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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 Tajikistan

This paper was prepared for discussion at the OECD GREEN Action Task Force Annual Meeting 30 September – 1 October 2019, Paris.

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7. Strategic infrastructure planning for sustainable development in Tajikistan

Overview

Tajikistan is the only low-income country in the former Soviet Union. Its population is predominantly rural, with the lowest urbanisation rate of Central Asia at 27%. Over the next 15 years, the government faces the challenge of providing adequate infrastructure and employment opportunities for the over 45% of the population who were under the age of 20 in 2015. Agriculture remains an important pillar of the economy accounting for 21% of GDP, but climate change poses major threats to the sector. The country has lost 20% of its glacier cover since 1950, and certain parts of the country (the south, western Pamir and the mountains of central Tajikistan) could face up to 5°C of warming by the end of the century.

While Tajikistan has a relatively well-developed regulatory framework for investment, the poor implementation of these regulations has led to an unpredictable and non-transparent regulatory environment for investors to operate (weak rule of law and judiciary system, corruption). The country ranks 126th in the World Bank's Ease of Doing Business index, and the country lacks capacity at all levels of government. Tajikistan's strategy to attract FDI flows, mainly in metal extraction, coal oil and gas and renewable energy, has resulted in a high risk of debt stress. the country's debt equalled 50% of GDP in 2017 compared to 30% in 2015, and 80% of the debt is to one single creditor, China's Export-Import Bank. Payment defaults have led to debt settlements including licenses for mineral extraction and even the transfer of sovereignty over disputed territory.

Tajikistan's infrastructure is poor, contributing to very high trade costs that restrict the country's access to nearby markets such as the People's Republic of China and Afghanistan. Deteriorating Soviet-era infrastructure assets such as irrigation channels, roads, dams, bridges and river embankments have increased the population's exposure to risks associated with extreme weather events and earthquakes. 83% of the roads are unpaved, and would need upgrading to anticipate the increase freight and passenger traffic linked to the CAREC Corridors and the BRI. Planned rail projects aim to improve the connectivity of the country with neighbouring markets, through the construction of long-distance rail lines (e.g. the Russia-Kazakhstan-Kyrgyz Republic-Tajikistan railway and the China-Kyrgyz Republic-Tajikistan-Afghanistan-Iran railway). The overall quality of Tajikistan's energy infrastructure is poor. Although the country has achieved universal access to electricity, existing systems function inefficiently and improved energy security is one of the government's top priorities for future development through the development of renewable energy sources (hydropower, representing 94% of planned energy projects, and coal-fired power plants representing 6%).

While Tajikistan has development strategies to 2030 – such as the *National Development Strategy for the period to 2030* and the *Sustainable Development Transition Concept* -, the country currently lacks a mid-century strategy, against which shorter-term documents could be benchmarked. The country does not adequately account for environmental concerns in policy-making, and its government body in charge of environmental protection, the Committee on Environmental Protection, lacks influence. Without a system of intermediate and final evaluation for investment projects and mechanisms for screening investment projects against national development and environmental goals, Tajikistan has not been sufficiently selective in its approach to foreign investments.

7.1. State of play: economy, investment and climate change in Tajikistan

Economy and trade

Table 7.1. Key indicators on Tajikistan's economy

Population (2018)	9 100 837
Urbanisation rate (2018)	27%
Annual population growth (2018)	2.5%
Surface area	141 380 km^2
GDP (USD, current price, 2018)	7 523 million
GDP per capita (USD, current price, 2018)	827
Real GDP growth (year-on-year change, 2019)	5%
Inflation (average consumer price, y-o-y change, 2016)	6.0%
Exports of goods and services (% of GDP, 2017)	15.7%
Imports of goods and services (% of GDP, 2017)	40.9%
FDI, net inflows (% of GDP, 2018)	2.9%
General government net lending/borrowing (% of GDP, 2019)	-4.7%
Unemployment (% of total labour force, 2018)	10.9%
Remittances (% of GDP, 2018)	29.0%
Transparency, accountability and corruption in the public sector rating (1= most corrupt, 6 = least corrupt, 2017)	2.5

Source: World Bank (2019[1]), *World Development Indicators (database)*, World Bank, https://datacatalog.worldbank.org/dataset/world-development-indicators; IMF (2018[2]), *World Economic Outlook: October 2018*, International Monetary Fund https://www.imf.org/external/datamapper/GGXCNL_NGDP@WEO/OEMDC/ADVEC/WEOWORLD

Economy and demographics

Tajikistan has the lowest GDP per capita in the region and is the only low-income country in the former Soviet Union.[1] Tajikistan's population is predominantly rural; it has the lowest urbanisation rate of any country in Central Asia at 27% (see Table 7.1). Tajikistan's government has referred to the next fifteen years as the 'demographic window of opportunity', during which the government faces a challenge of providing adequate infrastructure and employment opportunities for the over 45% of the population who were under the age of 20 in 2015 and many of whom will enter the work force by 2030 (Ministry of Economic Development and Trade of the Republic of Tajikistan, 2016[3]).

Tajikistan's GDP plummeted in the 1990s following the breakup of the Soviet Union, falling from USD 6.8 billion in 1990 to USD 2.1 billion in 1996 before recovering. It

[1] The World Bank classified Tajikistan as a lower-middle income country from 2014 to 2016, but it was reclassified as a low-income country in 2017.

did not surpass its pre-independence levels until 2013. The service sector accounts for the largest portion of Tajikistan’s economy at 41%, but industry (27%) and agriculture (21%) remain important. Agriculture’s share of GDP is the largest in the region (World Bank, 2019[1]).

Trade

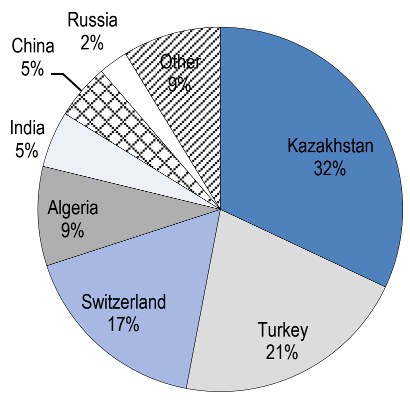
Tajikistan became a member of the World Trade Organisation in 2013. It is not a member of the Eurasian Economic Union.

Tajikistan’s exports are primarily extractives and, to a lesser extent, cotton textiles (see Figure 7.1(c)). Mineral products (mostly zinc ore and lead ore) account for 35% of Tajikistan’s exports by value, while metals and precious metals make up 23% and 17% respectively. Raw aluminium is Tajikistan’s single most important export (18% of total export value), and gold is a close second (17%). Most of Tajikistan’s exports classified as ‘textiles’ (13%) are raw or minimally refined cotton products, the two most important being raw cotton (6.7%) and non-retail pure cotton yarn (4.3%). Tajikistan’s imports are more diverse but concentrated in consumer goods, specifically textiles and machines (see Figure 7.1(d)). Lacking the domestic oil and gas industry of some of its neighbours, Tajikistan relies on hydrocarbon imports to meet demand. Refined petroleum accounts for 6.2% of total imports by value.

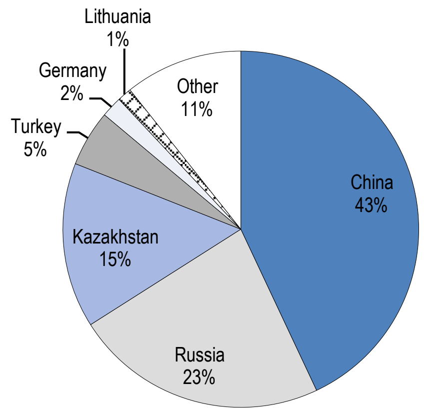
Kazakhstan is one of Tajikistan’s main trading partners: It is the destination of 32% of its exports and the origin of 15% of its imports (see Figure 7.1(a) and (b)). Chinese and Russian imports make up two thirds of Tajikistan’s total imports (43% and 23% respectively), but exports to these countries are far more modest (5% and 2% respectively). Similarly, Turkey and Switzerland are important export destinations (21% and 17%), but feature less prominently in Tajikistan’s imports (5% and 0.16%).

Figure 7.1. Trade of Tajikistan

(a) Export destinations (2017)

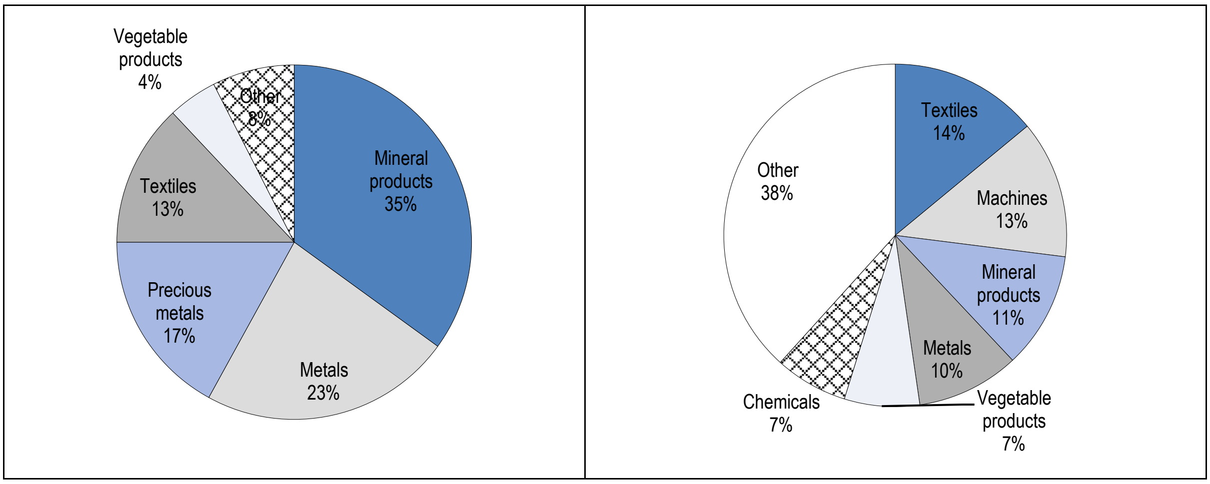


(b) Import origins (2017)



(c) Exports by category (2017)

(d) Imports by category (2017)



Source: Observatory of Economic Complexity (2017[4]), *Tajikistan: Exports, Imports and Trade Partners*, Observatory of economic Complexity, https://atlas.media.mit.edu/en/profile/country/tjk/

Investment climate

While Tajikistan has a relatively well-developed regulatory framework for investment, the poor implementation of these regulations has led to an unpredictable and non-transparent regulatory environment for investors to operate. Currently, there is an open investment regime where all forms of investment are welcome. Steps have been taken to simplify business registration, improve licencing and taxation as well as competition laws (UNCTAD, 2016[5]). However, many of these reforms are not implemented on the ground due to a weak rule of law and judiciary system, as well as corruption and a lack of correct interpretation of these laws. For example, businesses are required to make irregular advance tax payments, and are often fined through retroactive tax audits (World Bank, 2018[6]). The informal sector is large and very few new businesses are registered. According to the World Bank's 'Ease of Doing Business 2019', Tajikistan currently ranks 126th, comparing unfavourably with its neighbours such as the Kyrgyz Republic (70th) or Kazakhstan (28th).

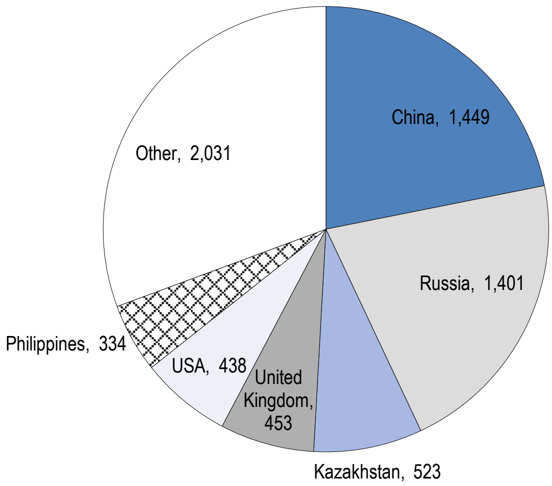
At the institutional level, the government has put in place structures to deal with investment policy and to promote investments, but further capacity is needed for these institutions to be more effective. The responsible body for investment policies is the Committee on Investment and State Property Management, while TajInvest is the investment promotion agency in charge of the promotion agenda. The Ministry of Economic Development and Trade, which is in charge of the development of free economic zones, also designs policies to attract investments in these zones. At the Presidential level, a public-private dialogue mechanism in the form of a Consultative Council on Improvement of Investment Climate has been established since 2007 to promote reforms to improve the climate for investments and entrepreneurship. Many of these institutions however need further capacity building, including TajInvest, which is not fully equipped to carry out its investment promotion activities (UNCTAD, 2016[5]).

The People's Republic of China and the Russian Federation are the two most important sources of FDI in Tajikistan, accounting for 22% and 21% respectively (see Figure 7.2). Other important FDI sources include Kazakhstan (8%), the United Kingdom (7%), the United States (6%) and the Philippines (5%).

The approach Tajikistan has taken in regards to large-scale investments is resulting in a considerable risk of debt stress. Gross government debt amounted to a third of Tajikistan's GDP in 2015, then rose to 44.8% in 2016 and surpassed 50% of GDP in 2017. Over 80% of this debt is to a single creditor, China's Export-Import Bank, which is linked to the Belt and Road Initiative (BRI) (Hurley, Morris and Portelance, 2018[7]). With existing mechanisms, the government has accepted loans for large-scale projects (notably Dushanbe's Chinese-financed coal-fired power plant) that it was then unable to repay. Such defaults led to debt settlements that have included licenses for mineral deposit extraction (Emerging Markets Forum, 2019[8]) and even transfer of sovereignty over disputed territory to China (Hurley, Morris and Portelance, 2018[7]). Its debt levels are considered unsustainable and both the IMF and the World Bank assess Tajikistan as having a 'high risk' of debt distress (Hurley, Morris and Portelance, 2018[7]).

Figure 7.2. FDI in Tajikistan by source country, 2007-2015

USD million

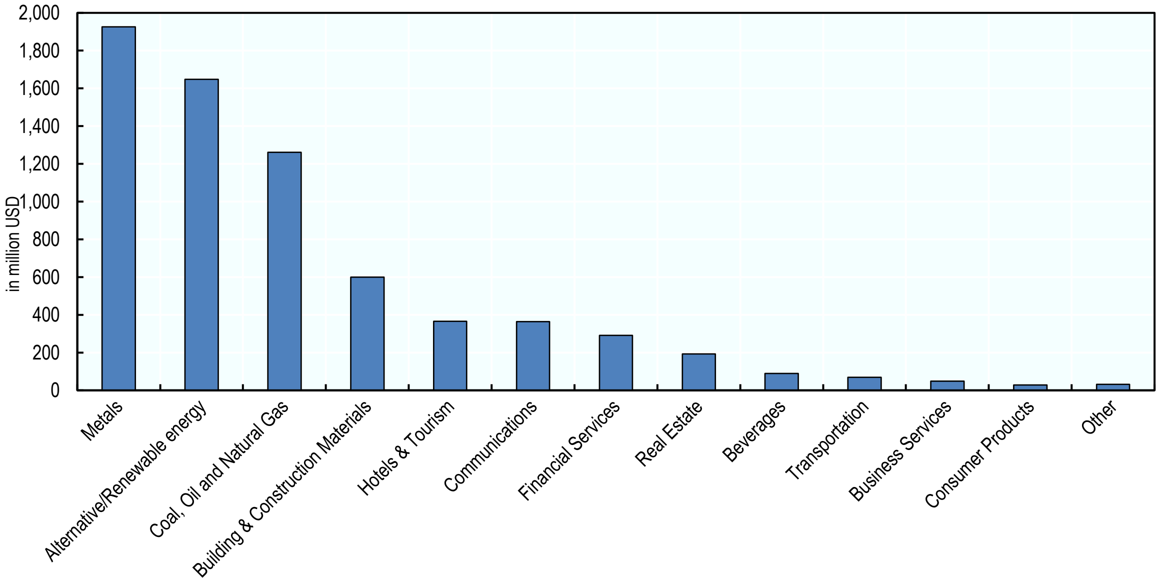


Source: Chamber of Commerce and Industry of the Republic of Tajikistan (n.d.[9]), *Аналитические данные о притоке иностранных инвестиций в экономику Республики Таджикистан в период 2007-2015 г. [Analytical data on foreign investment inflow into the economy of the Republic of Tajikistan for the period 2007-2015]*, Chamber of Commerce and Industry of the Republic of Tajikistan.

Tajikistan has been able to attract limited cross-border greenfield FDI projects totalling around USD 7 billion between 2003 and 2017, second-lowest in Central Asia after the Kyrgyz Republic's USD 6.3 billion and significantly lower than other regional peers. Foreign investors in Tajikistan have been mainly investing in metals projects (28%), alternative and renewable energy (24%), and coal, oil and natural gas (18%) (see Figure 7.3). Infrastructure related investments have been rather limited. For example, investments into construction materials reached USD 600 million (or 9%) while the transport sector received the least investments of only USD 70 million (or 1%) of the total announced greenfield FDI projects in Tajikistan. Recognising the important role of foreign investors to achieve sustainable growth, the *National Development Strategy 2016-2030* (see section 7.3 on the Tajikistan's key strategic documents) aims to attract as much as USD 55 billion in FDI by 2030. Such investments are aimed to increase the gross fixed capital formation to GDP by the private sector, which has averaged only 4.4% since 2000, which is much lower than the 21% average investment rate in the CIS countries (World Bank, 2018[6]).

Figure 7.3. Greenfield FDI in Tajikistan by economic activity, 2003-2017

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



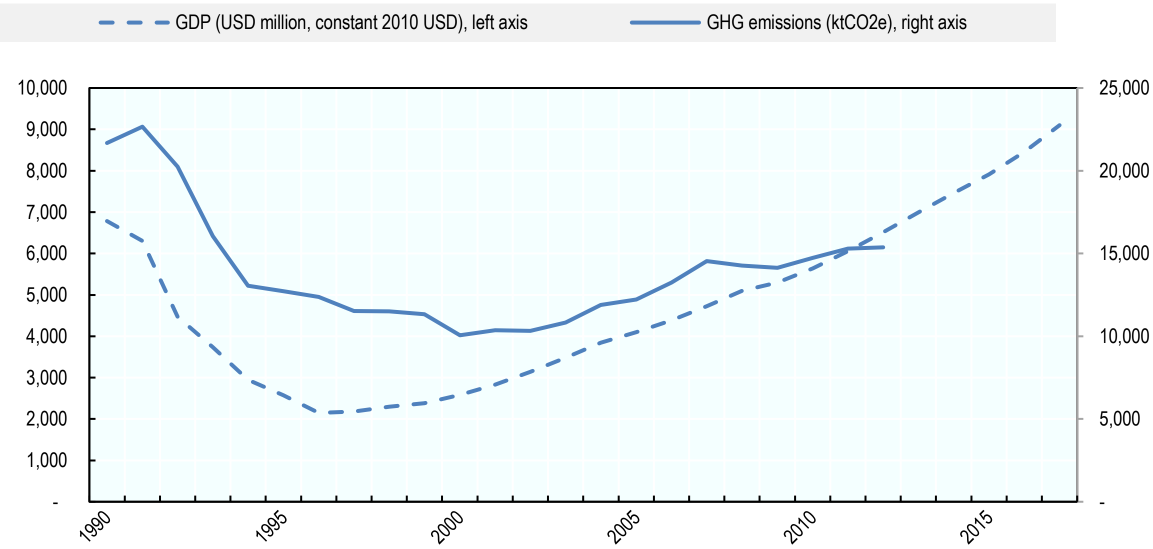
Note: Other includes: Automotive OEM; Software & IT services; Textiles; Automotive Components; Minerals; Food & Tobacco.
Source: OECD based on fDi Markets (2019[10]), *fDi Markets: the in-depth crossborder investment monitor (database)*, fDi Markets, https://www.fdimarkets.com/

Climate change

Tajikistan's contribution to global greenhouse gas emissions is miniscule at 0.0003% (World Bank, 2019[1]), and its per capita GHG emissions are the lowest in the region at 1.9 tCO_2e per capita, having contracted since 1990 (4.1 tCO_2e per capita). Tajikistan's greenhouse gas (GHG) emissions intensity (emissions per unit of GDP) has also reduced from 3.2 kg of CO_2e per USD of GDP in 1990 to 2.4 $kgCO_2e$ by 2012. However, this is still considerably higher than the OECD average of 0.4 kg of CO_2e.

Tajikistan's greenhouse gas emissions dipped sharply immediately following independence and have only reached about three quarters of their pre-independence peak. Over the same period, the economy shrank over the 1990s to less than a third of its original size, then began steadily recovering in 1997 and surpassed its Soviet-era peak in 2013 (see Figure 7.4).

Figure 7.4. GHG emissions and GDP of Tajikistan, 1990-2017



Source: World Bank (2019[1]), *World Development Indicators (database)*, World Bank, https://datacatalog.worldbank.org/dataset/world-development-indicators

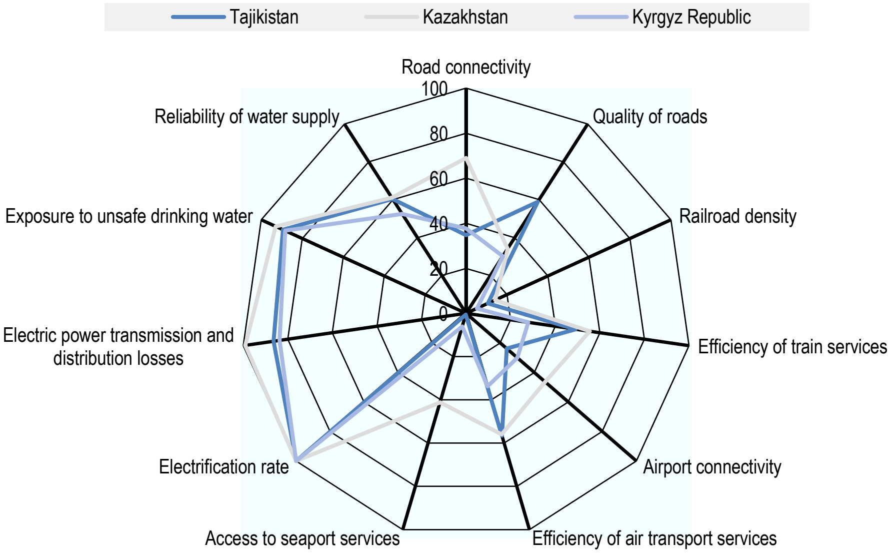
In 1990, the sectoral breakdown of Tajikistan's emissions more closely resembled its neighbours': 67% of emissions came from the energy sector, while agriculture (20%), industry (10%) and waste (3%) accounted for the rest. By 2010, the agriculture sector's share grew to 60%, while the energy's share had dropped to 15% (Government of the Republic of Tajikistan, 2014[11]).

Tajikistan is particularly vulnerable to the effects of climate change. From 1950 to the present day, Tajikistan has lost about 20% of its glacier cover, and current melt rates will lead to average losses of about 2 km^3 per year. Certain parts of the country (the south, western Pamir and the mountains of central Tajikistan) could face up to 5°C of warming by the end of the century, leading to increased incidence of heat waves and droughts. Altered precipitation patterns combined with rising temperatures pose major threats to Tajikistan's sizeable agriculture sector as well as future energy and food security (Government of the Republic of Tajikistan, 2014[11]).

7.2. Tajikistan's infrastructure needs and current plans

Tajikistan's infrastructure is substandard, despite gradual improvements (see Figure 7.5). Inadequate infrastructure, particularly in energy and transport, contributes to the high trade costs that restrict the country's access to nearby markets like that of China and Afghanistan. Deteriorating Soviet-era infrastructure such as irrigation channels, roads, dams, bridges and river embankments has increased the population's exposure to risks associated with extreme weather events and earthquakes (World Bank, 2018[6]).

Figure 7.5. Quality of infrastructure in Tajikistan



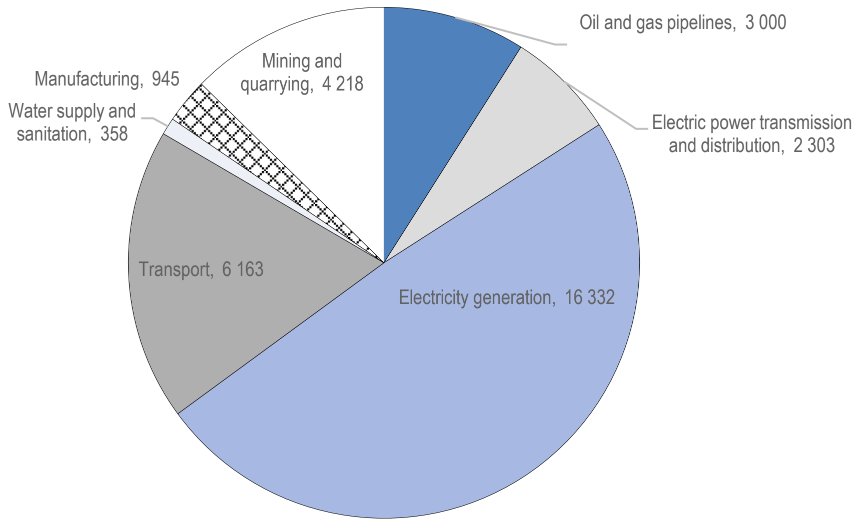
Source: World Economic Forum (2017[12]), *The Global Competitiveness Report 2017-2018*, World Economic Forum, http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf.

Out of the USD 33.3 billion of under construction and planned investments tracked, energy projects account for over 58% (USD 21.6 billion) of projects while transport and mining and quarrying make up 18% and 13% respectively. Finally, manufacturing and water supply and sanitation only account for 3% (USD 945 million) and 1% (USD 358 million) respectively of planned and under construction investment projects. The energy investments are divided into electricity generation projects (over 49% or USD 16.3 billion) and electric power transmission and distribution (7% or USD 2.3 billion) (see Figure 7.6). Such strong focus on hydroelectric power plants is in line with the government's objective to develop its capacity to sell excess power to neighbouring countries, particularly Afghanistan and Pakistan. One of the most significant sources of financing for large infrastructure projects such as transport and energy facilities, as well as power plants and power lines is China's BRI, which the government considers as a tool to finance its national development projects as part of the National Development Strategy until 2030. In fact, the BRI is expected to have a significant impact for Tajikistan, as it is considered the geographic starting point for a number of BRI projects.

Figure 7.6. Infrastructure projects in Tajikistan by sector

Planned and under construction

In USD million



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

Transport

Tajikistan ranks 147th out of 167 countries in the World Bank's Logistics Performance Index with a score of 2.29 (out of 5), the lowest in the region. Its infrastructure (2.17) and customs (2.02) are particularly weak (World Bank, 2018[13]).

Most of Tajikistan's cargo and passengers travel by road. 96% of freight turnover and 99% of overland passenger turnover in Tajikistan occurred by motorway in 2016. Motor transport accounted for 74.5% of total passenger turnover, while air transport made up the majority of the remaining passenger turnover (24.7%) (Agency for Statistics under the President of the Republic of Tajikistan, 2017[14]). Tajikistan's rail network, originally conceived as a part of the wider Soviet system, consists of two unconnected lines (one running from Tashkent to the Fergana valley through Tajikistan in the north, the other linking Dushanbe to southern Uzbekistan). This particularity explains in part the small modal share of rail in both freight and passenger transport (ITF, 2019[15]).

With no access to the sea, Tajikistan relies mainly on road transportation for its trade. Its road infrastructure capacity has to increase by 191% by 2030 and by 516% by 2050 to maintain network performance. Several international roads forming parts of CAREC corridors that pass through Tajikistan have been identified as requiring particular attention for capacity increases, such as the roads between Samarkand in Uzbekistan and Tajikistan's capital Dushanbe or between Tashkent and Khujand, a city in northern Tajikistan. In Tajikistan, 83% of the roads are unpaved because the traffic currently passing through them does not justify paving them, but projected increases to passenger and freight traffic may surpass the economic threshold to warrant paving (ITF, 2019[15]).

Lack of connectivity, both domestically and internationally, is a major barrier to Tajikistan's integration into regional and global value chains. Currently, all of

Tajikistan’s international rail links run through Uzbekistan, and tensions between Tajikistan and Uzbekistan have led to border closures in the past. To circumvent Uzbekistan and diversify its rail links, Tajikistan announced that it will build international rail links to Afghanistan as part of the Turkmenistan-Afghanistan-Tajikistan (TAT) railway, but improved relations with Uzbekistan seem to have reduced Tajikistan’s appetite for the project (Putz, 2018[16]). Benchmarked against Germany, a global leader in transport and logistics, Tajikistan is only 53% as well connected, several percentage points below its neighbours. It costs about USD 245 for one tonne of goods to reach 20% of global GDP from Tajikistan, meanwhile in Germany the same access can be attained at a smaller cost of around USD 30 (ITF, 2019[15]).

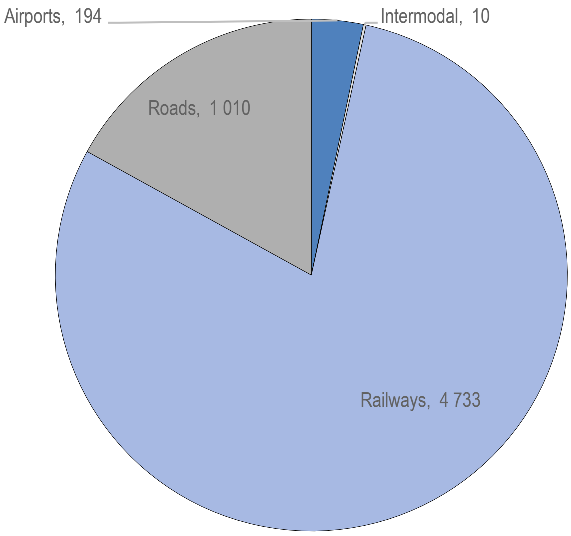
Tajikistan’s planned and current transport infrastructure projects account for around USD 5.9 billion, and consist primarily of railway projects (80% or around USD 4.7 billion) (see Figure 7.7). Although at a much lower level, investments in the road sector come second at around USD 1 billion (or 17%), followed by limited investments in airports (USD 194 million or 3%). Tajikistan has also been investing in logistics centres to increase the efficiency of transit transport in the country and the region but so far, very limited amounts have been allocated. The projects under construction are mainly brownfield investments that aim to upgrade sections of roads linking different economic centres in Tajikistan as well as connecting the country with neighbouring states (Table 7.2) such as for example the Dushanbe-Uzbekistan Border Road Improvement Project, which will connect Dushanbe to the Tajikistan-Uzbekistan border.

While projects under construction are mainly focusing on roads, the planned projects instead have a focus on railways. As shown in Table 7.2, these are mostly large-scale, often cross-border investments that aim to increase the connectivity of the country with neighbouring markets. This includes the construction of the Russia-Kazakhstan-Kyrgyz Republic-Tajikistan railway and the China-Kyrgyz Republic-Tajikistan-Afghanistan-Iran railways. Such investment on improving regional transport are considered to be the main sources of broad-based economic growth as they will increase the movement of goods, people and services in the region, and will allow Tajikistan to better include itself in regional and global value chains (TRACECA, n.d.[17]).

Figure 7.7. Transport projects in Tajikistan by sub-sector

Planned and under construction

In USD million



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

Table 7.2. Hotspot projects in the transport sector in Tajikistan

(a) Under construction

Name	Sub-sector	Description	Project value (USD million)	Funding source	Type of investment
Kulyab-Kalaikhumb Road Project (Sections A and F)	Road	The project will upgrade two sections of road linking the southwestern region of Khatlon with the eastern Gorno-Badakhshan Autonomous Region. Such a project will also increase trade with neighbouring countries.	116	ABUDF; IsDB; KFAED; SFD; Government of Tajikistan; OFID	Brownfield
Dushanbe-Uzbekistan Border Road Improvement Project	Road	The project will rehabilitate a 5 km road connecting Dushanbe to the border with Uzbekistan. It is considered as the last missing road of the Asian Highway Network and the CAREC Corridor 3, which is old and in poor condition.	106	EBRD; AIIB	Brownfield

(b) Planned

Name	Sub-sector	Description	Project value (USD million)	Funding source	Type of investment
Karamika-Vahdat Section of Russia- Kazakhstan-Kyrgyz Republic-Tajikistan Railway	Railways	The project will have a total length of 1 181 km, including 296 km in the territory of Tajikistan from Karamik to Vakhdat. The railway link is expected to link Tajikistan to other countries and strengthen the movement of goods, services and people in the region. A preliminary feasibility study has already been completed in 2015 and the	2 500	Implementer of the project: SOE *Rohi ohani Tojikiston* (Tajik Railways)	Greenfield

		total expected construction period is ten years. The estimated cost of construction for the Tajikistan section is USD 2.5 billion.			
Karamyk - Vakhdat - Kurgan Tyube - Kalkhazabad - Nizhny Pyanj Railway Construction Section of China – Kyrgyz Republic-Tajikistan - Afghanistan-Iran Railway	Railways	The project is one of the planned new railway constructions that will link China with Iran crossing Tajikistan, Kyrgyz Republic and Afghanistan.	2 000	Bank of China, Kyrgyz Republic, Tajikistan, Afghanistan, Iran, World Bank, ADB; USA (unspecified)	Greenfield
Dushanbe-Osh-Kashgar Railway Construction Section of Railway section of China – Kyrgyzstan- Tajikistan - Afghanistan- Iran Railway	Railways	The project is one of the planned new railway constructions that will link China with Iran crossing Tajikistan, Kyrgyz Republic and Afghanistan.	1 900	MTC of Tajikistan	Greenfield
Reconstruction and rehabilitation Kalaikhum-Khorog-Murghab – Tokhtamysh road	Road	The project entails the reconstruction and rehabilitation of a 80 km section between Kalaihum and Vanj. It will significantly reduce travel time and the freight cost by 20%. A preliminary feasibility study was already conducted by the China Roads and Bridges construction Corporation in 2014.	239	MTC of Tajikistan	Brownfield
Construction of Danghara Airport	Airport	The project is part of the National Development Strategy to 2030 and the State Target Program on Development of Transport Complex until 2025 to promote infrastructure and strengthen material and technical upgrades.	138	OJSC Dhangara Airport	Greenfield

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. ABUDF = Abu Dhabi Fund for Development; ADB = Asian Development Bank; AIIB = Asian Infrastructure Investment Bank; EBRD = European Bank of Reconstruction and Development; IsDB = Islamic Development Bank; KFAED = Kuwait Fund for Arab Economic Development; MTC = Ministry of Transport and Communications (of Tajikistan); OFID = OPEC Fund for International Development; OJSC = open joint-stock company; SFD = Saudi Fund for Development

Source: OECD analysis based on available data from CAREC (2019[18]), CSIS (2019[19]), TAJinvest (n.d.[20]) and OFID (2019[21]) as of June 2019.

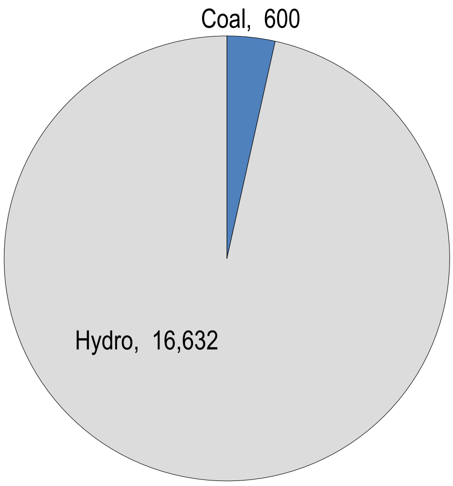
Energy

The overall quality of Tajikistan's energy infrastructure is poor. Although the country has achieved universal access to electricity, existing systems function inefficiently. The quality of transmission and distribution systems lead to losses of 17.1% (World Economic Forum, 2017[12]) and firms experience upwards of 6 power outages per month on average (World Bank, 2019[1]).

Tajikistan is a net importer of oil and natural gas, importing 0.97 Mt of oil in 2016 and 0.14 Mtoe of natural gas in 2010 (the last year of available data). Although historically an importer of electricity as well, it has begun exporting electricity (0.11 Mtoe in both 2015 and 2016). Given its connectivity shortcomings and dependence on imports of both oil and gas, Tajikistan faces major energy security concerns. The President has referred to 'energy independence' as one of the government's top priorities for the future development of Tajikistan (President of the Republic of Tajikistan, 2018[22]). In particular, Tajikistan aims to increase its electricity generation capacity to power industrial development (particularly energy-intensive aluminium production) and increase exports. It also aims to diversify its sources of electricity away from hydroelectric dams, which currently generate 97% of the country's electricity (see Figure 7.8). Tajikistan's *National Development Strategy to 2030* names both renewables (wind, solar) and coal-fired power plants as possibilities for increased capacity.

Tajikistan's focus on coal derives from energy security concerns and considerable unexploited domestic reserves. The country's dependence on electricity generation from hydroelectric dams leads to seasonal electricity shortages in the winter, leaving an estimated 1 million people without a reliable supply of electricity (UNECE, 2017[23]). Given the availability of domestic coal deposits, Tajikistan has turned towards coal. Tajikistan mined 1.05 million tonnes of coal in 2015, and the *National Development Strategy* sets ambitious production targets for the future: 4.05-5.3 Mt by 2020, 6.9-10.3 Mt by 2025 and 10.4-15.1 Mt by 2030. Although coal currently generates only 3% of electricity, all of Tajikistan's coal-fired generation units came online in the past ten years, and further projects have been announced (End Coal, n.d.[24]).

Figure 7.8. Electricity generation by fuel (GWh, 2016)

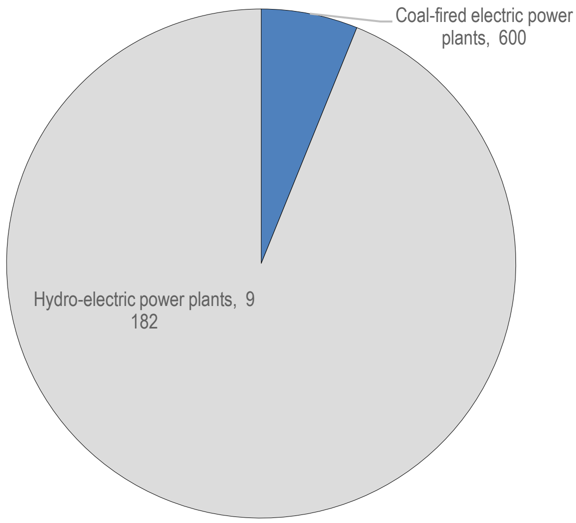


Source: IEA (2018[25]), *IEA World Energy Balances 2018*, International Energy Agency, https://webstore.iea.org/world-energy-balances-2018

Tajikistan's current and planned energy investments are in line with the government's strategies to increase the capacity of renewables for electricity generation. For instance, Figure 7.9 shows that 94% of electricity generation projects are in hydropower (or 9.2 GW), while coal-fired electric power plants only account for 6% of the total electricity generation projects. Tajikistan has the eighth highest hydropower potential in the world with some 220 terawatt-hours technically recoverable, however many plants require rehabilitation given that they were built during the Soviet era. Currently, hydropower potential is only exploited at 4-5%. Such projects would therefore help to address the winter crisis and reduce the imbalance of excess energy supply during the summer months and the energy deficit during the winter. They would also contribute to the *National Development Strategy to 2030* to increase electricity generation from 17.1 billion kW/h in 2015 to 26.2 in 2020, and ultimately to 40.7-45 in 2030. Besides hydropower, there are no other renewables projects under construction or being planned, although other renewable energy sources do exist compromising 3% of Tajikistan's energy profile.

Figure 7.9. Electricity generation projects in Tajikistan, by fuel

In MW



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

A further analysis of the hotspot energy projects under construction and planned (see Table 7.3) also shows that most important projects are in hydropower, but there are also a number of large-scale regional projects where Tajikistan is a participant country. One of the most significant projects currently under construction is the Roghun Hydropower Plant, which is the main pillar of the *National Development Strategy of Tajikistan to 2030*. Construction of the 3 600 MW plant will cost almost USD 4 billion and is expected to be finished by 2032 when it will be commissioned. The project will contribute to the objectives of the strategy of poverty reduction and growth, by boosting exports of hydropower and reducing energy shortages in the country. At the same time, such construction also entails social and economic risks, which will have to be managed by the government in order to avoid instability (World Bank, 2018[6]).

At the regional level, Tajikistan is participating in oil and gas pipeline and electricity transmission projects. For example, Line D of the Central Asia-China gas pipeline is one of the largest natural-gas mega projects in the country that will cost around USD 3 billion, with major financing from China. Another significant project is the World Bank-funded Central Asia-South Asia Electricity Transmission and Trade Project (CASA-1000), which will help Tajikistan and the Kyrgyz Republic to export summer surplus electricity to neighbouring Kazakhstan, Uzbekistan, Afghanistan and Pakistan. When realised, the project is expected to integrate the electrical networks of Central and South Asia. Tajikistan is poised to benefit considerably from this project with increased electricity exports, spurring additional development in the country.

Table 7.3. Hotspot projects in the energy sector in Tajikistan

(a) Under construction

Name	Sub-sector	Description	Project value (USD million)	Capacity (MW)	Funding source	Type of investment
Rogun Hydropower Dam Project	Hydro	The project is expected to boost hydropower exports and limit energy shortages, therefore contributing to growth and reduction of poverty across the country. The project is expected to be fully commissioned in 2032.	3 900	3 600	Salini Impregilo SpA and OJSC Rogun HPP	Greenfield
Line D of Central Asia-China gas pipeline (Tajikistan Section)	Oil and gas pipeline	The existing three lines of the pipeline run 1830 km from Turkmenistan to China through Uzbekistan and Kazakhstan. The fourth line, Line D, whose construction started in 2014 and is expected to be completed in 2020, will run 1 000 km from Turkmenistan to China via Uzbekistan, Tajikistan and the Kyrgyz Republic.	3 000	N/A	China (unspecified)	Greenfield
CASA-1000	Electric power transmission and distribution	CASA-100 is a regional project for the construction of a power transmission line between - Tajikistan, Afghanistan, Pakistan and the Kyrgyz Republic. The Tajikistan portion of CASA-1000 is a 170-km transmission line from north to south covering some 60 villages.	1 170	1 000	Governments of Kyrgyz Republic, Tajikistan (Ministry of Energy & Industry), Afghanistan, Pakistan	Greenfield
Nurek Hydropower Rehabilitatio n Project Phase I	Hydropower	The objectives of the First Phase of Nurek Hydropower Rehabilitation Project for Tajikistan are to rehabilitate and restore the generating capacity of three power generating units of Nurek hydropower plant, improve their efficiency, and strengthen the safety of the Nurek dam.	350	3 000	World Bank; AIIB; EDB; Other sources	Brownfield
Cross Regional Power Trade	Electric power transmission and distribution	The project aims to facilitate cross-border trade of electricity of summertime hydropower surplus in Kyrgyz Republic and Tajikistan. As part of the project, the high voltage transmission infrastructure will be constructed and reinforced.	301	N/A	EBRD; World Bank; EIB	Brownfield

(b) Planned

Name	Sub-sector	Description	Project value (USD million)	Capacity (MW)	Funding source	Type of investment
Fon-Yagnob	Coal-fired power plant	The project is promoted by the Investment Promotion Agency of Tajikistan as one of the priority projects to ensure reliable electricity supply during the winter period.	600	600	N/A	Greenfield

Hostav HPS	Hydropower	The project, scheduled for completion in 2026, is a key part of the strategy to eliminate the winter energy deficit. It is expected that the project will create employment for 26 000 people annually.	2 309	1 200	N/A	Greenfield
Shurob HPP	Hydropower	The project is 100 km east of the capital Dushanbe and is expected to produce 3.2 billion kWh per year.	1 500	850	N/A	Greenfield
Shtiyon HPP	Hydropower	The project is a priority project to tackle Tajikistan's winter crisis deficit. The project has been selected based on certain criteria such as ensuring energy adequacy, socio-economic gains, and reduction of water spillages.	1 500	160	N/A	Greenfield
Anderob Power Plant	Hydropower	The project aims to overcome the current electricity shortages in Tajikistan and meet the growing electricity demand in Tajikistan. It will contribute towards achieving the SDG 7 to address electricity shortages and the SDG 8 by creating employment for around 16 000 people.	1 300	650	N/A	Greenfield

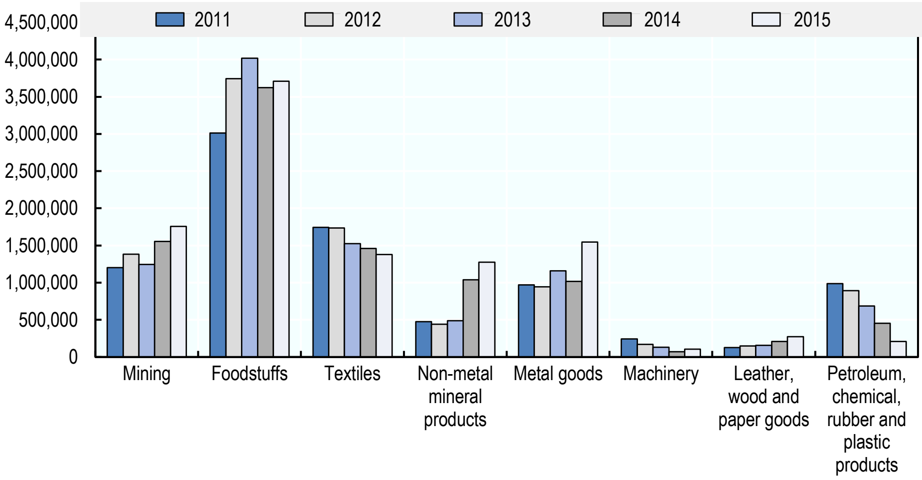
Note: Refer to the Preamble for the present report's definition of 'hotspot' and other information on how the projects above were selected and prioritised. AIIB = Asian Infrastructure Investment Bank; EBRD = European Bank of Reconstruction and Development; EDB = Eurasian Development Bank; EIB = European Investment BankOJSC = open joint-stock company
Source: OECD analysis based on accessed data from ADB (2019[26]), CAREC (2019[18]), CSIS (2019[19]), Dealogic (2019[27]), EBRD (n.d.[28]), IJGlobal (2019[29]), TAJinvest (n.d.[20]), World Bank (2019[30]) as of June 2019.

Industry and mining

The National Development Strategy for the period up to 2030 aims to increase the share of industry in Tajikistan's GDP from 12.3% in 2015 to 12.5-13.5% by 2020, 16-16.5% by 2025 and 20-21% by 2030. It also aims to decrease the role of extractives in favour of production further up value chains. Extractives have, however, played a large and increasing role in Tajikistan's recent industrial output, while light industry (textiles) has declined and machinery's already small share has shrunk (see Figure 7.10).

Figure 7.10. Mining and industrial production of Tajikistan, 2011-2015

In thousand TJS (Tajik somoni 1998 prices)



Source: Agency for Statistics under the President of the republic of Tajikistan (2018[31]), Выпуск промышленной продукции в разбивке по отраслям в постоянных ценах, 1980-2017 [Output of industrial production broken down by sub-sector in constant prices, 1980-2017], Agency for Statistics under the President of the republic of Tajikistan, https://www.stat.tj/ru/tables-real-sector

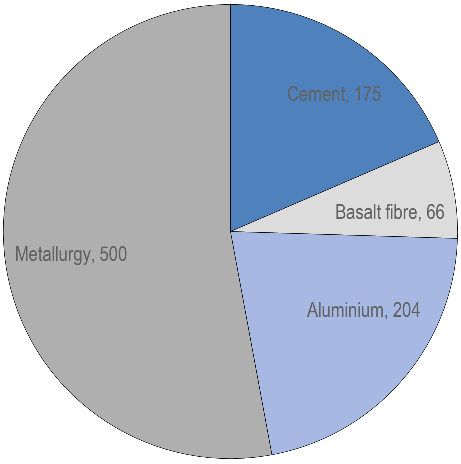
Tajikistan's planned and under construction manufacturing projects are mainly focusing on the metallurgical plants (53%) out of a total of USD 944 million, followed by aluminium plants (22% or USD 204 million), cement manufacturing (19% or USD 175 million) and basalt fiber production (7% or USD 65.8). Such projects reflect Tajikistan's leading position in the Central Asian smelting industry, and are in line with the government's priority to develop heavy industry (World Bank, 2018[6]). Progress in other industries however, is rather limited reflecting Tajikistan's narrow economic base and limited progress towards diversification.

A closer analysis of planned and under construction projects also demonstrate Tajikistan's reliance on heavy industries and the mining sector (Table 7.4). Such projects have been mainly promoted by Tajikistan's Investment Promotion Agency as priority investments. One of the largest projects currently under construction is the Istiqlol Metallurgical Plant, the construction of which started in 2014 and which is expected to produce 50 000 tons of lead and 50 000 tons of zinc per year. Upon commissioning, the project would create over 2 500 jobs, with domestic workers constituting 90% of the labour.

Figure 7.11. Industry and mining projects in Tajikistan by sub-sector

Planned and under construction

In USD million



Source: OECD based on ADB **(2019[26])**, IJGlobal **(2019[29])** and TAJinvest **(n.d.[20])** as of June 2019.

Table 7.4. Hotspot projects in the industry and mining sectors in Tajikistan

(a) Under construction					
Name	Sub-sector	Description	Project value (USD million)	Funding source	Type of investment
Istiqlol Metallurgical Plant	Fabricated metal products	Production started in 2014 and it will produce 50 000 tonnes of lead and 50 000 tons of zinc per year. It is expected that once the project will be commissioned, it will create 2 500 new jobs for Tajik nationals.	500	ADB	Greenfield
(b) Planned					
Name	Sub-sector	Description	Project value (USD million)	Funding source	Type of investment
Mining of Silver at the Koni Mansuri Kalon Deposit	Mining of silver	The project is for the development of a silver deposit containing 1 Mt of ore. It aims to boost the country's export potential and create new jobs.	4 000	SOE	Greenfield
Talco Energy-Metallurgical Company (Talco)	Basic metals	The project aims to increase aluminium production up to 200 000 tonnes per year and reduce aluminium cost price.	204	Tajik Aluminum Company (TALCO)	Greenfield

Talco Gold Konchoch deposit project	Mining of gold	The project entails mining, extraction and processing of ore, and further production of gold, silver and antimony products. The expected duration of the project implementation is between two to three years.	200	The project is expected to be financed by private capital	Greenfield
Construction of a cement plant	Cement	The project entails the production of high-quality cement to be sold in the domestic market. The estimated payback period of the project is between four to five years and is expected to create between 60-70 jobs.	175	The project is expected to be financed by private capital	Greenfield

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
Source: OECD analysis based on accessed data from ADB (2019[26]) and TAJinvest (n.d.[20]) as of June 2019.

Water

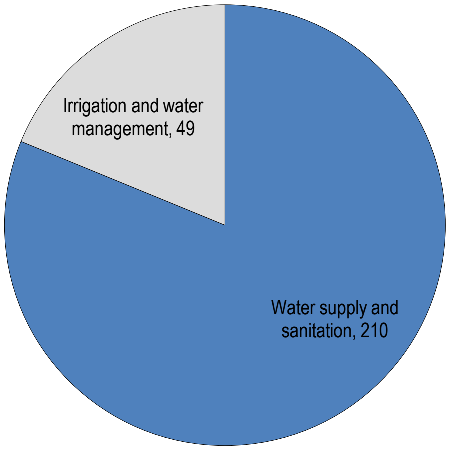
Tajikistan has abundant water resources, where the largest rivers of Central Asia originate, providing over 70% of all drinking water resources of the region. The use of transboundary rivers by the countries in the region makes them economically dependent on water. This has often led to low-level frictions between Tajikistan and the Kyrgyz Republic over water access and pasturage in the Fergana. Despite the abundant water resources, Tajikistan uses only 20% of the available water potential (The State Committee on Investment and State Property Management of the Republic of Tajikistan, 2018[32]) and only three out of four people have access to a clean water source (World Bank, 2018[6]). Moreover, the irrigation infrastructure is also largely deficient. For instance, some 50% of the water distribution system and approximately 65% of the drainage system is considered dysfunctional (European Commission, 2014[33]).

Current and planned water projects amount for around USD 258 million, and they are mostly focused on water supply and irrigation (81% or USD 210 million) and irrigation and water management (19% or USD 49) (see Figure 7.12). Relevant investments include projects to build climate resilience such as climate proofing flood and mudflow protection infrastructure, as well as irrigation and drainage infrastructure. For example, the Zarafshon Irrigation Rehabilitation and Management Improvement Project financed by the World Bank aims to improve the management of water resources and irrigation in the northern part of the country. Such a project is expected to boost crop yields and increase food security for the local inhabitants.

Figure 7.12. Water projects in Tajikistan by sub-sector

Planned and under construction

In USD million



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

7.3. 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

Tajikistan has two main development strategies, the *National Development Strategy for the period to 2030* and the *Sustainable Development Transition Concept* (2007-2030) (see Tables 7.5 and 7.6). Tajikistan could benefit from an overarching strategy defining the country's development objectives to 2050 in the context of the Paris Agreement, which Tajikistan ratified in 2017. A mid-century strategy, against which shorter-term documents would benchmark their own objectives, could help Tajikistan avoid costly lock-in to unsustainable development pathways, such as the recent pivot towards coal-fired power plants to diversify its electricity generation capacity. A longer-term vision could help the government weigh the costs and benefits of policy decisions and infrastructure development options.

The *Law on State Forecasts, Concepts, Strategies and Programmes of Socioeconomic Development* (2003) defines a hierarchy of documents from long-term "concepts" of socioeconomic development (15 years, adjusted every 5), strategies (10 years, adjusted halfway) and programmes (3-5 years) (UNECE, 2017[23]).

In practice, however, the terms 'concept', 'strategy' and 'programme' seem to be applied somewhat more arbitrarily with variable timeframes. The *Sustainable Development Transition Concept* (2007-2030), for instance, covers a 24-year period, while the 2016 *National Development Strategy for the period until 2030* covers 15 years. Programme are particularly variable: the *State Environmental Programme* (2009-2019) lasts half as long as the *State Programme for Research and Conservation of Glaciers* (2010-2030).

A well-defined hierarchy, from long-term documents (concepts and strategies) cascading through to medium-term and near-term documents (programmes and plans), allows lower-level documents to link their goals with longer-term objectives. In Tajikistan's existing strategic documents, these links appear to be absent, for example, the *National Development Strategy to 2030* does not refer to *the Sustainable Development Transition Concept*, despite a number of overlapping goals.

Institutional set-up and decision-making processes

Tajikistan lacks a dedicated environment ministry. The Committee on Environmental Protection, which is not an integral part of the government but rather a body subordinate to it, is responsible for most environment-related policy areas. As a result, the Committee lacks the authority to influence in coordination bodies and consultations on policies and strategies with environmental impacts, as evidenced by the poor integration of environmental concerns in sectoral documents (UNECE, 2017[23]).

The National Development Strategy identifies poor coordination across government bodies as a barrier to policy implementation. Previous efforts to address coordination concerns led to the creation of the National Development Council under the President in 2007 to facilitate communication and cooperation across the government (Ministry of Justice of the Republic of Tajikistan, 2007[34]). Overall, horizontal coordination mechanisms are relatively strong in Tajikistan, but relevant coordination bodies regularly exclude the Committee on Environmental Protection. The bodies charged with policy coordination on areas as diverse as public health and investment climate improvement do not include a representative of the Committee (UNECE, 2017[23]).

The *Programme for Medium-Term Development* (2016-2020) tasks the Presidential Administration and the finance and economy ministries with improving coordination across ministerial portfolios to better deliver policy coherence, and USD 2 million was earmarked for the task. During this review of coordination mechanisms, the government should reconsider the status of the Committee on Environmental Protection and its voice in coordinating bodies.

Tajikistan also lacks a system of intermediate and final evaluation of investment projects (Emerging Markets Forum, 2019[8]). Improved mechanisms for screening investment projects against national development and environmental goals could help Tajikistan more selectively harness foreign investment when the projects are in the country's best interest. Given the number of large-scale infrastructure projects in Tajikistan and the state of public finances, its debt situation could worsen if not managed appropriately. By articulating the government's long-term development and climate goals more clearly and consistently in a mid-century development strategy, Tajikistan would be better equipped to weigh the costs and benefits of large-scale infrastructure development projects.

List of relevant strategic documents

Table 7.5. Main strategic documents in force

	Status	Time Horizon	Sectoral Coverage	Main objectives

First Nationally Determined Contribution (NDC)	Submitted in 2017	2017-2030	Economy-wide	• Unconditional target: not exceed 80-90% of the 1990 level of greenhouse gas emissions by 2030, 1.7-2.2 tons in CO_2e per capita • Conditional target: target of 65-75% of the 1990 level of greenhouse gas emissions by 2030, 1.2-1.7 tons in CO_2e per capita • Main sectors targeted for emission reduction: Water (linked with improvement in irrigation, water resource management and protection of glaciers), Industry (introduction of new technologies), Transport (development of low-emission transport infrastructure), Energy (transition to renewable energy sources) • Main adaptation tool: the list of strategic documents mentioned below
National Development Strategy for the period until 2030	Adopted in 2016	2016-2030	Governance, planning, transport, energy, water, industry	• Industrial development through the implementation of infrastructure projects and promoting the rational use of land, water and energy resources, as well as an aim to increase production capacities • Develop an effective public administration system • Human capital development, focusing on improving levels of education, science, health, social protection, living environment and social equality • Improve the investment climate and promote growth in the financial sector • Increase access to water supply systems and sanitation • Increase electricity generation, aiming to reach 26.2 billion kWh by 2020, 37.5-37.6 billion kWh by 2025 and 40.7-45 billion kWh by 2030 • Improve connectivity, especially to neighbouring countries and key markets, by developing transport and telecommunications
State Environmental Programme for the period 2009-2019	Adopted in 2009	2009-2019	Governance, energy, water, industry	• Promote the efficient and rational use of natural resources • Ensure environmentally safe processes in production • Introduce and use environmentally friendly technologies • Increase the level of responsibility of government bodies and society • Create institutions and organisations that support an environmental mind-set to development • Produce reports on the state of the environment in various sectors, to promote environmentally friendly practices
Programme on Improving Access of the Population to Clean Drinking Water for the period 2008-2020	Adopted in 2006	2008-2020	Water	• Rehabilitate existing water systems and construct new centralised water supply systems with the use of modern technology • Construct local water supply systems (e.g. water wells) • Introduce modern methods of water disinfection • Promote a more efficient use of water resources

Programme of Water Sector Reform for the period 2016-2025	Adopted in 2015	2016-2025	Water	• Enable the implementation of integrated water resource management • Institutional reforms in the water sector to promote transparency and create accountable structures • Transition from administrative-territorial water resource management to management within hydrological and hydrographic zones
Programme for Mid-Term Development of the Republic of Tajikistan for 2016-2020	Adopted in 2016	2016-2020	Governance, planning, finance	• Create a functional strategic planning system and increase coordination within the government • Improve the business environment and investment climate
Programme for the Adoption of Renewable Sources of Energy and the Construction of Small Hydroelectric Plants for 2016-2020	Adopted in 2016	2016-2020	Energy, Water	• Increase electricity supply, especially to remote highland areas • Construct small hydroelectric plants and create the conditions necessary for operational maintenance of existing small hydroelectric power plants
Targeted Government Programme of transport Development in the Republic of Tajikistan to 2025	Adopted in 2011	2011-2025	Transport	• Develop a set of measures that promote the consistent development of transport infrastructure in an economically sustainable manner • Create a national transport network, in compliance with established safety standards, to meet domestic needs • Promote free competition in domestic and international transport service markets
Concept of State Policy for Attraction and Protection of Investment of the Republic of Tajikistan	Adopted in 2012	No defined timeframe	Governance, Industry	• Increase investment in infrastructure projects • Modernise production processes by updating their material and technical base • Improve the effectiveness of the regulatory policy of the state within the investment sphere
Concept of Transition to Sustainable Development	Adopted in 2007	2007-2022	Governance, planning, transport, energy, water, industry	• Establish an effective form of governance • Ensure energy security, as well as social security • Promote environmentally sustainable production
Concept of Environmental Protection in the Republic of Tajikistan	Adopted in 2008	No defined timeframe	Governance, energy, water, industry	• Promote environmentally friendly practices across all economic sectors • Develop an environmental monitoring system • Protect and promote the rational use of land and water resources • Improve the welfare of the population

Table 7.6. Other relevant documents

	Status	Time Horizon	Sectoral Coverage
Environmental Monitoring Programme for the period 2013-2017	Adopted in 2012	2013-2017	Multi-sector
Mid-Term Plan for the Implementation of the Concept on Environment Protection for the period 2010-2012	Adopted in 2010	2010-2012	Multi-sector
Strategy for Improving the Welfare of the Population of Tajikistan for 2013-2015	Adopted in 2012	2013-2015	Multi-sector
Programme of State Foreign Borrowing of the Republic of Tajikistan for 2013-2015	Adopted in 2012	2013-2015	Multi-sector
State Quality Programme for 2013-2015	Adopted in 2012	2013-2015	Energy
Programme for Effective Use of Hydroelectric Resources and Energy Efficiency for 2012-2016	Adopted in 2011	2012-2016	Energy
Targeted Comprehensive Programme for the Use of Renewable Energy Sources in Tajikistan for 2007-2015	Adopted in 2007	2007-2015	Energy
Programme of Effective Use of Water and Energy Resources for 2012-2016	Adopted in 2011	2012-2016	Energy, Water
Programme for the Processing and Production of Finished Products from Raw Aluminium for 2007-2015	Adopted in 2007	2007-2015	Industry
Programme for Integrating Scientific and Technical Advances in Industrial Production for 2010-2015	Adopted in 2009	2010-2015	Industry
Programme of Light Industry Development for 2006-2015	Adopted in 2005	2006-2015	Industry

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