South Caucasus and Central Asia: Belt and Road Initiative
Azerbaijan Country Case Study

Macroeconomics, Trade and Investment
South Caucasus and Central Asia
Equitable Growth, Finance and Institutions (EFI)
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This Country Case Study was written by Olena Bogdan, with support of Evgenij Najdov. It is an output of the South Caucasus and Central Asia MTI team in collaboration with the staff from other World Bank Global Practices covering the two sub-regions and draws on research led by Michele Ruta and Francois de Soyres, with contributions from Cristina Constantinescu and Alen Mulabdic. The main objective of the Country Case Studies is to provide an informed view of the potential impact of the China’s Belt and Road Initiative on countries in Central Asia and the Caucasus, as well as to identify policy recommendations that would help maximize its benefits and manage the associated risks. The team is grateful for the guidance from Sandeep Mahajan (Practice Manager) and internal reviews by Michele Ruta, Abdulaziz Faghi, Paul Valley, and Nadir Ramazanov.

**Acronyms and Abbreviations**

- **BRI**  Belt and Road Initiative
- **EE & CA**  Eastern Europe and Central Asia
- **EU**  European Union
- **FDI**  Foreign Direct Investment
- **GDP**  Gross Domestic Product
- **ICT**  Information and communication technology
- **SGC**  Southern Gas Corridor
- **SOE**  State-Owned Enterprise
- **TASIM**  Trans-Eurasian Information Superhighway
- **TCTC**  Trans-Caucasus Transit Corridor
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Executive Summary

**Belt and Road Initiative (BRI) is China’s significant and long-term commitment** which could potentially influence economic development of countries along its six economic corridors. By participating in the BRI projects, countries could address their infrastructure gaps, reduce their trade costs and barriers, and gain additional fiscal revenues. BRI could also promote greater international and regional economic integration.

**Both China and Azerbaijan consider BRI as a great development opportunity.** Recently, the country officials participated in several high-level BRI forums and signed a number of BRI-related agreements. Even though Azerbaijan does not borrow from China for its infrastructure investments, it considers its participation in the BRI as a major government priority. China also sees Azerbaijan as an important BRI partner. The two countries intend to deepen their economic cooperation in future, as the trade officials initiate negotiations on a preferential trade agreement.

**China is not a major trade and investment partner for Azerbaijan, but its role grew over time.** The trade volume between the two countries was 1.3 billion USD in 2018, about 6 percent of total Azeri trade, and half of that amount in 2013. Azerbaijan also invested USD 1.7 billion in Chinese securities, about 8 percent of all its FDI outward stock. Chinese investment in Azerbaijan, in contrast, account for about USD 800 million or 0.05 percent of all China’s outward FDI stock. Recently, Azerbaijan and China officials signed additional investment projects, cumulatively worth $821 million.

**Azerbaijan is considered to be a part of the China–Central Asia–West Asia Economic Corridor, principally the Trans-Caucasus Transit Corridor (TCTC),** that connects China to Europe via a network of railways, seaports, roads, and potentially pipelines (oil and gas). China sees this corridor as an alternative to the New Eurasian Land Bridge (i.e., China-Russia-Belarus route), though it is a costlier option than a pure sea route.

**Over the past years Azerbaijan’s government invested heavily in infrastructure projects along the TCTC.** The investment projects, both completed and ongoing, include the new Baku port in Alat; construction, repair, electrification, and upgrading of the Baku-Tbilisi-Kars railway; rehabilitation of the E-60 road between Baku and Ganja and onward to the Georgian border. Most of the projects are financed not by China but by the Government of Azerbaijan (including through Azerbaijan’s State Oil Fund, a sovereign wealth fund) and international financial institutions, such as the World Bank Group, the European Bank for Reconstruction and Development, the Asian Infrastructure Investment Bank, the European Investment Bank.

**BRI could potentially enhance Azerbaijan’s trade, attract foreign investment, and increase aggregate income.** These positive effects could also be high as compared to the region in general. Moreover, when combined with crucial institutional and regulatory reforms for trade facilitation and business climate development (i.e. policies that increase comparative advantage of local firms), BRI could increase country’s GDP up to 21 percent in the long run. For the welfare effects to be positive, it is key that complementary policies are implemented, in addition to infrastructure investment.

**The BRI benefits are not automatic.** To maximize them, critical connectivity gaps need to be addressed. These gaps include both physical and non-physical domains. The main physical challenge, as related to BRI and regional trade integration, is a lack of container-focused infrastructure which is fundamental for integration into Chinese trade routes. There is a need to invest more in the dedicated container terminals, ferries, and other related infrastructure that would enable seamless container operations via different transportation modes (i.e., establishing multimodality of port-rail/road-port infrastructure). Additionally, there is a lack of modern logistics infrastructure that would facilitate a seamless freight movement across the borders in the region.

**The non-physical barriers are related to logistic services and institutional environment surrounding the corridor.** First, the associated costs of doing business are very high, if compared to other routes, particularly those by sea.
There is a need of greater regional integration, to harmonize transportation tariffs across the corridor countries and make them more transparent. The latter requires cooperation of public and private entities beyond national borders. Second, border management practices should also be harmonized and formalized. A clear legal supranational framework developed jointly by the BRI countries would benefit all the involved parties and facilitate trade. Third, an integrated information and telecommunication system for customs and tracking of the transport cargo (and related services) through the corridor is needed.

**There is a great need to open up the corridor for private businesses and reduce the state monopoly in the corridor operation.** Open private market along the route would also help develop local transit-related services, such as logistics, and is a potential mechanism of economic growth for local communities. Additionally, increased private sector participation is vital if the infrastructure investments to be sustainable in the long run. Favorable business climate is also important for diversification of Azerbaijan’s exports away from the hydrocarbons.

**Complementary policies** focused on fiscal discipline, public investment management, labor market mobility, workers skills and training, and social security, could make the BRI connectivity benefits inclusive and shared across all income groups. Since transport and economic corridors are often associated with increased agglomeration, Azerbaijan’s policymakers should consider addressing territorial inequality between Baku metropolitan area and the rest of the country and potential labor migration resulting from BRI-related trade acceleration. Possible environmental challenges, such as adverse effects of agglomeration and increased congestion along the corridor, should also be considered and mitigated.

**By participating in the BRI, Azerbaijan can tap into global value chains and diversify its economy.** Successful realization of this ambition requires a complex approach and a long-term strategy. The COVID-19 pandemic and a resulting collapse in oil prices and demand, might in fact help accelerate the country’s search for alternative sources of growth. If Azerbaijan pursues infrastructure enhancements with the required complementary regulatory and institutional reforms, as well as deepens its regional integration, the BRI benefits could accelerate and become sustainable.
1. Introduction

Belt and Road Initiative (BRI), announced in 2013 and formalized in 2015, is China’s long-term commitment and aims to improve connectivity within Asia as well as between Asia and other continents via transport corridors (rail, road, maritime, air) and deeper economic, political, and cultural integration between China and the countries in Europe and Africa (National Development and Reform Commission, 2015).

BRI rests on a fundamental assumption that infrastructure and trade integration are preconditions for economic prosperity (Lianlei, 2016). The initiative includes two major trade routes – the Silk Road Economic Belt and the New Maritime Silk Road (see Annex 1 for more details). The former links China with Europe via Central Asia and Middle East while the latter connects China to the countries in the South and East Asia, the Persian Gulf, East and North Africa and finally on to Europe. There are six BRI economic corridors: (1) China-Mongolia-Russia; (2) New Eurasian Land Bridge; (3) China–Central Asia–West Asia; (4) China-Pakistan; (5) China–Indochina Peninsula; and (6) Bangladesh-China-India-Myanmar (See Map 1).

The exact number of the BRI participants is ambiguous. From a geographic point of view there are about 71 economies located along the Silk Road Economic Belt and the New Maritime Silk Road (see Annex 2). However, there are also about 125 countries that signed BRI cooperation agreements with China, including those located beyond the BRI routes (World Bank, 2019). Countries are often attracted to the BRI projects due to availability of substantial infrastructure (transportation, energy, information and communication technology or ICT) funding from China and reaping potential benefits from global trade and FDI flows. Additionally, many countries look for opportunities to learn from China’s development experience via integration into global value chains. Closer trade linkages could also bring additional fiscal revenues.

BRI has a potential to accelerate economic integration, trade, investment, and growth in the participating countries but its economic and welfare effects are challenging to estimate due to a complexity of factors involved in country’s economic development (FDI, infrastructure, and trade being among them). Moreover, the success of inter-regional infrastructure projects depends on a close cooperation between involved parties and smoothness of the integration process where all the nods are linked to one system. Once physical infrastructure is in place, there is a need for public policies that would make the corridor benefits economically sustainable, without economic distortions and regulatory barriers.

This study analyzes a potential impact of the BRI on Azerbaijan’s economy by focusing on (1) Azerbaijan’s connectivity and trade with the BRI economies; (2) its recent improvements in transport, power, and ICT infrastructure as part of the China–Central Asia–West Asia economic corridor; (3) its remaining connectivity gaps and challenges; and (4) potential economic effects of BRI on Azerbaijan’s trade, foreign investment, growth and welfare. Finally, the study concludes with policy implications that would mitigate the BRI risks and maximize the benefits.

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1 As part of the BRI, the Chinese government invests in transport, energy, and information and communication technology (ICT) infrastructure in the BRI-participating countries, particularly where private investors might be constrained or unwilling to invest due to associated high risk and cost. BRI also encourages the Chinese outward FDI in industrial parks and enterprises in countries along the transport-corridors.

2. Belt and Road Initiative and Azerbaijan

**Azerbaijan strongly supports BRI.** In December 2015 Azerbaijan’s President Ilham Aliyev visited China and signed a Memorandum of Understanding on Joint Promotion of the “Silk Road Economic Belt” between the Government of the Republic of Azerbaijan and the Government of the People’s Republic of China. The two countries intend to deepen their economic cooperation in future, as the trade officials initiate negotiations on a preferential trade agreement³. In April 2019 the two presidents participated in the BRI Forum in Beijing where they reiterated their commitment to strengthen connectivity and trade between their countries. A number of partnership agreements between Azerbaijani and Chinese enterprises were signed during the forum.⁴

**Trade with the BRI economies**

**Azerbaijan is a small open economy with abundant hydrocarbon resources.** It is located on a Caspian seaside in the Caucasus region, at the crossroads between Russia and Iran (North-South) and Eastern Europe and Central Asia (West-East). Its population is about 10 million and labor force is about 5 million (State Statistics Service of Azerbaijan, 2019). Agriculture contributes about 6 percent to the country’s GDP, whereas services, such as transportation, IT, tourism, and retail trade account for about 40 percent. Nevertheless, oil and natural gas are the Azerbaijan’s dominant exports and account for more than 90 percent of all exports (see Figure 1). The

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³ [https://eng.yidaiyilu.gov.cn/home/rolling/81509.htm](https://eng.yidaiyilu.gov.cn/home/rolling/81509.htm)
country’s major trade partners, besides the United States, include primarily other BRI economies – Turkey, Russia, European Union (particularly, Germany, Italy, and Czech Republic), Ukraine, Georgia, and China (see Figure 2). China is not a major trade partner for Azerbaijan, but its role grew over time. The trade volume between the two countries was 1.3 billion USD in 2018 (or about 6 percent of total Azeri trade) and half of that amount in 2013.

**Figure 1.** Azerbaijan trade in goods (left) and FDI net flows (right), 2007-2018

![Trade and FDI charts](source: IMF Direction of Trade Statistics and World Development Indicators)

**Figure 2.** Share of China and other BRI economies in Azerbaijan’s exports (left) and imports (right), 2007-2018

![Export and Import charts](source: IMF Direction of Trade Statistics)

**Azerbaijan invests twice as much in China as China invest in Azerbaijan.** Azerbaijan invested USD 1.7 billion in Chinese securities or about 8 percent of all its FDI outward stock (see Figure 1)⁵. Chinese investment in Azerbaijan, in contrast, account for about USD 800 million or 0.05 percent of all China’s outward FDI stock.⁶ Current areas of

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⁵ [http://www.chinadaily.com.cn/a/201904/12/WSScb009cea3104842260b5ddd_4.html](http://www.chinadaily.com.cn/a/201904/12/WSScb009cea3104842260b5ddd_4.html)

⁶ [https://www.azernews.az/business/134838.html](https://www.azernews.az/business/134838.html)
cooperation include projects in the petrochemical industry, but both countries are eager to develop their ties in transportation and logistics, tourism, and ICT. In fact, in April 2019, during the BRI Forum in Beijing, Azerbaijani and Chinese officials signed ten non-oil-sector investment projects, cumulatively worth USD 821 million. Specifically, Azerbaijan Railways Company and Chinese Continental Bridge International Logistics Company signed a Strategic Partnership Agreement, while AzerTelecom and China Telecom signed a Strategic Memorandum of Cooperation on ICT infrastructure development, as part of the "Azerbaijan Digital Hub" initiative. China also intends to invest in the local tire factory and greenhouse complex. Another deal between the two countries aims to incorporate a new Baku International Sea Port into BRI and make it a regional distribution and logistics center. All these agreements aspire to facilitate the cargo transit through the China–Central Asia–West Asia Economic Corridor.

In contrast, the European Union (EU) and China are major trade partners. Specifically, China is the EU's second-biggest trading partner behind the United States and the EU is China's biggest trading partner. China and Europe trade, on average, over EUR 1 billion a day. Most of this trade is in goods, such as industrial and consumer goods, machinery and equipment, and only about 10 percent is trade in services (European Commission, 2019). Most of the China-EU tradable goods are transported in standardized, intermodal containers via maritime routes (more than 90 percent) and via railway though Russia-Belarus-Poland route (see Map 2).

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<thead>
<tr>
<th>Box 1. Azerbaijan’s recent economic development</th>
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<td><strong>After the fall of the Soviet Union and until 2014, Azerbaijan accumulated considerable oil rents.</strong> Its oil export revenues (more than 90 percent of all exports) helped the country maintain high growth rates, accumulate large foreign exchange reserves, reduce poverty, and increase household incomes. During 2002-2013 Azerbaijan GDP grew at an average of 13 percent per year, having weathered the 2008 world financial crisis rather resiliently and making it an upper middle-income country in the process. This period of strong growth was also accompanied by investment of oil revenues in physical infrastructure, social safety net, and human capital.</td>
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<td><strong>Since 2014 the Azerbaijan’s economy has faced strong headwinds from the dual challenges of lower oil prices and uncertain regional economic environment.</strong> Oil prices collapsed in 2014 and remained depressed after some increases in 2015-18. Consequently, Azerbaijan current account balance shifted from a surplus of 13.6 percent of GDP in 2014 to a 0.4-percent deficit in 2015, prompting pressures on the exchange rate, which led to the eventual local currency devaluation, erasing half of its value against the US dollar. Capital outflow reached USD 9 billion in 2015 or 16.8 percent of GDP. Similar trends persisted in 2016 with the current account deficit widening to about 3.6 percent of GDP. The resulting tightening of fiscal policy and credit crunch led to the first recession recorded in Azerbaijan in two decades. The economy contracted by 3.1 percent in 2016, entirely driven by a 5.4-percent decrease in non-oil sector output.</td>
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<td><strong>During 2017-19, the Azerbaijan’s economy began to recover, albeit at a sluggish pace, supported by favorable terms of trade and stable oil and gas production.</strong> Economic growth was 0.1 percent in 2017 and accelerated to 1.4 percent in 2018 and 2.2 percent in 2019, with the non-energy sector leading the modest recovery. In 2018 the completion of the Southern Gas Corridor between Azerbaijan and Europe opened up another source of revenues – gas exports. In 2019 the external account surplus reached 11 percent of GDP.</td>
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Note that the IMF CDIS reported China’s total FDI position in Azerbaijan to be $176 million in 2017.


In 2020 the economy was hit by dual shocks of the COVID-19 pandemic and the resulting collapse in oil prices and demand. Besides adverse health effects on the population, the shocks harmed the economy through significantly depressed oil revenues, reduced trade and financial flows, as well as plummeting receipts from tourism and hospitality sectors. Both fiscal and external surpluses are likely to be wiped out. If the negative developments are contained to the first half of 2020 and a sustained recovery starts in the second half, including stabilization of oil prices, GDP growth is projected to contract in 2020 and slowly recover over the medium term.

BRI connectivity

Azerbaijan is part of the China–Central Asia–West Asia Economic Corridor, particularly the Trans-Caucasus Trade and Transit Corridor (TCTC), which connects China to Europe via a network of seaports, railways, roads, and, potentially, pipelines (oil and gas). China sees this corridor as an alternative to the New Eurasian Land Bridge (i.e., China-Russia-Belarus route), though it is a costlier option than a pure sea route (Lianlei, 2016, see Annex 4 for details). Each year China ships about 10 million TEU (twenty-foot equivalent units) of cargo over sea and more than 400 thousand TEU over New Eurasian Land Bridge. In contrast, the TCTC cargo volume was about 500 TEUs in 2018 (CPCS, 2019).

The TCTC has a potential to become an alternative to the China-Russia-Belarus route (see Map 2 for details). It would connect Azerbaijan with Europe (Southern Europe in particular) via Georgia and Turkey and with China via Caspian Sea and Kazakhstan. The TCTC begins at the Baku-Alat port in Azerbaijan. To its East, the port is linked by a ferry through the Caspian Sea to Kazakhstan’s port of Aktau, and onward via railroads to China. To the West, from Baku-Alat port, the TCTC route goes 511 km via railway to the Georgian border. In Georgia the route splits in Samtredia into two branches – one traveling to the Georgian ports of Batumi and Poti and another to Kars in Turkey and westward to the EU. From the Black Sea ports in Georgia one can transport cargo to Ukraine and Romania and then via rail or road to final destinations in the EU. The route length from Beijing, China, to Warsaw, Poland, via the latter option is about 9,500 km while a route from Beijing to Warsaw via the Trans-Siberian railway is about 9,000 km.

Alat port is a new Baku International Sea Trade Port which substituted the old port at the center of Baku in May 2019. For more information see https://en.trend.az/business/economy/3055988.html
Recent improvements in transport, power, and digital infrastructure

Azerbaijan government invested heavily in infrastructure projects along the TCTC\(^{10}\). The investment projects, both completed and ongoing, include the new Baku port in Alat; construction, repair, electrification and upgrading of the Baku-Tbilisi-Kars railway; rehabilitation of the E-60 road between Baku and Ganja and onward to the Georgian border (see Map 3 and Table 1 for more details). Most of the projects are financed not by China but rather by the Government of Azerbaijan (including through Azerbaijan’s State Oil Fund, a sovereign wealth fund) and to some extent via international financial institutions such as the World Bank, the European Bank for Reconstruction and Development, the Asian Infrastructure Investment Bank, the European Investment Bank.

<table>
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<tr>
<th>Table 1. TCTC projects in Azerbaijan</th>
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<tr>
<td>Project title</td>
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<tr>
<td>Baku-Tbilisi-Kars route</td>
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<tr>
<td>Azerbaijan Highway Project, Second Highway Project and Third Highway Project</td>
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<tr>
<td>Alat New Port Project (Phase One, Two and Three)</td>
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Note: Investment amounts include estimated cumulative financing, from various sources.
Source: Canadian Pacific Consulting Services (CPCS) and World Bank, 2019

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\(^{10}\) Azerbaijan is also part of the North-South transport and economic corridor which connects Middle Eastern countries, via Iran and Azerbaijan, to Russia. Azerbaijan heavily invests in rail and road infrastructure along this route. However, this corridor is not part of BRI. Moreover, its potential is yet to be realized due to associated geopolitical and economic uncertainties. Hence, the analysis of the North-South corridor is beyond the scope of this study.
The new port of Baku, Alat, has replaced the old port at the city center and is a country’s main maritime gateway on a Caspian seaside, with a favorable geographic location south to the Absheron Peninsula, protected from the northern winds. The port’s construction started in 2012 and its first phase was completed in 2018. Phases two and three are ongoing. The port includes a ferry terminal and three berths for general cargo, roll-on/roll-off, and services. Currently, the port has a capacity of 15 million tons per annum (MTPA) of bulk cargo freight and 100 thousand TEU. Upon completion of phases two and three (potentially involving private investors) the port’s capacity would almost double. The Alat port is connected to the Baku-Ganja-Tbilisi rail and road transportation network. It is also planned to be part of the future free trade zone and logistics hub. The Baku International Sea Trade Port company operates the Alat port while the Azerbaijan Caspian Shipping Company runs the maritime shipments – both are closed joint stock companies and owned by the Government of Azerbaijan.

Baku-Tbilisi-Kars railway became operational in 2017 and connects Azerbaijan with Europe via Georgia and Turkey. The railway’s existing capacity is expected to increase threefold over time. The route is 826 kilometers long but is not seamless due to a break-of-gauge at the Turkish border – Turkish railways use the European standard gauge whereas Azerbaijan and Georgia use the Russian standard gauge. The route can reduce time for cargo shipments between Asia and Europe to two weeks from a month by rail and 40-45 days by sea today11. The railway is operated by the Azerbaijan Railways, a state-owned enterprise (SOE), and its major freight is crude oil and oil byproducts. The company intends to diversify its cargo commodities via container freight and related logistic services.

The European route E-60 or the East-West Highway is a major international road connecting Western Europe with Central Asia. In Azerbaijan, the highway runs from the Alat port to Baku, Ganja, and onward to the Georgian border crossing at Red Bridge. The Alat-Ganja segment is a four-lane highway while the Ganja-Red Bridge segment is two-lane with a plan to upgrade it to a four-lane highway by 2020. Since the road quality is rather good, the highway is currently a preferred mode of both international transit and local freight (except for oil and gas).

The country has nine international digital connectivity providers for both transit and domestic needs. It sources international IP connectivity from the EU through Georgia, and from Russia over terrestrial links. It also passes connectivity to the Persian Gulf through neighboring Iran. The country’s ICT landed capacity grew by a factor of 7 between 2013 and 2018. Currently, no undersea cable connects Azerbaijan to the Central Asian countries across the Caspian Sea, but a recent agreement between the states in the region will enable exploration of the seabed and future laying of undersea cables.

The largest local digital network is owned and operated by a state-owned entity. Two major private sector operators also invested in building their own networks connecting major population centers with cross-border linkages to Georgia, Russia, and Iran. Azerbaijan could play a significant role in the Europe-Asia ICT connectivity as an access point in the future. New investment opportunities pertain to upgrading of the copper-based networks to the fiber optic cables and extending access to rural areas. Furthermore, investment in Trans-Caspian undersea connectivity could significantly influence the development of an alternative route for the Europe-Asia digital connectivity.

Chinese telecom companies are considering investing in underwater infrastructure connecting Azerbaijan and Kazakhstan, which is essential to the Trans-Eurasian Information Superhighway (TASIM) project. Additionally, Chinese telecom carriers and AzerTelecom, a private sector company leading the development of Azerbaijan’s digital hub, signed several memoranda of understanding to transit traffic once such infrastructure is available.

Although not directed related to the BRI yet, Azerbaijan’s current network of oil and gas pipelines with the EU could potentially be linked with China, via a proposed Trans-Caspian pipeline route (see Annex 3 for more details). The recently completed South Caucasus and Trans-Anatolian natural gas pipelines are part the Southern Gas Corridor (SGC), which supplies Azerbaijani natural gas from the Shah Deniz gas field, located in the Caspian Sea, to the EU via Georgia, Turkey, and the Balkans. Additionally, the planned Trans-Adriatic gas pipeline would connect Trans-Anatolian pipeline in Turkey to Greece, Albania, and finally to Italy. This pipeline is currently under construction and estimated to be completed in 2020. The total investment of the SGC is about US$40 billion, financed from a variety of sources including international financial institutions and local governments\(^{12}\). There is a separate proposal under discussion to build the Trans-Caspian gas pipeline which would run under the Caspian Sea and connect Turkmen and Azerbaijani gas pipelines to the SGC, effectively transporting natural gas from Central Asia to Europe. On parallel to the SGC, there is a Baku–Tbilisi–Ceyhan oil pipeline which transports crude oil from the Caspian Sea to the Mediterranean via Azerbaijan, Georgia, and Turkey. There is a debated idea of the Trans-Caspian Oil Transport System, a project to connect Azerbaijani and Kazakh oil pipeline systems\(^ {13} \). The potential economic and welfare benefits of these new routes are likely to be less than their costs due to limited ability of pipeline infrastructure to enhance local growth or business development.

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12 https://www.tap-ag.com/the-pipeline/the-big-picture/southern-gas-corridor
3. Remaining connectivity gaps and challenges

Azerbaijan has recently made a lot of progress in upgrading its physical infrastructure such as ports, railways, and roads. However, some connectivity gaps remain. These gaps can be broadly classified as physical and non-physical, such as those related to logistics, institutional setting, and regulatory policies (CPCS, 2019). It is worth noting that if many of these gaps are addressed, the result could have positive spill-over effects on broader economic activity, beyond the corridor.

The main outstanding physical challenge, as related to BRI and regional trade integration, is a lack of container-focused infrastructure. Most of the modern global trade and transit, including Chinese trade with the EU, is containerized. Consequently, there is a need to invest more in the dedicated container terminals, ferries, and other related infrastructure that would enable seamless container operations via different transportation modes. Smooth container transit is closely connected to the need of establishing multimodality of port-rail/road-port infrastructure.

Another related physical barrier is a lack of modern logistics infrastructure that would facilitate a seamless freight movement across the borders in the region (see Annex 4 for details about the complexity of freight border crossings in the TCTC). Establishment of logistics centers is part of the Azerbaijan Strategic Roadmap for the Development of Logistics and Trade.

The non-physical barriers are those related to logistic services and institutional environment surrounding the TCTC. First, the associated costs of doing transportation and logistics business are very high, if compared to other routes. There is a need to harmonize transportation tariffs across the corridor countries and make them more transparent. The latter requires regional cooperation of public and private entities beyond national borders. Moreover, the existing tariff structure should be modernized and adopted to the intermodal, container-centered system. It should also be reoriented to a client-driven approach that reflects the commercial reality and consumer willingness to pay. Additionally, there is a need to separate infrastructure operational and management costs to improve corridor efficiency.

Second, regulatory practices at the border should be harmonized and formalized. In addition to deepening trade agreements among the BRI economies, a clear legal supranational framework developed jointly by the involved countries would benefit all the parties and facilitate trade across borders. The Government of Azerbaijan has recently implemented a number of improvements in customs operations at the border, such as simplification of procedures and electronic declarations, and creation of the “green corridor” gating system in 2018. Yet, additional reforms of customs inspections and border crossing management are needed, for instance, adding modern scanners and integrated ITC system for customs checking and client tracking of the transport cargo and related services.

Third, an absence of an independent regulatory authority for the telecommunication sector is seen as a major bottleneck to the Azerbaijan's future ICT sector development overall and as related to the TCTC. Investment in digital infrastructure is hindered by the existing mechanisms for seeking authorizations and permits for network deployment. Additionally, the transit price for international capacity is another challenge to sector development, as international stakeholders depend on limited competition and bandwidth.

Fourth, there is a great need to open up the TCTC for private businesses and reduce the state monopoly power in the corridor development and operation (see Annex 5 for more information). The current system is predominantly run by the SOEs and prevalent not only in Azerbaijan, but also in other countries along the corridor.

14 Recently, there was an observed intensification of bilateral dialogue between Azerbaijan and its regional trade partners (e.g., Turkey, Georgia, Kazakhstan, Russia) on the BRI-related institutional framework. Introducing a shared regional platform for joint negotiations could further improve regional cooperation and maximize the value of BRI integration.
– Georgia, Turkey, Kazakhstan etc. In order to integrate into the global value chains, Azerbaijan (and other TCTC countries) need to open up the transportation and logistics markets to commercial enterprises. Increased competition would make the corridor more price-efficient, especially in light of a multimodal transportation system. Open private market along the TCTC would also help develop local transit-related services (e.g., insurance, supply chain management).

Increased private sector participation is a potential mechanism which could bring economic growth from the BRI participation to local communities and is vital if the infrastructure investments to be sustainable in the long run. Since BRI-related projects imply long-term horizon with high cost and risks, reducing the risk burden faced by the private investors is important. Specific measures would include strengthening local legal environment, such as protection of private property and law enforcement. Favorable business climate is also important for diversification of Azerbaijan’s exports away from the hydrocarbons.

4. Economic effects of Belt and Road Initiative

This section provides (a) an overview of Azerbaijan’s current connectivity and trade indicators (i.e. baseline), and (b) estimates the potential effect of the local BRI-related infrastructure improvements (primarily related to the rail upgrades) and policy changes on country’s trade, foreign investment, aggregate income and welfare.

Describing the baseline

In 2014, Azerbaijan scored 2.45 (out of 5) in the World Bank Logistics Performance Index (LPI) and ranked 125th globally (World Bank, 2014; see Figure 3). When compared with global performance, its score deteriorated recently as it ranked 116th in 2012 (LPI score: 2.48), 89th in 2010 (LPI score: 2.64) and 111th in 2007 (LPI score: 2.29). In 2014, Azerbaijan generated the highest score in the “infrastructure” indicator, 2.71. The lowest scores were “logistics competence” and “tracking & tracing”, both receiving a score of 2.14. If compared with previous years, Azerbaijan made measurable improvements in the “customs” and “infrastructure” indicators, but it also experienced deterioration in the “international shipments”, “logistics competence”, “tracking & tracing”, and “timeliness” indicators. Furthermore, Azerbaijan ranked below its comparative group of countries – upper middle income (LPI score 2.82) and Europe & Central Asia (LPI score 2.76). While the Azerbaijani “infrastructure” and “customs” indicators were either comparable or stronger than its peers, the other four indicators fell behind.

Azerbaijan’s trade performance in terms of time and costs is either on par with its peers or below the average. For instance, according to the World Bank Doing Business ranking, its border management is similar to other countries in Eastern Europe and Central Asia (EE & CA) with an average of 17 hours delay for exports and 14 hours for imports. In comparison, Georgia has a better compliance with regard to exports (see Figure 4). In terms of

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15 The Logistics Performance Index (LPI) is a benchmarking tool developed by the World Bank. It identifies challenges and opportunities faced by countries in trade logistics performance. The 2016 version of the LPI offers comparisons across 160 countries. Data is gathered based on surveys of logistics professionals, organizations and operators doing business in foreign countries. The index generates a weighted average score from 0-5 for each country on six key indicators: (1) Efficiency of the clearance process by border control agencies (“Customs”); (2) Quality of trade and transport related infrastructure (“Infrastructure”); (3) Ease of arranging competitively priced shipments (“International shipments”); (4) Competence and quality of logistics services (“Logistics competence”); (5) Ability to track and trace consignments (“Tracking & tracing”); and (6) Timeliness of shipments in reaching destination within the scheduled or expected delivery time (“Timeliness”). A total LPI score out of 5 and an overall ranking is then generated for each country. The most recent LPI data available for Azerbaijan is from 2014.
trade cost, Azerbaijan has the highest applied average tariffs in the South Caucasus region — 5-9 percent on average. In contrast, Georgian average tariffs are about 1 percent (see Figure 5).

**Figure 3.** Azerbaijan’s Logistics Performance Index Scores, 2007-2014

*Panel A. Azerbaijan’s LPI scores  
Panel B. Azerbaijan and Comparative Countries*

![Graph 1](image1.png)

**Source: The World Bank Group**

**Figure 4.** Time to import and export, 2019

**Figure 5.** Applied average tariffs, 2016

![Graph 2](image2.png)

*Source: The World Bank Group Doing Business  
Source: World Integrated Trade Solution  
Note: In both figures EE&CA is the average for Eastern Europe and Central Asia. In Figure 5 applied tariff rate (weighted average) for each country is computed as the weighted average of the tariff rates of all 6-digit level products, using the country’s 6-digit level import values as weights.*
Box 2. Quantifying BRI impact

The results presented in this case study envisage full implementation of all BRI transport infrastructure projects and as such are not an assessment on the impact of individual projects. The calculations were done as part of the World Bank’s “Belt and Road Economics: Opportunities and Risks of Transport Corridors” report. Estimates of the gains in shipment time were calculated by a combination of geographical data and network algorithms between 1,000 cities in 191 countries. The global network of railways and ports in 2013 is used to estimate the pre-BRI shipment times. The network is subsequently upgraded with planned infrastructure projects to derive post-BRI shipment times. The projects were selected based on the criteria that the transport project is located on the corridor and that the project has been explicitly mentioned as part of BRI in an official document. This is neither exhaustive nor an official list of BRI transport projects. On the two corridors that go through EE & CA countries, the report identifies around two dozen of investment projects. Out of these, around half were operational in 2019, six were under construction and the remaining were proposed. Annex 6 lists specific projects (and their status) that are part of the China-Central Asia-West Asia Economic Corridor.

Sectoral estimates of “value of time”, considering each pair of countries and each sector, transform the reduction in shipment time into reductions of trade costs. Importantly, the analysis does not assume that all infrastructure projects are good. In fact, in a separate analysis of 68 BRI projects globally, Reed and Trubetskov (2019) show that half of them generate little value when built in isolation; however, when the entire network of projects is built, that share falls to around one-third. The results confirm the inter-dependence of projects as well as the importance of proper project selection and appraisal. Finally, a range of models (computable general equilibrium, structural general equilibrium and gravity models) are used to estimate the impact of the reduced trade costs on trade, FDI and GDP.

BRI effect on trade and foreign investment

The effect of the BRI on Azerbaijan’s trade and foreign investment is estimated using a gravity model. A standard gravity model implies a partial equilibrium approach, which does not account for the effects of BRI infrastructure on the economy as a whole, but rather it allows to include all BRI economies and highly disaggregated sectors into the analysis (see Annex 6 for the full list of projects included in the analysis).

The estimated effect of BRI on Azerbaijan trade costs is positive and the largest among the South Caucasus countries (see Figure 6 and Annex 7). Specifically, it is estimated that the export cost would decline, on average, by about 2 percent and by more than 4 percent for import, double the export cost reduction gains and much higher than EE & CA average of 1.5 percent. Additionally, the model estimates that the BRI would increase, on average, the Azerbaijan’s goods trade by 2.5 percent, which also slightly exceeds the trade gains of 2.3 percent by the average EE & CA country.

The model results also suggest that the integration into the BRI rail and port network would increase FDI flows to Azerbaijan by 4.2 percent. The country FDI gains would be the largest in the South Caucasus region (almost double) but less than the EE & CA average, 4.8 percent. These FDI gains would also be associated with the additional 0.03 percent GDP growth. The latter result indicates that, even though BRI could potentially improve Azerbaijan’s integration in global transportation and value chains and attract foreign investment, these gains might not translate to enhanced local economic development due to existing rigidities in its economic structure.

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16 This section is based on Baniya et al., 2019; Chen. and Lin, 2018; de Soyres et al., 2019; de Soyres et al., 2018.
17 While a gravity model is a rather standard approach for estimating trade flows between countries, its approach to estimate the BRI impact on FDI should be treated as an upper bound estimate. Since a gravity model relies heavily on the assumption that countries in the same locality and with similar characteristics (e.g., language, border etc.) tend to trade more with one another, the same assumption doubly applies for private investment decisions.
Figure 6. BRI effect on Azerbaijan’s trade and foreign investment

Sources: Baniya et al., 2019; Chen and Lin, 2018; de Soyres et al., 2018.

Potential impact on income and welfare

The potential impact of BRI on Azerbaijan’s aggregate income and welfare is based on the structural general equilibrium model (SGE). An SGE model is a Ricardian model with sectoral linkages, trade in intermediate goods, and sectoral heterogeneity. Disaggregation in the SGE model allows it to capture the impact of lower trade costs associated with BRI ground transportation projects on trade flows and consequently on aggregate income. The SGE model also assumes strong complementarities between foreign and domestic inputs in production as firms optimize their production decisions.

The SGE model simulations consider three scenarios: BRI railway and port infrastructure improvements only (Scenario A); infrastructure improvements and reduced border delays (Scenario B); and infrastructure improvements with complementary policies of both reduced border delays and lower preferential tariffs (Scenario C). Additionally, all three scenarios assume full completion of all BRI projects in all participating countries (see Annex 6 for the full list of projects included in the analysis). Consequently, given the uncertainty surrounding specific projects, the expected gains from the BRI are likely to be smaller than those delivered by the model.

The estimated effect of BRI on Azerbaijan’s aggregate income is positive under each scenario and the largest when infrastructure investments are combined with regulatory reforms to facilitate trade. The SGE model results suggest that under the first scenario Azerbaijan’s real income would increase by 6 percent, if compared to the baseline (see Figure 7). Reduced border delays, in addition to the BRI infrastructure investment (Scenario B), would increase the GDP gains to 17 percent over time. If infrastructure improvements are combined with both reduced border delays and lower preferential tariffs (Scenario C), GDP would eventually grow by 21 percent. These GDP gains would also be larger than those of the average EE & CA country. Because both improvements in infrastructure and trade facilitation policies reduce trade costs, the two factors reinforce each other and augment positive effect on country’s income.

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18 The SGE method has a number of important assumptions such as a view of an economy from a supply side and, more significantly, as a perfectly competitive market (with perfect competition, perfect information, rational individuals etc.). A major mechanism of equilibrium in this type of models is price. If one assumes that all the BRI countries have perfectly competitive markets, the estimated gains most likely be large, and hence, should be treated as the upper-bound estimates.
Similarly, the **BRI long-term welfare impact is the largest when infrastructure development is accompanied by institutional reforms**. For the long-term welfare impact\(^{19}\), the model estimates indicate that if the BRI infrastructure investment are not accompanied by complementary policies of trade facilitation and business climate development (i.e. policies that increase comparative advantage of local firms), the eventual effect could be even negative, -4 percent, as final infrastructure costs would outweigh the direct consumer benefits. However, if the complementary reforms are implemented, the welfare gains would become positive and increase to 2 percent. In other words, the real potential income gain from BRI integration likely is not sufficient to cover the total cost of infrastructure in the absence of broader reforms to promote trade facilitation and improve local business climate.

**Figure 7.** Impact of BRI infrastructure investment and complementary policies on GDP (left) and welfare (right), upper bound

![GDP and Welfare Comparison](Image)

*Source: de Soyres et al., 2019.*

*Note: Scenario A includes BRI infrastructure improvement only; scenario B includes BRI infrastructure improvement and the reduction by 50 percent of border delays for BRI economies; scenario C includes BRI infrastructure improvement, reduced border delays, and a 50-percent cut in bilateral tariffs among BRI economies). EE & CA is the average for Eastern Europe and Central Asia.

5. **Managing risks: fiscal, governance, social, and environmental**

**BRI infrastructure investment carry inherent risks because of their big scale and long-term nature.** These risks are often amplified in countries with weaker local institutions and high debt burdens. China provides substantial debt financing to many BRI projects, though not in Azerbaijan’s case. Most of the BRI-related investment in Azerbaijan, as mentioned in section 3, are financed by the Government of Azerbaijan and to some extent on concessional terms by the international finance institutions such as the World Bank, the European Bank for Reconstruction and Development, the Asian Infrastructure Investment Bank, and the European Investment Bank. The Government of Azerbaijan co-finances many projects through either its sovereign wealth fund, State Oil Fund

\(^{19}\) In the SGE model “welfare” is defined as total consumer revenues divided by the consumption price index. Total revenues comprise payments to factors of production (both labor and capital), revenues derived from import tariffs, and the cost of the transport infrastructures financed via government taxes (de Soyres et al., 2019).
or SOFAZ\textsuperscript{20}, or via capital expenditures from the state budget (that are also indirectly financed by SOFAZ as its transfers are part of the consolidated budget and account for more than a third of all budget revenues).

Even though Azerbaijan’s fiscal position was strong in 2018-19, it was significantly weakened by the dual shocks of the COVID-19 pandemic and a collapse in energy prices and demand in 2020. Higher all prices in 2018-19 propelled the current account surplus to 13 percent of GDP in 2018 and 9 percent of GDP in 2019, giving the authorities enough fiscal space to boost public investment. At the same time, the government introduced a relatively stringent fiscal rule which caps consolidated budget spending increases to 3 percent per annum (adjusted for inflation). But the surpluses on the fiscal and external accounts are forecasted to turn to deficits in 2020 and remain negative over the medium term (World Bank, 2020). Even though in 2018 the government passed a debt management strategy that aims to decrease general government debt from about 23 percent in 2017 to 12 percent of GDP by 2025\textsuperscript{21}, it might still need to turn to the external borrowing to cover rising deficits, in addition to increased SOFAZ transfers. Furthermore, the government contingent liabilities present higher risk than general government borrowing, as many SOEs acquired debt for the BRI-related projects with the government guarantees (e.g., about half of those guarantees are connected to the Southern Gas Corridor; Hasanov, 2018). General government gross debt including the guarantees accounted for about 48 percent of GDP in 2018 (International Monetary Fund, 2019). About half of Azerbaijan’s debt is expected to mature in 10 years and another half between 10 and 20 years.

Management of fiscal risks associated with the BRI investment is closely connected to good budget discipline and mitigation of overall governance risks. These risks exist at all stages of BRI projects – initiation, procurement process, bidding and tendering, monitoring and evaluation. It is essential that the BRI-participating countries, including Azerbaijan, adopt good practices for public procurement, increase transparency of the process and ensure equal access of firms to financing. Competition and transparency would make public investment more efficient and reduce corruption, which in some cases can account for up to 20 percent of costs in transportation projects (Kenny, 2006).

BRI-related reduction in trade costs and integration in global value chains will likely bring adjustments to local labor market via increased labor mobility and potential displacement of workers. Even though the estimated total labor displacement in all BRI-participating countries is less than 1 percent of the total labor force (Maliszewska and van der Mensbrugghe, 2019), the heterogeneity at the local level could be substantial. About 55 percent of Azerbaijan’s population resides in urban areas, particularly in its eastern areas. In fact, a metropolitan area encompassing the city of Baku and its suburbs accounts for majority of the urban population or roughly 40 percent of all people living in the country. Since transport and economic corridors often increase agglomeration, such dramatic urban-rural difference between Baku and the rest of the country could be exacerbated.

Policymakers should consider complementary policies that not only address territorial inequality and potential labor displacement, but also focus on inclusiveness and shared benefits. These policies include facilitation of labor mobility (e.g., relaxing residency rules; developing rental, housing, and land markets; protecting private property rights) and developing workers skills that would help them integrate in new labor markets. It is also important to make sure the social safety net system is targeted and effective to support the vulnerable, particularly in the country’s remote mountain areas. Additionally, increased agglomeration could pose extra challenge to Baku, Ganja, and other municipalities that provide local public services. Maintaining access to high

\textsuperscript{20} For example, SOFAZ directly provided AZN 748.6 million or USD 440 million for Baku-Tbilisi-Kars railway project and AZN 1.5 billion or USD 900 million to the Southern Gas Corridor.

\textsuperscript{21} Medium and long-term strategy for public debt management of the Republic of Azerbaijan, 2018. Available at https://static.president.az/media/W1siZiIsIjIwMTgvMDgvMjcvMjcvMjI0O3dfuN2NnY9fRE9WTEVUX19CT1jDV9TVFJBVEVRX1IbXy5wZGY+iV0?sha=67f1b296c90ca1f2
quality public goods (such as local roads, transportation, water, sewage, electricity) and services (such as education and health) would be essential to fully realize BRI positive economic effect.

Finally, possible environmental risks should also be considered and mitigated. Selection of projects and routes would ideally include social cost-benefit analyses to avoid sensitive natural areas with vulnerable habitats and endangered species. Rail transport and tunnel/bridge engineering should be prioritized when possible, as rail transportation is “greener” than road due to lower pollution and congestion. Addressing potential deforestation in mountainous regions and environmental degradation of coastal areas, resulting from increased trade flows and economic activity, would sustain positive BRI effect in the long term.

6. Conclusion

Azerbaijan is part of the China–Central Asia–West Asia Economic Corridor that connects China to Europe via a network of seaports, railways, roads, and, potentially, pipelines. Over the past years Azerbaijan invested heavily in the BRI-related infrastructure projects. Most of the projects are financed not by China but by the Government of Azerbaijan (mostly through Azerbaijan’s State Oil Fund) and via international financial institutions, which lowers its associated fiscal risks.

BRI could potentially enhance Azerbaijan’s trade, attract foreign investment, and increase aggregate income. These positive effects would also be high as compared to the region in general. Moreover, when combined with policies to reduce trade costs and barriers, BRI could increase country’s GDP up to 21 percent. For the welfare effects to be positive, it is crucial that the complementary policies are implemented, in addition to infrastructure investment.

The BRI benefits are not automatic. To maximize them, critical connectivity gaps need to be addressed. These gaps include both physical and non-physical. The main physical challenge, as related to BRI and regional trade integration, is a lack of container-focused, multimodal infrastructure which is fundamental for integration into Chinese trade routes. Additionally, there is a lack of modern logistics infrastructure that would facilitate a seamless freight movement across the borders in the region.

The non-physical barriers are related to logistic services and institutional environment surrounding the corridor. First, the associated cost of doing business is very high and transportation tariffs across the corridor countries need to be harmonized and made more transparent. Second, border management should also be harmonized and formalized, preferably via a clear legal supranational framework developed jointly by the BRI countries. Third, an integrated ICT system for customs checking and client tracking of the transport cargo and related services is needed. Fourth, opening the corridor for private businesses and reducing the state monopoly in the corridor operation would also help develop local services and is a potential mechanism of positive spill-over effects on economic development for local communities. Additionally, increased private sector participation is vital if the infrastructure investments to be sustainable in the long run.

Complementary policies focused on fiscal discipline, public investment management, labor market mobility, workers skills and training, and social security, could make the BRI connectivity benefits inclusive and shared across all income groups. Possible environmental challenges, such as pollution, deforestation, increased vulnerability of natural habitats, should also be considered and mitigated.

By participating in the BRI, Azerbaijan can tap into global value chains and diversify its economy. Pursuing broader economic reforms as part of BRI integration could also help in economic recovery after the COVID-19 crisis. Successful realization of this ambition requires a complex approach and a long-term strategy. If Azerbaijan
pursues infrastructure enhancements with the required complementary regulatory and institutional reforms, as well as deepens its regional integration, the BRI benefits could become far-reaching, inclusive, and sustainable.
References


Annex 1

China’s Belt and Road Initiative Map, 2018

The Belt and Road Initiative creates a global infrastructure network. China uses, acquires and builds railroads, ports and pipelines.

## Annex 2

Core BRI Countries

<table>
<thead>
<tr>
<th>Economy</th>
<th>WBG region</th>
<th>Economy</th>
<th>WBG region</th>
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<td>37 Poland</td>
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<td>3 Brunei Darussalam</td>
<td>EAP</td>
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Annex 3
Map of gas and oil pipelines in Europe and Central Asia

Source: Energy Information Administration
Annex 4

Comparison of the TCTC and Competitive Transport Routes

Source: Canadian Pacific Consulting Services (CPCS), 2019
## Annex 5

List of Institutions Involved in the TCTC

### Public Sector
- Ministry of Transport, Communications and High Technologies
- Ministry of Economy
- Ministry of Finance
- Azerbaijan Railways
- Azerbaijan State Road Agency
- State Statistics Committee
- Azerbaijan Airlines
- State Customs Committee
- Azerbaijani Export & Investment Promotion Foundation (AZPROMO)
- Azerbaijan International Road Carriers Association (ABADA)
- Baku International Sea Trade Port
- Ganja rail multimodal terminal and Ganja rail transloading station
- Azerbaijan Caspian Shipping Company
- State Maritime Administration of Azerbaijan
- Coordination Committee of Trans-Caspian International Transport Route
- International Organizations: UNDP, ADB, EBRD, EIB, EU etc.

### Private Sector

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<td>LTD, Veyseloglu LLC, etc.</td>
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*Source: Canadian Pacific Consulting Services (CPCS)*
Annex 6
China-Central Asia-West Asia Economic Corridor: Projects description and status

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<tr>
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<th>Improvement Type</th>
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<td>New sea link</td>
<td>Operational</td>
<td>5-Jul-18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turkmenbashi–Baku</td>
<td>Turkmenistan</td>
<td>New sea link</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Tbilisi-Kars Rail</td>
<td>Tbilisi – Kars</td>
<td>Georgia, Turkey</td>
<td>New rail</td>
<td>Operational</td>
<td>28-May-18</td>
</tr>
<tr>
<td>12.</td>
<td>Anaklia port</td>
<td>Anaklia port</td>
<td>Georgia</td>
<td>New port</td>
<td>Operational</td>
<td>28-Jul-18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anaklia</td>
<td>Georgia</td>
<td>New hicap rail</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anaklia–Istanbul</td>
<td>Georgia, Turkey</td>
<td>New sea link</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Ambarli Port</td>
<td>Istanbul</td>
<td>Turkey</td>
<td>New ports and sea links</td>
<td>Operational</td>
<td>21-Apr-18</td>
</tr>
<tr>
<td>14.</td>
<td>Piraeus Port</td>
<td>Athens</td>
<td>Greece</td>
<td>Major port expansion</td>
<td>Operational</td>
<td>27-Feb-18</td>
</tr>
</tbody>
</table>

Source: Reed and Trubetskoy (2019).
Annex 7

BRI effect on trade, FDI and GDP growth of the South Caucasus countries (Gravity Model)

Sources: Baniya, et al., 2019; Chen and Lin, 2018; de Soyres et al., 2018.

Note: EE & CA is the average for Eastern Europe and Central Asia.