1	9.1
<b>Total Asia and the Pacific</b>	<b>5.3</b>	<b>22 551</b>	<b>1 503</b>	<b>5.1</b>	<b>26 166</b>	<b>1 744</b>	<b>5.9</b>

Source: ADB (2017<sup>[2]</sup>)(2017), *Meeting Asia's Infrastructure Needs*, Asian Development Bank, Manila, <https://www.adb.org/sites/default/files/publication/227496/special-report-infrastructure.pdf>

Low levels of investments in infrastructure in Central Asia and the Caucasus region over an extended period have translated into limited regional integration and low participation in global value chains (GVCs). Intra-regional trade in Central Asia stands at 5% of total trade for oil exporters (ITF, 2019<sup>[3]</sup>) and 15% for oil importers in the region (Kunzel et al., 2019<sup>[4]</sup>), which remains very low by international standards and compares unfavourably to intra-Asia and intra-Europe exports, at 59% and 69% respectively (Sow, 2018<sup>[5]</sup>). Although trade openness has improved slightly in recent years, regional openness has generally been in decline due to the lack of infrastructure and the concentration of trade in a few products, but also the overall business climate and foreign exchange restrictions (Vera-Martin et al., 2019<sup>[6]</sup>). Such factors have also led to slower growth of participation in GVCs. The low participation in GVCs is more prominent among the oil exporters in the region as they mostly export raw materials such as fuels (UNESCAP, 2015<sup>[7]</sup>).

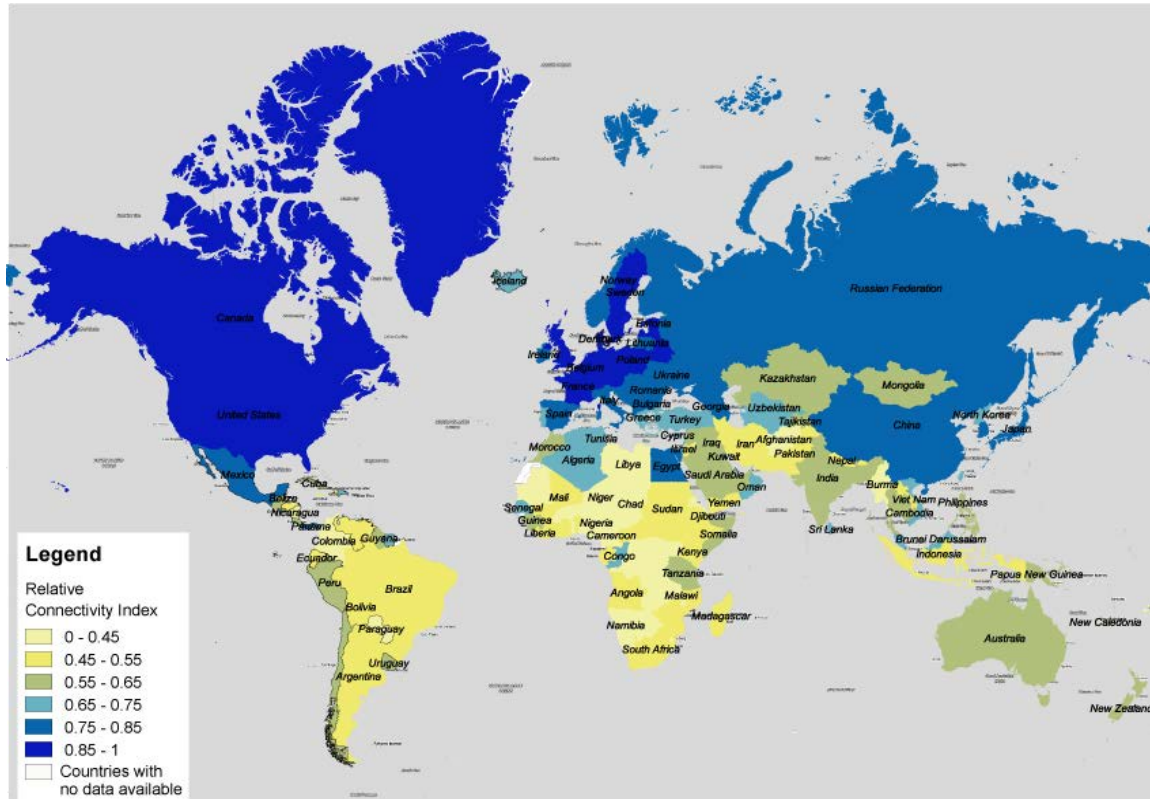
The increased trans-Eurasian overland transit, with over 6 000 trains carrying goods across the Eurasian continent since 2011, could be an important turning point for Central Asia and the Caucasus towards greater trade integration (AIIB, 2019<sup>[8]</sup>). Given that in recent years China has established itself as a more central player in the GVCs networks, and trade between China and Europe is currently averaging over USD 1 billion a day, opportunities exist for countries in sectors such as industrial and consumer goods, textiles, and machinery and equipment (Kunzel et al., 2019<sup>[4]</sup>). Trade openness and GVC participation, as well as export diversification and improved product quality could raise the income levels of countries in Central Asia and the Caucasus between 5-10 percentage points within the next five to 10 years (Kunzel et al., 2019<sup>[4]</sup>).

Overall, the connectivity of Central Asia and Caucasus countries depends on how well they are positioned in global logistics networks, infrastructure and services. Across the region, there is considerable scope to improve connectivity with the rest of the world. According to one measure of connectivity (defined in terms of access to global GDP), the connectivity gap of landlocked Central Asian countries is around 50% of that of Germany, which is one of the best performers, while the Caucasus fares marginally better (see Figure 1.1). Such a low level of connectivity is partly caused by long distance of these countries to global economic centres as well as the lack of effective and low-cost maritime connections (ITF, 2019<sup>[3]</sup>).

Central Asian countries are relative outliers in terms of their logistics performance compared to other peers, leading to limited participation in regional and global value chains (see Figure 1.2). The cost of shipping a container via an overland route via Kazakhstan is over 8 000 USD per twenty-foot equivalent unit (TEU), while maritime transportation costs only 1 161 USD per TEU. Unlike other parts of the Asia-Pacific, investments in Central Asia rarely take part in global supply chains due to the lack of regional co-operation and transport infrastructure, as well challenges with crossing borders (ADBI, 2014<sup>[9]</sup>). For example, foreign investments in non-extractive industries are only 18% of the total FDI portfolio in Central Asia, compared to 42% of the global levels (BCG, 2018<sup>[10]</sup>).

Figure 1.1. Global connectivity

Access to global GDP (%)



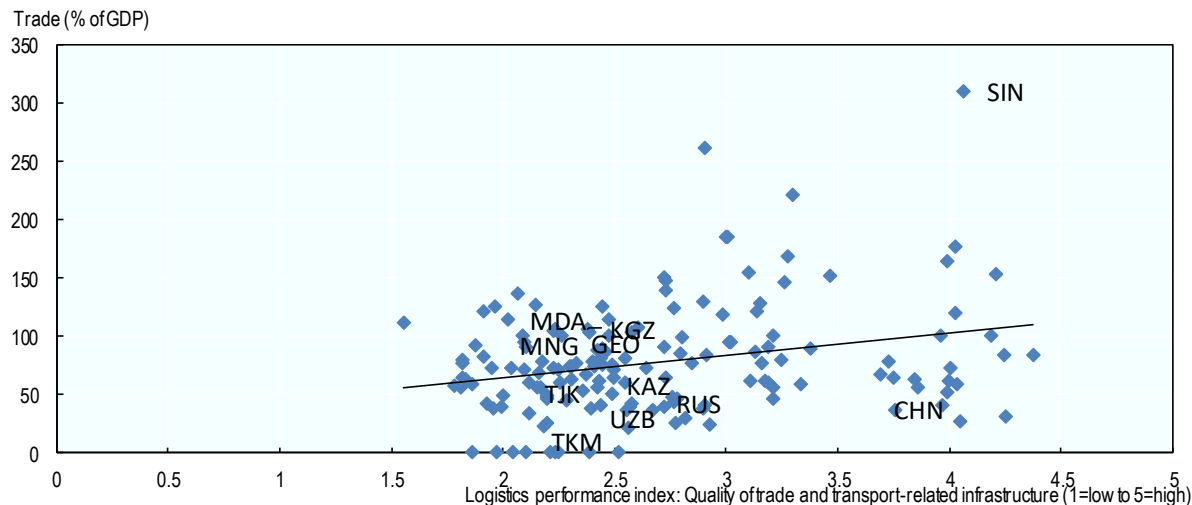
Note: The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Note by Turkey: The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Source: Based on the ITF Freight Model. ITF (2019<sup>[11]</sup>), *ITF Transport Outlook 2019*, OECD Publishing, Paris, [https://doi.org/10.1787/transp\\_outlook-en-2019-en](https://doi.org/10.1787/transp_outlook-en-2019-en)

Figure 1.2. Logistics costs and trade openness

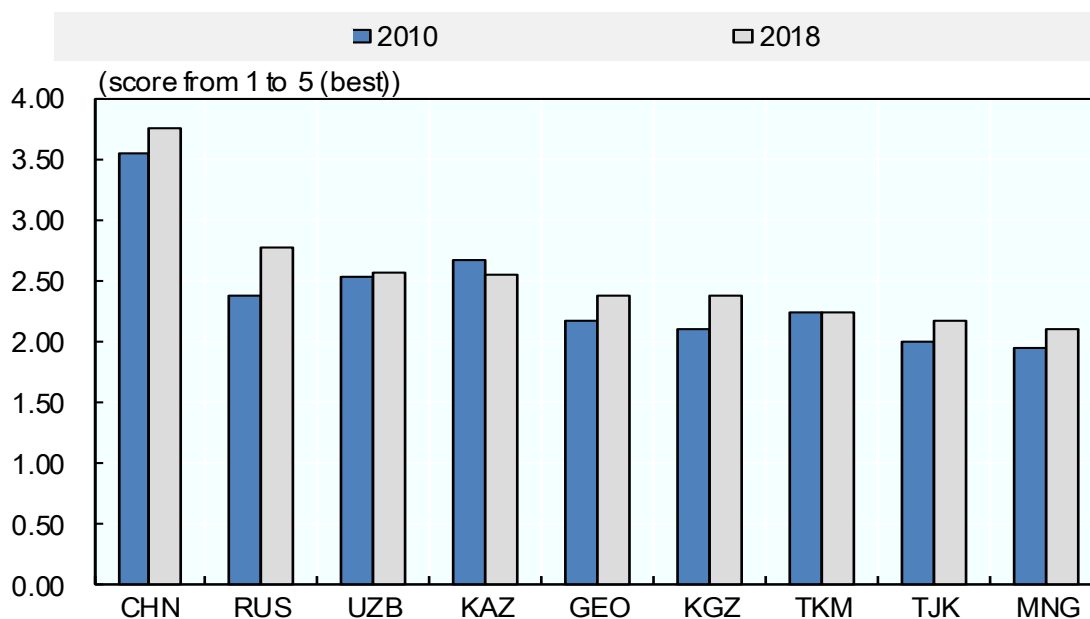


Source: World Bank (2018<sup>[12]</sup>), *Logistics Performance Index* (database), <https://lpi.worldbank.org/international/aggregated-ranking>; World Bank (2019<sup>[13]</sup>), *World Development Indicators* (database), World Bank, <https://data.worldbank.org/>

Although in recent years most countries in Central Asia and the Caucasus have improved their logistics performance under the indicator of “quality of infrastructure” (e.g. ports, roads, airports, information technology) in the World Bank’s *Logistic Performance Index*, numerous infrastructure bottlenecks remain. Uzbekistan performed better than its peers between 2010 and 2018, followed by Kazakhstan and the Kyrgyz Republic (see Figure 1.3). Kazakhstan’s performance declined from 2.66 in 2010 to 2.55 in 2018 on a scale from 1 (worst) to 5 (best). While it has increased its performance compared to 2010, Mongolia’s infrastructure is perceived as the weakest in the region. In general, low-quality infrastructure leads to high costs of transportation, which hampers competitiveness. With few exceptions such as Azerbaijan and Georgia, economies of the region still face some important infrastructure shortcomings as reflected in a number of infrastructure indicators and perception assessments (see Table 1.2). Such shortcomings are also the result of an inadequate investment environment.

**Figure 1.3. The World Bank's Logistic Performance Index, Infrastructure Indicator**

(score from 1 to 5 (best))



Source: World Bank (2018<sup>[12]</sup>), *Logistics Performance Index* (database), <https://lpi.worldbank.org/international/aggregated-ranking>

With regards to the energy sector, most countries have achieved universal access to energy except Mongolia. However, energy infrastructure assets are generally of poor quality due to underinvestment in maintenance and replacement of existing facilities in the past decade: losses along the electric grid are high, and power outages frequent. Coal and other fossil fuels remain the main source of energy in many countries, leading to high greenhouse gas emissions and poor air quality in urban areas of Kazakhstan and Mongolia for instance.

**Table 1.2. Selected infrastructure indicators in Central Asia and the Caucasus**

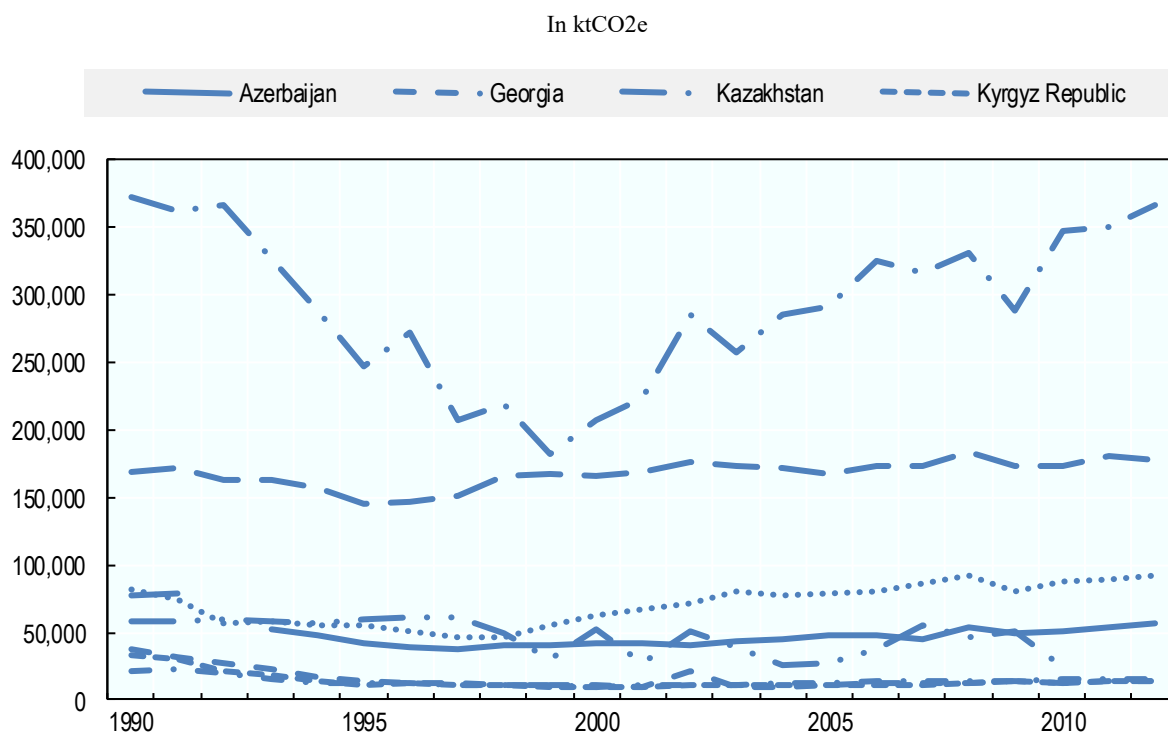
	Azerbaijan	Georgia	Kazakhstan	Kyrgyz Republic	Mongolia	Tajikistan	Turkmenistan	Uzbekistan
<b>Energy</b>								
Electricity production from coal sources (% of total) 2015	0	0	71.6	13.2	92.7	1.5	0	4.1
Electric power transmission and distribution losses (% of output) 2014	14	6	7	24	15	17	12	9
Quality of electricity supply (1-7 (best), WEF 2017-2018)	5.5	5.0	4.6	3.6	4.0	3.7	N/A	N/A
<b>Water and sanitation</b>								
Improved water source (% of population with access) 2015	87	100	92.9	90	64.4	73.8	60.4*	87.3**
Improved sanitation facilities (% of population with access)	89.3	86.3	97.5	93.3	59.7	95	N/A	100
<b>Transport</b>								
Quality of roads, 1-7 (best), WEF 2017-2018	4.8	3.8	2.9	2.7	3.1	4.1	N/A	N/A
Quality of railroad infrastructure, 1-7 (best), WEF 2017-2018	4.7	3.8	4.1	2.4	2.8	3.7	N/A	N/A
Quality of port infrastructure, 1-7 (best), WEF 2017-2018	4.7	4.1	3.2	1.4	1.4	2.0	N/A	N/A
Quality of air transport infrastructure, 1-7 (best), WEF 2017-2018	5.6	4.3	4.0	3.1	3.2	4.3	N/A	N/A

Notes: \*Data for Turkmenistan is available from 2006. \*\*Data for Uzbekistan is available from 2012.

Source: World Bank (2019<sub>[13]</sub>), IBRD (2019<sub>[14]</sub>), World Economic Forum (2017<sub>[15]</sub>).

Since the dissolution of the Soviet Union, most of the countries in Central Asia and the Caucasus have remained heavily dependent on oil and fossil fuel-based industries. The energy sector is responsible for the majority of greenhouse gas emissions in the region (73%), followed by LULUCF (8%) and the agricultural sector (7%) (FAO, 2018<sub>[16]</sub>). The largest greenhouse gas emitter in Central Asia and the Caucasus is Kazakhstan (see Figure 1.4), emitting 0.68% of total global greenhouse gas emissions. Other countries in the region such as the Kyrgyz Republic, Georgia and Tajikistan emit a very small share of total global greenhouse gases, the lowest being in Tajikistan at 0.026%. (World Bank, 2019<sub>[13]</sub>), as it relies mainly on hydropower for their energy supply. However, those countries are particularly vulnerable to climate change that poses a great threat on water availability, and subsequently on their future energy security and agricultural sector, with potential cross-border disputes over water availability in the future.

Figure 1.4. GHG emissions by country, 1990-2012



Source: World Bank (2019<sup>[13]</sup>), *World Development Indicators (database)*, World Bank, <https://data.worldbank.org/indicator/EN.ATM.GHGT.ZG>

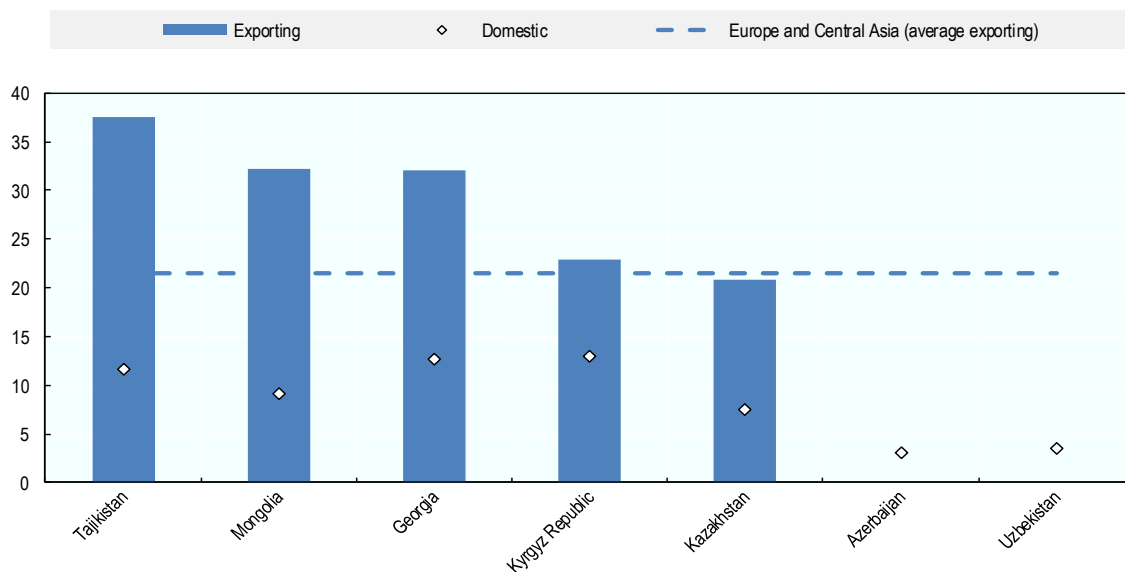
### ***The lack of connectivity infrastructure is also a major constraint to exporting manufacturing firms***

Bottlenecks in logistics and transport infrastructure in the region are a major impediment to more intra-regional trade and investment. In particular, such bottlenecks impede further growth of manufacturing firms, both domestic and foreign. According to the World Bank Enterprise Survey, over 22% of exporting firms identify transportation as a major constraint to their current operations (see Figure 1.5). The survey also reveals numerous differences at the country level in the region, where transport infrastructure is a major concern across the board. Compared to firms focused on the domestic market, exporting manufacturing firms face significantly more constraints to their operations in the region, particularly in Tajikistan (38% for exporters compared to 12% for non-exporters), Mongolia and Georgia (32%), the Kyrgyz Republic (23%), Kazakhstan (21%). There is no data available for Azerbaijan and Kazakhstan.



**Figure 1.5. Exporting manufacturing firms in Central Asia and the Caucasus identify transportation as a major constraint**

As % of manufacturing firms



*Note:* Survey data from 2013. No data available from Turkmenistan. Exporting firms include firms with direct exports with 10% or more of sales; domestic firms include non-exporters.

*Source:* World Bank (World Bank, 2013<sup>[17]</sup>), “Enterprise Surveys”, <https://www.enterprisesurveys.org/>

### ***Regional initiatives are an opportunity to close the gap***

The need to address infrastructure bottlenecks and to enhance connectivity is also acknowledged in the development of regional strategies (ADB, 2017<sup>[2]</sup>). A number of sub-regional projects, programmes and strategies intend to increase connectivity and spur competitiveness (see Table 1.3) (OECD, 2018<sup>[18]</sup>). This includes the European Union’s Transport Corridor Europe-Caucasus-Asia (TRACECA), as well as other regional initiatives such as the International North–South Transport Corridor or the proposed Central Asian Regional Economic Cooperation (CAREC) corridors. Such regional programmes aim to provide sufficient infrastructure to ensure a high level of transport connectivity and integration into different modes of transport (OECD, 2018<sup>[18]</sup>).

**Table 1.3. Regional Transport Corridors in Central Asia**

Project name	Amount of investment (in USD billion)	Countries or continents covered
Belt and Road Initiative (BRI)	900 – 8 000	Europe, Asia, Africa
The Central Asia Regional Economic Cooperation (CAREC) Program	31.5	Afghanistan, Azerbaijan, People's Republic of China, Georgia, Kazakhstan, the Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, Uzbekistan.
Transport Corridor Europe Caucasus Asia (TRACECA)	0.16	Armenia, Azerbaijan, Bulgaria, Georgia, Kazakhstan, the Kyrgyz Republic, Iran, Moldova, Romania, Turkey, Ukraine, Uzbekistan, Tajikistan, Turkmenistan, plus the member states of the European Union.
Trans-Asian Railway (TAR)	75.6	Afghanistan, Armenia, Azerbaijan, Bangladesh, Belarus, Bhutan, Brunei, Cambodia, China, India, Indonesia, Iran, Kazakhstan, Laos, Mongolia, Nepal, Pakistan, South Korea, Russia, Sri Lanka, Tajikistan, Thailand, Turkey, Turkmenistan, Uzbekistan, Vietnam.

Source: ITF (2019<sup>[3]</sup>), “Enhancing Connectivity and Freight in Central Asia”, International Transport Forum Policy Papers, No. 71, OECD Publishing, Paris.

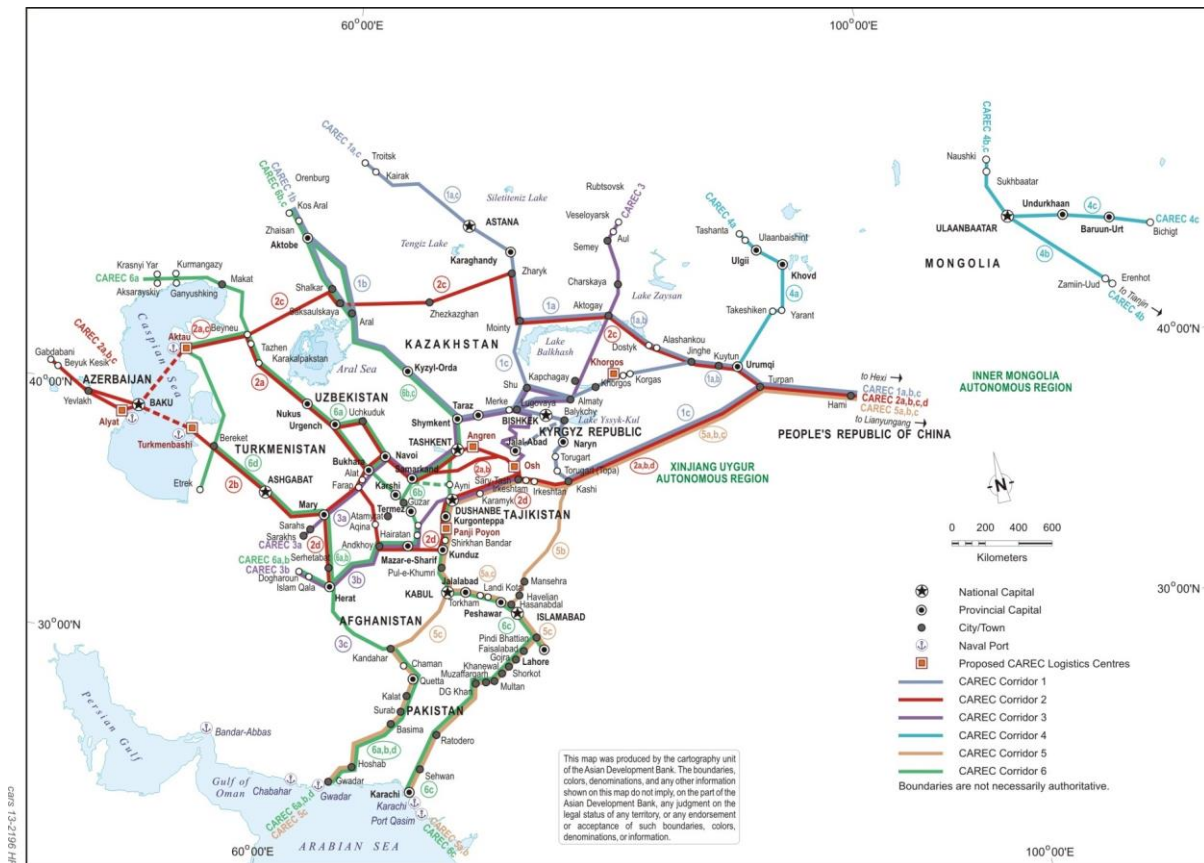
The most comprehensive of these strategies, the CAREC programme, is a USD 31.5 billion initiative led by the Asian Development Bank that focuses on identifying and developing six main transport and trade corridors for long-term investments (see Figure 1.6). Its goal is similar to other regional initiatives in Asia to strengthen transnational economic corridors such as the Greater Mekong Subregion (GMS) and the South Asia Subregional Economic Cooperation (SASEC) Programme (ADB, 2015<sup>[19]</sup>). Yet, compared to other regions in Asia, CAREC’s recipient countries remain less integrated in terms of trade and investment (AIIB, 2019<sup>[8]</sup>).

The six CAREC corridors are:

- *Corridor 1*: Europe–East Asia (Kazakhstan, the Kyrgyz Republic, and Xinjiang Uygur Autonomous Region);
- *Corridor 2*: Mediterranean–East Asia (Afghanistan, Azerbaijan, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan Uzbekistan, and Xinjiang Uygur Autonomous Region);
- *Corridor 3*: Russian Federation–Middle East and South Asia (Afghanistan, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan); *Corridor 4*: Russian Federation–East Asia (Inner Mongolia Autonomous Region and Xinjiang Uygur Autonomous Region in the People’s Republic of China, and Mongolia);
- *Corridor 5*: East Asia–Middle East and South Asia (Afghanistan, the Kyrgyz Republic, Pakistan, Tajikistan, and Xinjiang Uygur Autonomous Region).
- *Corridor 6*: Europe–Middle East and South Asia (Afghanistan, Kazakhstan, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan) (ADB, 2014<sup>[20]</sup>)

Figure 1.6. Map of CAREC Economic Corridors

Six Central Asia Regional Economic Cooperation Corridors



Source: CAREC (n.d.[21]), “CAREC Program”, Central Asia Regional Economic Cooperation, [https://www.carecprogram.org/?page\\_id=31](https://www.carecprogram.org/?page_id=31)

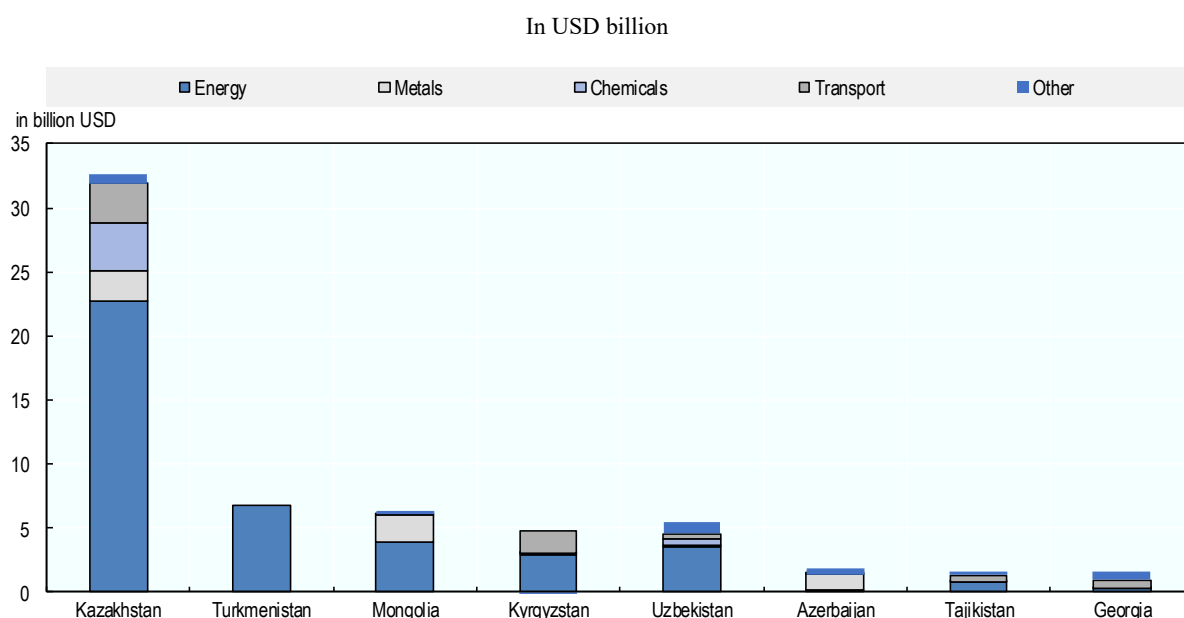
Another significant global infrastructure initiative with significant implications for Central Asia and the Caucasus is China’s Belt and Road Initiative (BRI). Proposed in 2013, the BRI aims to improve global connectivity and co-operation. While the scope of the BRI is still not yet clearly defined, there are two main components involving investments in infrastructure, namely the Silk Road Economic Belt (the overland “Belt”) and the New Maritime Silk Road (the sea routes constituting the “Road”) (Freund and Ruta, 2018[22]). The Belt will link China to Central and South Asia and onward to Europe, while the Road will better connect China with Southeast Asia, the countries of the Persian Gulf, East and North Africa and to Europe. The BRI could significantly improve trade, investment and living conditions for citizens in the region. However, this will only occur if China and the individual recipient countries implement deeper policy reforms aimed at improving transparency, expanding trade, improving debt sustainability, while mitigating environmental, social and governance risks (World Bank, 2019[23]). As part of the BRI, there are six proposed overland economic corridors:

1. China–Mongolia–Russia Economic Corridor
2. New Eurasian Land Bridge
3. China–Central Asia–West Asia Economic Corridor

4. China–Indochina Peninsula Economic Corridor
5. China–Pakistan Economic Corridor
6. Bangladesh–China–India–Myanmar Economic Corridor

In recent years, the economies of Central Asia and the Caucasus became large recipients of Chinese investments, with over USD 60.8 billion of investments between 2005 and 2018 (Figure 1.7). The China Global Investment Tracker, a database that tracks investment projects by China worldwide, shows that most of these investments in the region focus on the energy sector, accounting for over 68% (or USD 41 billion) of total investments. The transport sector, by contrast, has received only 11% of total Chinese investments, followed by metals (10%) and chemicals (7%). The largest recipient of Chinese investments in the region is Kazakhstan, with over USD 32.6 billion, including with major investments as part of the BRI since 2013, followed by Turkmenistan and Mongolia with each USD 6.8 and 6.2 billion.

**Figure 1.7. Chinese investments across Central Asia and the Caucasus, by sector**



*Note:* Other includes projects in agriculture; tourism; real estate (construction and property); industry; banking; and timber.

*Source:* American Enterprise Institute (2019<sup>[24]</sup>), “China Global Investment Tracker”, <http://www.aci.org/china-global-investment-tracker/>

## 1.2 The investment environment

### *The investment climate is improving in the region but private sector participation needs to be scaled-up*

In recent years, many countries in Central Asia and the Caucasus have become more attractive destinations for investment. Their improving investment climates are reflected in selected indicators in Table 1.4. According to the World Bank Doing Business indicators, the region has made progress in the areas of fiscal, regulatory and political reforms. Increased electricity access, coupled with strengthened rule of law and better

corporate tax regulations have further improved the confidence of investors to invest in individual countries in the region. For instance, Georgia has become one of the most open economies in the world in terms of ease of doing business, ranking 6<sup>th</sup> worldwide in 2019. Azerbaijan and Kazakhstan also performed relatively better than their regional peers in 2019, ranking 25<sup>th</sup> and 28<sup>th</sup> worldwide.

In most countries, further reforms are needed to further leverage domestic and international private investment. Business entry rates in the Central Asia and the Caucasus region are much lower than in other regions and even lower than in sub-Saharan Africa (IMF, 2018<sup>[25]</sup>). Among the most common challenges to doing business in the region is access to finance, tax rates and regulation, inflation and corruption. Promoting more private sector participation and opening up to more trade and investment could allow access to cheaper goods and services, as well as more diversification and competition (IMF, 2018<sup>[25]</sup>).

**Table 1.4. Selected economic indicators in Central Asia and the Caucasus**

	Azerbaijan	Georgia	Kazakhstan	Kyrgyz Republic	Mongolia	Tajikistan	Turkmenistan	Uzbekistan
Real GDP growth (year-on-year change, 2019)	1.4%	4.6%	3.2%	3.8%	6.3%	5%	6.3%	5.1%
GDP per capita (USD, current price, 2018)	4 721	4 345	9 331	1 220	4 104	827	6 967	1 532
FDI, net inflows (as % of GDP)	3.0%	7.3%	0.1%	-1.4%	16.7%	2.9%	6.1%	1.2%
Ease of Doing Business Rank	25	6	28	70	74	60	N/A	76
Number of procedures to start a business (women), 2019	3	1	5	4	8	4	N/A	3
Number of days to start a business (women), 2019	3.5	2	5	10	11	11	N/A	4
Ability to trade across borders across Borders (0 to 100 best performance), 2019	77.4	90.3	70.36	80.74	66.89	59.06	N/A	49.79
Transparency, accountability and corruption in the public sector rating (1= most corrupt, 6 = least corrupt, 2017)	2.5	3.5	N/A	3	3.5	2.5	N/A	2

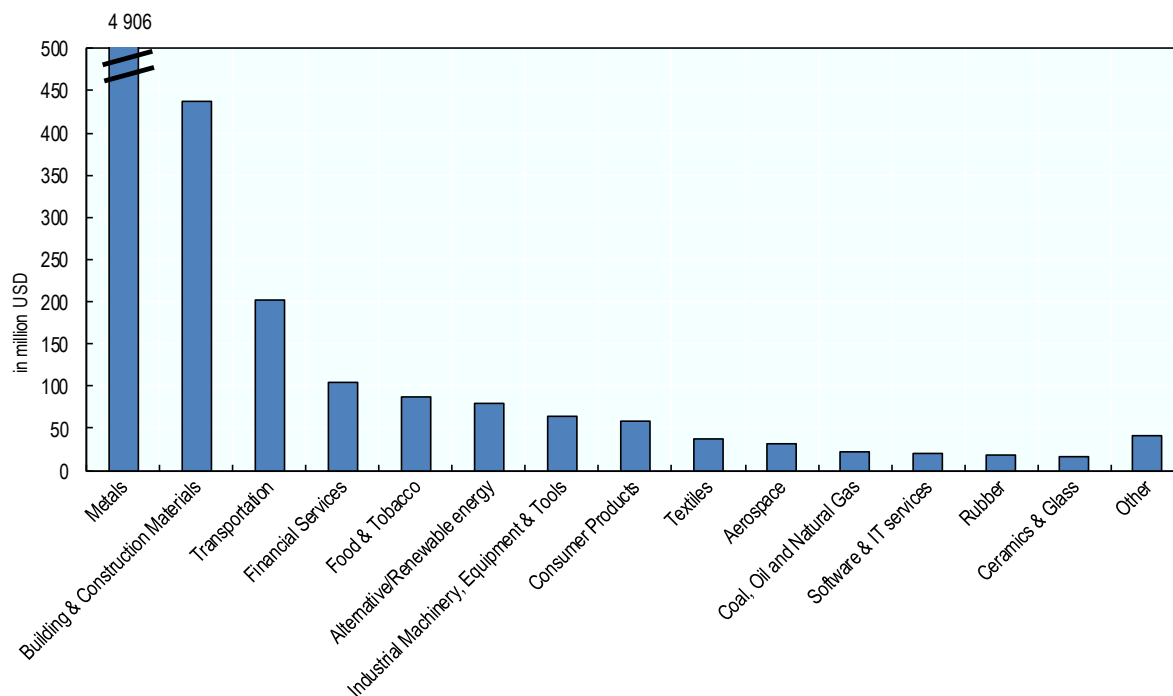
Source: World Bank (2019<sup>[13]</sup>), IBRD (2019<sup>[14]</sup>), World Economic Forum (2017<sup>[15]</sup>).

### ***Shifting investments away from fossil fuel and mineral resources extraction***

Many countries of the region are trying to diversify their economies, limiting their dependence over fossil fuels and extractive industries. But a review of greenfield foreign

direct investments in the region shows that FDIs are still disproportionately flowing to extractive and fossil fuel projects. Between 2003 and 2017, greenfield FDIs in the region accounted for over USD 228.8 billion, 43% of which belonged into coal, oil and natural gas sectors (see Figure 1.8). These sectors are the most attractive for greenfield FDI across almost all countries. Kazakhstan attracted the largest share with USD 56.4 billion, followed by Azerbaijan and Uzbekistan with 16.2 and 13 USD billion respectively. Although at a much lower scale, investments into metals accounted for a total of USD 34.3 billion (or 15% of the total), followed by real estate at 7% (or USD 15.5 billion). Infrastructure-related investments, particularly in the transport sector attracted close to USD 12.9 billion (or 6% of total greenfield FDI), while the building and construction sector only accounted for 2% (USD 4.4 billion). Other sectors that attracted greenfield FDI were chemicals (5%), financial services (4%) and alternative/renewable energy (3%). The limited FDI in the alternative/renewable sector shows that there is significant scope for foreign investors to enter these markets provided that the right incentives and business environment are in place.

**Figure 1.8. Greenfield FDI in Central Asia and the Caucasus by economic activity, 2003-2017**



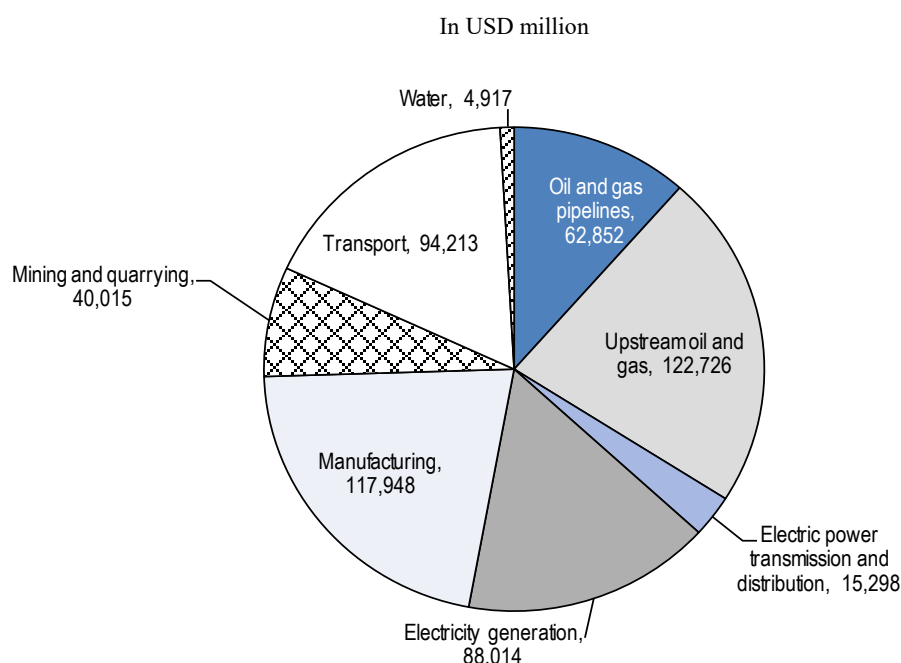
*Note:* Other includes Pharmaceuticals; Non-Automotive Transport OEM; Leisure & Entertainment; Rubber; Beverages; Software & IT services; Electronic Components; Automotive Components; Aerospace; Engines & Turbines; Healthcare; Business Machines & Equipment; Paper, Printing & Packaging; Medical Devices; Biotechnology; Semiconductors; Wood Products.

*Source:* OECD based on fDi Markets (2019<sup>[26]</sup>), *fDi Markets: the in-depth crossborder investment monitor (database)*, fDi Markets, <https://www.fdimarkets.com/>

### 1.3 Overview of current infrastructure projects, planned and under construction

The database put together for this analysis tracks around USD 546 billion of planned and under construction infrastructure projects in the eight countries - Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Mongolia, Tajikistan, Turkmenistan and Uzbekistan. Energy projects<sup>i</sup> account for more than half (53% or USD 289 billion), followed by manufacturing projects (22% or USD 117.9 billion) and transport (17% or USD 94.2 billion) (see Figure 1.9). Finally, water projects only account for 1%, or USD 4.9 billion of total investments and they primarily relate to water supply and sanitation projects. Within energy investments, upstream oil and gas projects account for over 42% (or USD 122.7 billion), followed by electricity generation projects (30% or USD 88 billion) and oil and gas pipelines (22% or USD 62.9 billion). Finally, electric power transmission and distribution investments account for 5% (or USD 15.3 billion).

**Figure 1.9. Investment projects in Central Asia and the Caucasus, by sector**

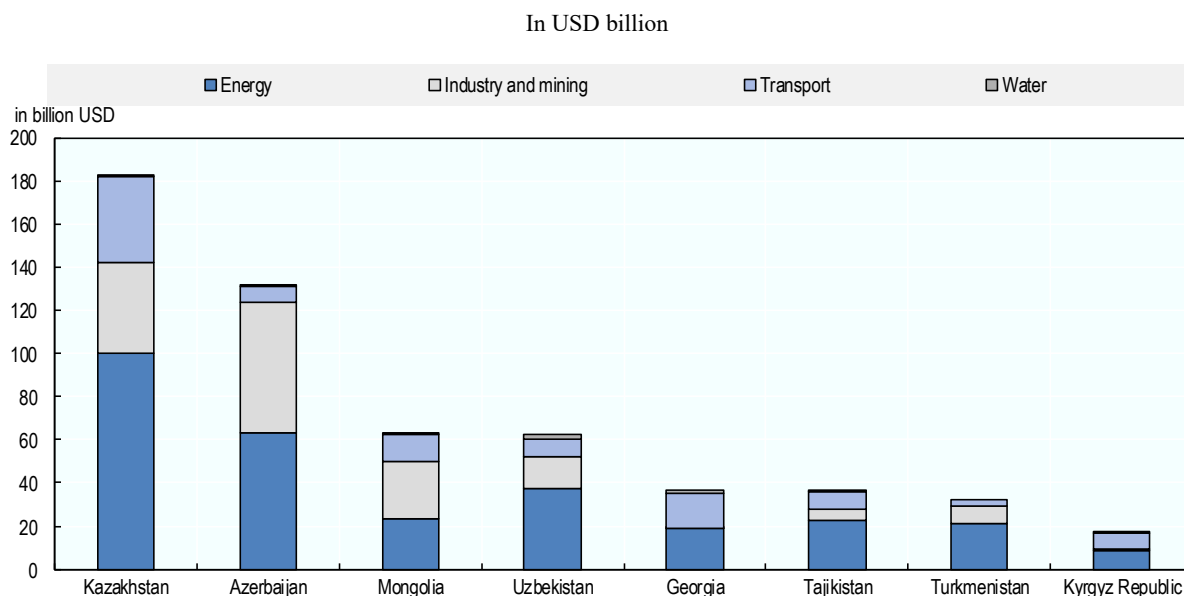


*Note:* *Electricity generation* projects include natural gas-fired electric power plants, wind farms, solar plants, hydroelectric power plants, and coal-fired electric power plants. *Electric Power Transmission and Distribution* projects include district heating projects, central transmission and distribution networks, double circuit transmission lines. *Upstream oil and gas* projects include oil and gas field development projects. *Manufacturing* projects include petrochemical plants, cement plants, plants for the production of ferrosilicon, aluminium plants, polypropylene plants, metallurgical complexes, production of motor fuels, acid plants, steel plants, bioethanol plants, and other transport equipment. *Transport* projects include intermodal projects, railways and roads. *Water* projects include water supply and sanitation as well as irrigation and water management

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

The top two countries in Central Asia and the Caucasus in terms of infrastructure investments are Kazakhstan (33%) and Azerbaijan (23%). Mongolia and Uzbekistan both attract 11% of total investments, followed by Georgia (7%), Tajikistan and Turkmenistan (6% each), and the Kyrgyz Republic (3%).

**Figure 1.10. Investment projects planned and under construction in Central Asia and the Caucasus countries, by sector**



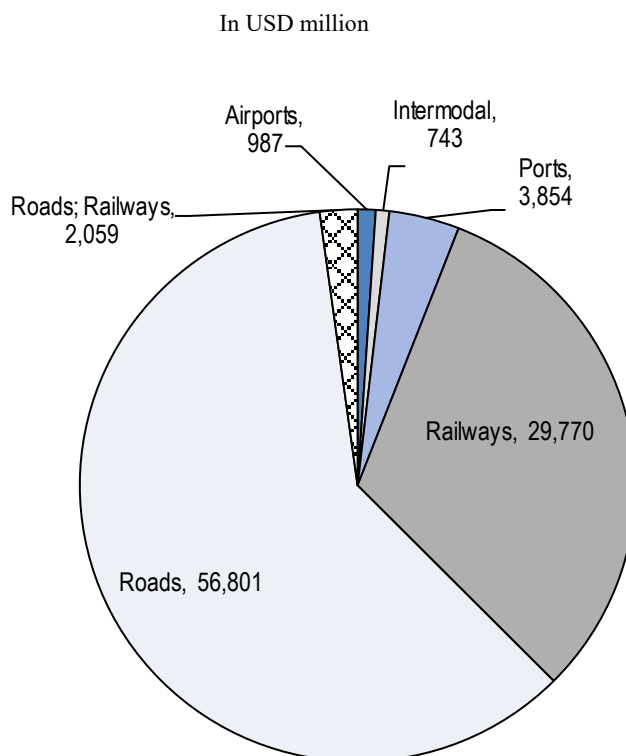
Source: OECD analysis based on accessed databases as of June 2019.

### ***Transport***

Transport infrastructure projects in the database account for around USD 94.2 billion, and consist mostly of road projects of around USD 56.8 billion or 60% of total transport investments (see Figure 1.11). Investments in railways come second at around USD 29.8 billion (or 32%), followed by port projects totalling USD 3.9 billion (4%). While roads attracted the majority of transport investments in the region, railways will also require significant investments flows in the coming years to maintain and improve performance. It is estimated that the region will need around USD 38 billion up to 2030 to upgrade rails and build new lines (AIIB, 2019<sup>[8]</sup>). Better rail connectivity in the form of new investments in technology and improved logistics could reduce existing bottlenecks, such as track gauge differences and further enhance the region's participation in regional and global value chains.



**Figure 1.11. Transport projects planned and under construction in Central Asia and the Caucasus, by sub-sector**



*Note:* Intermodal projects include the development of logistics centres.

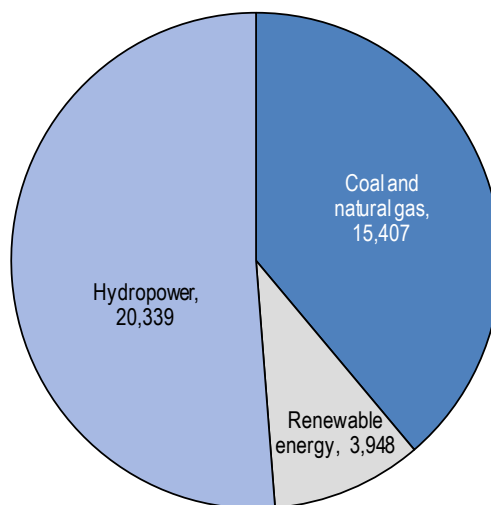
*Source:* OECD analysis based on accessed databases as of June 2019

### ***Energy***

In terms of investment projects in electricity generation in the region, around 50% of the investments by capacity are in hydro-power plants (or 20 339 MW), while coal and natural gas-fired electric power plants account for 40% of the total. Other renewable projects such as solar photovoltaic (PV) and wind account for 10% of electricity generation (see Figure 1.12). The hydropower projects are primarily concentrated in Georgia and Tajikistan, which have high hydropower potential. These countries' focus on hydroelectric power plants is in line with their governments' objectives to develop power generation capacity to sell excess electricity to neighbouring countries. Despite the relatively low investments in other renewable energies, some countries in the region identify the use of renewable energy sources as an important component of their sustainable development strategies. At the national level, prominent examples include Kazakhstan's *Concept for the Transition towards a Green Economy* and Uzbekistan's *Action Strategy on Five Priority Directions 2017-2021*.

**Figure 1.12. Electricity generation projects by fuel**

In MW



*Note:* Renewable energy includes solar PV and wind, while coal and natural gas includes coal-fired electric power plants and natural gas-fired electric power plants.

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

## Notes

<sup>i</sup> Energy projects include oil and gas pipelines, upstream oil and gas projects, electric power transmission and distribution projects, as well as electricity generation projects.

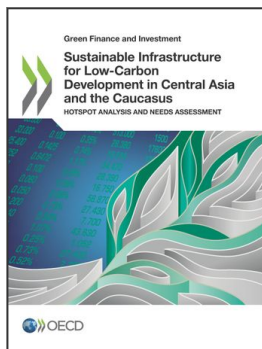
## References

- ADB (2017), *Meeting Asia's Infrastructure Needs*, Asian Development Bank, Manila, [2]  
<https://www.adb.org/sites/default/files/publication/227496/special-report-infrastructure.pdf>  
 (accessed on 1 August 2019).
- ADB (2015), *Greater Mekong Subregion Economic Cooperation Program: Overview*, Asian [19]  
 Development Bank, Manila, <https://www.adb.org/publications/greater-mekong-subregion-economic-cooperation-program-overview> (accessed on 1 August 2019).
- ADB (2014), *Central Asia Regional Economic Cooperation - Corridor Performance [20]  
 Measurement and Monitoring: A Forward-Looking Retrospective*, Asian Development Bank, Manila, <https://think-asia.org/bitstream/handle/11540/4085/carec-cpmm-forward-looking-retrospective.pdf?sequence=1> (accessed on 1 August 2019).
- ADBI (2014), *Connecting Central Asia with Economic Centers*, ADBI, Tokyo, [9]  
<https://www.adb.org/sites/default/files/publication/159307/adbi-connecting-central-asia-economic-centers-final-report.pdf>.
- AIIB (2019), *Asian Infrastructure Finance 2019: Bridging Borders - Infrastructure to [8]  
 Connect Asia and Beyond*, Asian Infrastructure Investment Bank, Beijing, <https://www.aiib.org/en/news-events/asian-infrastructure-finance/common/base/download/AIIB-Asian-Infrastructure-Finance-2019-Report.pdf>  
 (accessed on 1 August 2019).
- American Enterprise Institute (2019), *China Global Investment Tracker*, [24]  
<http://www.aei.org/china-global-investment-tracker/> (accessed on 1 August 2019).
- BCG (2018), *Investing in Central Asia: One Region, Many Opportunities*, BCG, Boston, [10]  
[https://www.bcg.com/Images/BCG-Investing-In-Central-Asia-report-ENG\\_tcm26-212857.pdf](https://www.bcg.com/Images/BCG-Investing-In-Central-Asia-report-ENG_tcm26-212857.pdf).
- CAREC (n.d.), *CAREC Program*, Central Asia Regional Economic Cooperation, [21]  
[https://www.carecprogram.org/?page\\_id=31](https://www.carecprogram.org/?page_id=31) (accessed on 1 August 2019).
- FAO (2018), *Regional Analysis of the Nationally Determined Contributions of Countries in [16]  
 Southern-Eastern Europe and Central Asia*, FAO, Rome, <http://www.fao.org/3/CA2518EN/ca2518en.pdf>.

- Fay, M. et al. (2019), “Hitting the Trillion Mark: A Look at How Much Countries Are Spending on Infrastructure”, No. 8730, World Bank Group, Washington, D.C., <http://documents.worldbank.org/curated/en/970571549037261080/pdf/WPS8730.pdf> (accessed on 1 August 2019). [1]
- fDi Markets (2019), *fDi Markets: the in-depth crossborder investment monitor (database)*, <https://www.fdimarkets.com/>. [26]
- Freund, C. and M. Ruta (2018), *Overview: BRI at a Glance*, World Bank, <https://www.worldbank.org/en/topic/regional-integration/brief/belt-and-road-initiative> (accessed on 1 August 2019). [22]
- IBRD (2019), *Doing Business 2019*, IBRD, Washington DC, <https://www.doingbusiness.org/en/rankings>. [14]
- IMF (2018), *Regional Economic Outlook: Middle East and Central Asia November 2018*, International Monetary Fund, Washington, D.C., <https://www.imf.org/en/Publications/REO/MECA/Issues/2018/10/02/mreo1018#Chapter%203> (accessed on 1 August 2019). [25]
- ITF (2019), *Enhancing Connectivity and Freight in Central Asia*, International Transport Forum, Paris, <http://www.itf-oecd.org>. [3]
- ITF (2019), *ITF Transport Outlook 2019*, OECD Publishing, Paris, [https://doi.org/10.1787/transp\\_outlook-en-2019-en](https://doi.org/10.1787/transp_outlook-en-2019-en). [11]
- Kunzel, P. et al. (2019), “Opening Up in the Caucasus and Central Asia: Policy Frameworks to Support Regional and Global Integration”, *18*, No. 7, International Monetary Fund, Washington, D.C., <https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2018/06/19/Opening-Up-in-the-Caucasus-and-Central-Asia-Policy-Frameworks-to-Support-Regional-and-Global-45910> (accessed on 1 August 2019). [4]
- OECD (2018), *Enhancing Connectivity through Transport Infrastructure: The Role of Official Development Finance and Private Investment*, The Development Dimension, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264304505-en>. [18]
- Sow, M. (2018), *Figures of the week: Africa’s intra- and extra-regional trade*, Brookings, <https://www.brookings.edu/blog/africa-in-focus/2018/03/29/figures-of-the-week-africas-intra-and-extra-regional-trade/> (accessed on 1 August 2019). [5]
- UNESCAP (2015), *Asia-Pacific Trade and Investment Report 2015: Supporting Participation in Value Chains*, UNESCAP, Bangkok, [https://www.unescap.org/sites/default/files/publications/APTIR%202015\\_Full%20Report.pdf](https://www.unescap.org/sites/default/files/publications/APTIR%202015_Full%20Report.pdf) (accessed on 1 August 2019). [7]
- Vera-Martin, M. et al. (2019), “Promoting Inclusive Growth in the Caucasus and Central Asia”, *19*, No. 9, International Monetary Fund, Washington, D.C., <https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2019/05/14/Promoting-Inclusive-Growth-in-the-Caucasus-and-Central-Asia-46857> (accessed on 1 August 2019). [6]

- World Bank (2019), *Belt and Road Economics: Opportunities and Risks of Transport Corridors*, World Bank Group, Washington, D.C., <http://documents.worldbank.org/curated/en/715511560787699851/Main-Report> (accessed on 1 August 2019). [23]
- World Bank (2019), *World Development Indicators (database)*, <https://datacatalog.worldbank.org/dataset/world-development-indicators>. [13]
- World Bank (2018), *Logistics Performance Index*, <https://lpi.worldbank.org/international/aggregated-ranking>. [12]
- World Bank (2013), *Enterprise Surveys (database)*, <https://www.enterprisesurveys.org/> (accessed on 1 August 2019). [17]
- World Economic Forum (2017), *The Global Competitiveness Report 2017-2018*, World Economic Forum, Geneva, <http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf>. [15]





**From:**  
**Sustainable Infrastructure for Low-Carbon  
Development in Central Asia and the Caucasus**  
Hotspot Analysis and Needs Assessment

**Access the complete publication at:**  
<https://doi.org/10.1787/d1aa6ae9-en>

**Please cite this chapter as:**

OECD (2019), "Overview", in *Sustainable Infrastructure for Low-Carbon Development in Central Asia and the Caucasus: Hotspot Analysis and Needs Assessment*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/26b109ae-en>

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. Extracts from publications may be subject to additional disclaimers, which are set out in the complete version of the publication, available at the link provided.

The use of this work, whether digital or print, is governed by the Terms and Conditions to be found at <http://www.oecd.org/termsandconditions>.