The Future of Global Stability

The World of Work in Developing Countries

Kazakhstan Case Study

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A Report of the CSIS Project on Prosperity and Development

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Acknowledgments

The CSIS Project on Prosperity and Development (PPD) project director and the country case study authors would like to thank a series of individuals for their invaluable contributions to this country case study.

The authors would like to thank CSIS interns Nazla Mariza, Owen Murphy, and Joseph Coffee. The CSIS Dracopoulos iDeas Lab, in particular Rebecka Shirazi and Caroline Amenabar, helped us realize the vision of the country case study. We thank the designers Alison Bours, Emily Tiemeyer, William H. Taylor, Jeeah Lee for facilitating, and Emily Walz for copyediting.

Additionally, we would like to thank the countless people and organizations who assisted the research team in organizing imperative interviews for this country case study. Overall, the CSIS team met more than 20 institutions and 50 thought leaders in Kazakhstan. We would like to thank the interviewees and reviewers who provided useful information. Many chose to remain anonymous, so they are not listed in this case study.

Finally, this country case study would not have been possible without the generous support of Chevron. We are grateful that you entrusted CSIS with such an important undertaking.
1 | Introduction: Kazakhstan Case Study

In the past three decades, Kazakhstan’s economic growth has skyrocketed thanks to an abundance of natural resources, but as in the case of many resource-rich developing countries, this growth has been uneven. Kazakhstan was one of the fastest-growing economies in the world during the natural resources boom of the 1990s. The discovery of oil and natural gas in the Caspian Sea sparked massive economic growth spurred by foreign direct investment (FDI). As a result, the average income in Kazakhstan quadrupled from 2000 to 2016, putting Kazakhstan in the World Bank’s upper-middle-income country tier.¹

Kazakhstan is well endowed with natural resources: it has the ninth-largest oil reserves in the world and about 2 percent of the global share of oil and gas production.² These reserves will allow Kazakhstan to remain a major producer of oil for years to come, but the government relies too heavily on crude oil sector for tax revenue and export growth. Although the government has publicly acknowledged the need to reduce its reliance on natural resource extraction, economic diversification remains low and fluctuations in the price of oil continue to stunt GDP growth. Reliance on oil and gas has caused other sectors of the economy to remain underdeveloped and weak.

Kazakhstan should invest oil and gas revenues on education, not on further extraction. The government should reinvigorate the education system by digitizing schools’ curriculums and increasing teacher salaries. The country needs to create inclusive programs for children, youth, and marginalized citizens such as oralmans (i.e., ethnic Kazakhs returning from former Soviet Union countries). Investing in the education system will help the country retain quality teachers and ensure that future generations of Kazakhstani youth have the skills and training to pursue highly technical and diversified careers--beyond those related to natural resources.

“Kazakhstan should invest oil and gas revenues on education, not on further extraction.”

Construction, mining, and agribusiness are among the sectors projected to be the most promising for economic growth in the next 10 to 15 years, but challenges to the labor market remain. How will Kazakhstan strengthen the agriculture sector when most of the population is urbanizing? How will Kazakhstan deal with low population growth? Can the country create high-quality jobs in an increasingly digital world? What steps need to be taken to make the labor force more dynamic and inclusive across sectors?

This case study analyzes the current labor market in Kazakhstan and expected trends over the next five to ten years. The first section is a general description of the existing challenges to economic growth and the main drivers that are currently disrupting the labor market. The second section highlights the sectors that are most likely to offer employment or better income opportunities in the next five years. The third section presents a set of policy recommendations for a variety of stakeholders that aim to help make the labor market more dynamic.

The study draws from a wide-ranging literature review as well as a set of 25 interviews conducted in the Kazakhstani cities of Atyrau, Almaty, and Astana in May 2018 with thought leaders, company heads, NGOs, industry associations, and government officials. The country case study will contribute to a larger, more comprehensive report on the future of work in developing countries.
Kazakhstan’s Future Workforce Trends: Challenges and Drivers

Despite its incredibly large land mass, Kazakhstan has a small population of only about 18 million people. Kazakhstan’s economy is mainly driven by the services sector, which the World Bank estimates contributed 61.5 percent to GDP in 2016. The main services subsectors are wholesale and retail trade and education. Industry which includes mining, manufacturing, energy, and construction contributes 33.6 percent of GDP and is mainly attributed to oil and gas production. Agriculture currently accounts for a 4.9 percent of GDP yet continues to cover almost 17.9 percent of employment as of 2016 (Figure 1; Box 1). The services sector is the largest employer (61.2 percent), while agriculture and industry employ over 20 percent (Figure 1).

Figure 1: Employment and Value Added by Sector in Kazakhstan, 2016

![Employment and Value Added by Sector in Kazakhstan, 2016](Image)

- **Employment by Sector**
  - Agriculture: 4.9%
  - Industry: 20.9%
  - Services: 61.2%

- **Value Added by Sector**
  - Agriculture: 61.5%
  - Industry: 33.6%
  - Services: 4.9%

Source: ILO, United Nations

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5 Ibid.
6 Ibid.
8 According to the Kazakh Government’s data in 2017, agriculture employs around 15 percent of the labor force, industry 13 percent, and services 72 percent. Source: Ibid.
9 ILO, “Employment by Sector – ILO Modelled Estimates” (Geneva: ILO, 2016), [http://www.ilo.org/ilostat/faces/oracle/webcenter/pagehierarchy/Page3.jspx?MBI_ID=33&_afrLoop=1402989965501304&_afrWindowMode=0&_afrWindowId=165c9931m_1#%40%40%3F_afrWindowId%3D165c9931m_1%26&_afrLoop%3D1402989965501204%26MBI_ID%3D33%26_afrW](http://www.ilo.org/ilostat/faces/oracle/webcenter/pagehierarchy/Page3.jspx?MBI_ID=33&_afrLoop=1402989965501304&_afrWindowMode=0&_afrWindowId=165c9931m_1#%40%40%3F_afrWindowId%3D165c9931m_1%26&_afrLoop%3D1402989965501204%26MBI_ID%3D33%26_afrW).
Kazakhstan has shown great progress in formal job creation. Between 2003 and 2013, the annual employment growth was 2.1 percent, compared to the total labor force growth of 1.7 percent. During this period, a total 1.5 million jobs were created. Major employment expansion happened in construction, trade, and education, with the agricultural sector stagnated (Figure 3). The unemployment rate decreased from 8.8 percent in 2003 to 5.2 percent in 2013 and has remained steady since then. The International Monetary Fund (IMF) predicts that 800,000 people will enter the labor force over the next five years, while GDP is projected to grow by 5.2 percent on average for the same period.

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13 Ibid.

14 Ibid.


21 Ibid.


Box 1: Employment in Agriculture

Agriculture is the only sector that experienced a sharp decline in employment (in absolute terms) between 2003 and 2013, dropping by 14 percent. Agriculture as a share of total employment in Kazakhstan has decreased significantly from 45 percent in 1991 to 18 percent in 2017; however, the agricultural sectors still employs about 1.7 million Kazakhstanis. Around two-thirds of agricultural workers in 2014 were self-employed; many have low productivity levels and are engaged in subsistence farming. The low wages and lack of transportation methods to market make this sector less attractive. Agricultural laborers earn about 78 to 84 percent less than workers in mining and extractive industries. Roadways are in poor condition, making it difficult to transport goods from farms to the markets in Almaty and Astana without spoiling. Most agricultural farmers lack advanced refrigeration methods that would significantly reduce post-harvest loss.

**Figure 3: Sectoral Employment Trends**

Kazakhstan has also achieved remarkable success in poverty reduction. The poverty rate declined by 92 percent between 1999 and 2015. This decrease is very closely linked to strong economic growth over the last two decades. The monthly minimum wage has also increased in real terms, rising from 10,515 tenge ($32) in 2008 to 24,459 tenge ($74) in 2017. According to the Asian Development Bank (ADB),

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28 Index Mundi, “Population below poverty line (%),” [https://www.indexmundi.com/g/g.aspx?c=kz&v=69](https://www.indexmundi.com/g/g.aspx?c=kz&v=69).
Kazakhstan ranks far ahead of its regional counterparts in terms of the share of the population living below the poverty line, which was 2.7 percent in 2016.\textsuperscript{30} Although the number of impoverished people has been decreasing, macroeconomic shocks (mainly fluctuations in global oil prices) could impact poverty rates.

**Current Labor Market Challenges**

Despite the sustained economic growth and progress that the country has made over the past 20 years, there are several challenges facing the labor market. The economy continues to depend heavily on the oil and gas sector, and the jobs being filled by Kazakhstanis are mostly low-skilled ones. With the evolution of the Bolashak Scholarship Program and improvements to education, Kazakhstanis could improve their technical skills and begin filling some of the higher-level engineering and management positions. Schools should adopt innovation- and entrepreneurship-focused programs to encourage Kazakhstanis to start their own businesses and spur private sector growth.

**LOW PRODUCTIVITY JOBS**

Kazakhstan does not face a shortage in jobs, but the quality and productivity of many jobs remain relatively low.\textsuperscript{31} Construction, education, and wholesale and retail trade offer jobs with low and below-average productivity, and they are the main contributors to employment growth.\textsuperscript{32} Highly productive sectors such as mining have little employment growth.\textsuperscript{33} Worker inefficiency disproportionately affects vulnerable and disadvantaged groups such as women, low-skilled workers, older employees, and those in rural areas, who struggle to find good quality opportunities. A large share of the workforce remains in low-productivity sectors, particularly relating to agriculture.\textsuperscript{34} Many self-employed agricultural workers are subsistence farmers and face significant constraints to scaling up their production.

In Kazakhstan, informal sector jobs accounted for approximately 26 percent of total employment in 2015.\textsuperscript{35} Informal workers are highly concentrated in the agriculture sector: around 62 percent of informal workers live in rural areas and work in agriculture.\textsuperscript{36} Informality decreases with education: workers with tertiary education had an incidence of informality three times lower than those with only primary schooling.\textsuperscript{37}

**HEAVY DEPENDENCY ON CRUDE OIL AND GAS, WITH FEW TRADING PARTNERS**

Kazakhstan remains highly dependent on the tax and export revenues from the oil and gas sector (Box 2). The government has struggled to move industrial production away from oil and gas and into minerals and rare earth metals, despite initial investment from countries like Japan. Government revenues still rely heavily on profits obtained from natural resources, placing Kazakhstan among the Extractive Industries Transparency Initiative’s (EITI) most resource-dependent countries.\textsuperscript{38} The share of oil exports as a


\textsuperscript{31} World Bank Group Macroeconomics & Fiscal Management Global Practice, “Kazakhstan: A Long Road to Recovery.”

\textsuperscript{32} Ibid.

\textsuperscript{33} Ibid.

\textsuperscript{34} Strokova et al “Labor Market Outcomes Kazakhstan,”


\textsuperscript{36} Ibid.

\textsuperscript{37} Ibid.

percentage of total exported goods is around 60 percent. The government has a plan to reduce this to 30 percent by 2050 and move exports to the high-technology energy processing industry.

The economy of Kazakhstan is tied to the fluctuation of crude oil prices, which makes the country vulnerable to global price shocks. The fall of global oil prices in 2014 resulted in a dramatic economic downturn and real GDP growth slowed to 1 percent for two years. During this time frame, Kazakhstan experienced currency devaluation, greatly weakening private consumption and the purchasing power of individual households. An increase in FDI inflows of 12.2 percent to expand oil production helped Kazakhstan’s economy recover, and real GDP grew 4 percent in 2017. Similar economic recessions could easily happen again in the future if the government does not strengthen other economic sectors.

Related to oil and gas, Kazakhstan is dependent on China and Russia to buy Kazakhstani exports. External demands from China and Russia continue to drive Kazakhstan’s economic agenda. The Kazakhstan-China oil pipeline is estimated to have cost $3 billion total and has become a major part of the Belt and Road Initiative (BRI).

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Economic growth in Kazakhstan over the past decade has largely been driven by the expansion of the extractive oil and gas sector. Rapid development of the oil industry began in the late 1990s, stimulated by foreign investment after the discovery of oil reserves. Since then, oil and gas have become the most lucrative, revenue-generating industries for the country. Kazakhstan ranks among the world’s top 20 oil producers, with total proven recoverable oil reserves of 38 billion barrels in 2017 (4 billion tons) and potential reserves of 100-110 billion barrels.\(^{42,43}\) Nearly 80 percent of Kazakhstan’s mining products (the majority of which are oil and gas) are exported to more than 30 countries and represent around 60 percent of Kazakhstan’s total exports.\(^{44,45}\)

The oil business in Kazakhstan is dominated by Chevron, Exxon Mobile, and Russia’s Lukoil. Through the Ministry of Energy, the government maintains supervision of these foreign companies and collects royalties from them. Kazakhstani officials seek equal inclusion for KazMunaiGaz—Kazakhstan’s national oil company—despite an under-skilled workforce.

Oil and gas will continue play a key role in Kazakhstan’s economy. Investment in mining, mainly to extract oil and gas, covered 55 percent of total investment in 2017. This will likely to grow along with the expansion of oil fields, such as the production launch of the Kashagan offshore oil field in the Caspian Sea.\(^{46}\) The production of oil and gas is expected to increase significantly with the integrated Future Growth Project-Wellhead Pressure Management Project (FGP-WPMP) expansion of the Tengiz field.\(^ {47} \) Crude oil production is expected to grow by 12 million tons a year, and the project will provide new jobs for 33,000 Kazakhstani.\(^ {48} \)

### THE EDUCATION SYSTEM DOES NOT MEET CURRENT LABOR MARKET NEEDS

Another structural weakness in Kazakhstan’s economy is its outdated education system, which fails to prepare workers with the critical thinking skills needed for a more diversified labor market. The first challenge is the education curriculum. Even though the country gained independence from the Soviet Union more than 26 years ago, both its primary and secondary education systems are dominated by the Soviet legacy of central planning. Public education institutions depend heavily on the Ministry of Education and Science for their operations. For example, they must obtain ministry approval before instituting any new courses or degrees and they still use a Soviet-era curriculum with little flexibility in veering from traditional, basic academic subjects. Instead, students must seek third-party “extra-curricular” courses in science, technology, engineering, and math (STEM), language skills, and other transferable life skills (such as articulating ideas and concepts, public speaking, and working in a group setting, among others).

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\(^{44}\) Ibid.


A second challenge is the low level of investment in education. Kazakhstan’s government expenditure on education in 2016 was 2.9 percent of its GDP, compared to a global average of 4.9 percent and 5.1 percent in Europe and Central Asia.49

Moreover, regional and geographic disparities exist. Kazakhstan has way too many schools (primary, secondary, and university level), so development actors on the ground should keep track of which public schools are performing at the level they should, and which fall below the curve. Access to education in rural areas remains lower than in urban centers. This is a critical issue, because approximately 40 to 45 percent of the population still lives in what is considered a rural setting.50 Private institutions have little incentive to invest in these areas because most rural families cannot afford private education and there is low enrollment. Combined with a lack of access to modern technology and state-of-the-art resources, rural schools are at a grave disadvantage.

The chances for career advancement are higher for workers who know Russian,51 increasing the incentive to attend Russian-language schools. Most primary schools in Kazakhstan continue to teach in Kazakh, while secondary and higher education institutions are primarily taught in Russian. Most primary Kazakh schools remain in rural areas, while Russian schools are concentrated in urban areas and are higher quality. In 2012, there were 3,819 secondary schools using Kazakh as the language of instruction and 1,394 using Russian.52 In the 2012-2013 academic year, rural areas accounted for only 15.7 percent of primary schools while 92.7 percent of secondary schools were in urban areas.53

The current administration of President Nursultan Nazarbayev has recognized these shortcomings. Education is named as one of seven long-term development priorities in the “Kazakhstan-2030: Prosperity, Security and Improvement of Welfare of the Citizens of Kazakhstan,” which puts education as a medium-term state programs (5 to 10 years) for the major spheres of economic and social development within that larger planning framework. President Nazarbayev’s long-term vision for education is elaborated upon in the State Program of Education Development (SPED) which aims to transition to a 12-year education model and increase the share of students who have successfully completed education programs in science and math to 70 percent.54

In addition, the document set another objective to improve Technical and Vocational Education and Training (TVET). Kazakhstan has many workers with only basic skills obtained from primary education, specifically regarding science and mathematics. Primary education does not instill a level of understanding in these areas that will translate into highly technical careers in engineering. Because of this, there is a shortage of workers in engineering, computer science, and technology, all of which are critical if the country wants to diversify its economic base and compete on a global economic scale.55 The TVET system must be more responsive to the anticipated transitions to new fields such as renewable energy and rare

53 Ibid.
55 Jan Rutkowski, “Promoting Formal Employment in Kazakhstan.”

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earth metal applied science. This requires an integrated labor market information system that provides data on-demand for different occupations and skills. Moreover, linkages between employers’ demands and skill supply should be improved. It is important to involve employers in the design of curricula so that graduates possess the skills that are most demanded by the market.

Behind this ambitious government plan for education, there are some implementation issues. Although primary and secondary school enrollment rates have steadily increased since 1998, the quality of education remains concerning.\textsuperscript{56} Primary, secondary, and even higher education institutions suffer from poorly trained teachers and low-quality technology. Teachers earn only around half of the average wage in Kazakhstan, which is the second-lowest income by sector after agriculture.\textsuperscript{57} This leaves little incentive to attract or retain talent in this sector. Because of this, education institutions in Kazakhstan often employ recent graduates with little to no experience to fill teaching roles. The more experienced teachers, many of whom have foreign educations, have emigrated in search of better opportunities.

One of the most successful government programs to improve education levels within Kazakhstan is the Bolashak Scholarship Program. Started in 1993, some 12,898 young people have been educated abroad and brought back to work at least five years in Kazakhstan.\textsuperscript{58} This program demonstrates the Kazakh government’s desire to expand the skills developed by young Kazakhstanis and help the labor force develop the skills to succeed in the 21\textsuperscript{st} century.

\textbf{WEAK INFRASTRUCTURE AND A NON-CONDUCIVE ENVIRONMENT FOR INNOVATION}

Major constraints to doing business in Kazakhstan include weak competition in some sectors, long distances to global markets, and an inability to compete on a global scale with neighboring countries such as China and Russia.\textsuperscript{59,60} There is also an overall restrictive environment for innovation and entrepreneurship in Kazakhstan. The success of the private sector in Kazakhstan is linked to the closeness of its relationship with the government. Therefore, there is little incentive for future generations to consider staying in Kazakhstan to start a business or work in the private sector, as it is assumed that this will require ties to the government which comes with heavy operating restrictions.

Transportation logistics remain a major impediment for important sectors in the economy, particularly for agriculture and consumer goods. Roadways are in poor condition, making it difficult to transport agricultural produce to urban areas without the meat, dairy, and other perishables spoiling. Kazakhstan is also adjacent to two of the largest consumer markets in the world, China and Russia. Without proper infrastructure and transportation methods, Kazakhstan is unable to export goods, agricultural or otherwise, outside the country. One of Kazakhstan’s biggest comparative advantage is its location.

\textsuperscript{56} Ibid.
\textsuperscript{57} OECD, “Early Childhood.”
\textsuperscript{60} Likewise, the World Economic Forum (WEF)’s Global Competitive Index ranks Kazakhstan 57\textsuperscript{th} out of 137 economies studied, a four-point drop from the previous year study WEF Global Competitiveness Index 2017-2018.
Future Drivers of the Labor Market

The biggest hurdle for Kazakhstan’s future labor market is the lacking education system and the potential resulting emigration. Technology and globalization will make emigration easier for Kazakhstaniis who are not finding adequate education or labor opportunities in their country. Kazakhstan does not have enough training in science, technology, and engineering, which makes its citizens unprepared to fill high-quality jobs in the prominent extractive industry. Even if Kazakhstaniis had the education and skill set, the industry is not projected to offer sustainable employment prospects.

In 2014, the U.S. Energy Information Administration ranked Kazakhstan as the world’s 18th-largest oil producer, sitting between Colombia and Algeria. If oil or natural gas prices drop, however, Kazakhstan does not have a fallback sector for working-age citizens to turn to. Despite having direct access to European markets via the Caspian Pipeline Consortium through Russia, the extractives industry is not projected to be a long-term, sustainable employment mechanism in Central Asia. If the government of Kazakhstan is unable to shift its reliance away from the extractives industry and into building up emerging sectors for employment, such as renewable energies, the future of the labor market will be dim.

The world is shifting toward renewable energies. Advancements in technology, coupled with advanced education systems, will help many countries develop this industry, as well as the supporting labor market it needs. Kazakhstan has a unique opportunity to develop its green energy sector as well, but it cannot do so without people who understand engineering and have the technical skills to implement it successfully. If the world continues moving toward renewables and away from extractives and Kazakhstan does not keep up, it will be left behind.

Lastly, demographics will play a key role in the labor market. Like other former states of the Soviet Union, Kazakhstan underwent intense turmoil after its independence. Life expectancy in Kazakhstan decreased from 68.3 years in 1990 to 65.5 years in 2000. Although life expectancy improved to 72.3 years in 2016, there are escalating concerns about Kazakhstan’s aging population, which has reached 7 percent of the country’s total population. Kazakhstan’s total dependency ratio increased from 44.6 in 2010 to 53.7 in 2017, and it appears that the youth dependency ratio will decrease by 2050, while the elderly dependency ratio will double. Though total population is not decreasing and Kazakhstan’s birth rate has remained relatively constant, it is projected to steadily decline over the next few decades while average life expectancy is forecasted to increase. According to the UN Population Prospects, Kazakhstan’s elderly population (65+) will double from 6.75 percent of the country’s total population in 2015 to 13.2 percent of the population by 2050. This will create pressure for the country to provide retirement income and adequate care to a growing aging population (Figure 4).

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66 Ibid.
67 Ibid.
Figure 4: Kazakhstan’s Age Distribution, 2017 and 2050

Source: UN DESA

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As mentioned earlier, over the last decade, economic growth has mainly been driven by the expansion of the extractive sector—mainly crude oil—which has supported consumption and government spending. However, Kazakhstan will need to diversify its economic base to buffer itself from oil price shocks and to increase its export capabilities. This has the potential to enhance job productivity and enable Kazakhstan’s workforce to integrate to a more competitive and innovative global economy.

During his annual State of the Nation address in 2012, President Nazarbayev laid out his “Kazakhstan 2050” strategy for bringing Kazakhstan into the twenty-first century. The Kazakh Minister of Labor and Social Protection estimates that the plan will create 220,00 new jobs in 2018. The eight priority sectors for “Kazakhstan 2050” are energy, finance and banking, mining and smelting, agriculture, transportation and logistics, chemicals and pharmaceuticals, information and communications technology (ICT), and machinery. Many of the government programs proposed through “Kazakhstan 2050” are directly tied to the creation of new jobs. One example is that the plan directly specifies that “infrastructure should be built only in places where it leads to the development of new businesses and jobs.”

The following section provides an overview of sectors that could provide added value to the economy beyond oil and would bring new work opportunities for the next generation of Kazakhstanis. Within manufacturing, the subsectors on food production, mining rare earth metals, renewable energies, and construction are the most promising. Services accounted for 61 percent of the total workforce in 2016, and subsectors connected to urbanization show the more promise like sales, transport, and real estate. However, to accelerate the diversification process, Kazakhstan needs to increase investment in education to instill the skills needed for employment in alternative sectors.

**Diversified Mining: Rare Earth Metals**

Kazakhstan has the potential to become a global competitor in the field of mining and supplying rare earth metals (REMs) in the next several years. Considering the vital function of REMs for highly technical industries such as electronics, laser technology, telecommunications, and medical equipment, President Nazarbayev approved a national investment plan to develop the REM industry in the country.

To accelerate the development of the REM industry, Kazakhstan has been attracting FDI from leading companies in Japan, Germany, and France. The cooperation with Japan resulted in the production of
almost 10 percent of global REM, around 225,000 tons in 2015. The co-production with Germany and France is worth almost 4 billion and 3 billion EUR, respectively.

The development of the REM industry could potentially bring short-term opportunities for low-skill labor in mining, as well as long-term employment opportunities in production and supply trade. To give an illustration, AO NAK Kazatomprom, a national company that produces and exports uranium and its compounds; rare metals such as beryllium, niobium, and tantalum; nuclear fuel for nuclear powerplants; and related technologies and equipment, employed 25,000 workers in 2014. The number of ongoing rare earth exploration projects in Kazakhstan indicates the sector will continue to grow and create more employment potential in the future.

**Food Production**

The Kazakh government has publicly recognized the enormous untapped potential of agriculture, particularly as it pertains to exports and higher value-added products. Currently, Kazakhstan is one of the world’s largest exporters of grain, exporting wheat to more than 70 countries. Other important crops in to Kazakhstan’s economy are maize, rice, oats, buckwheat, cotton, potatoes, vegetables, sugar beets, and sunflowers. By 2021, Kazakhstan expects to improve the profitability of its grain industry by 30 to 40 percent.

President Nazarbayev named agriculture “a new driver of the economy” in his 2017 address to the nation. In the national strategy *Kazakhstan-2030: Prosperity, Security and Improvement of Welfare of the Citizens of Kazakhstan*, the president stresses the importance of agriculture, forestry, and the food industry to improving diversification within Kazakhstan’s economy. This plan identifies agriculture and the food processing industry as key areas for economic diversification and food security: namely, agricultural exports, increased labor productivity, and processing of meat, milk, fruits, and vegetables. In 2013, the Kazakh government also approved the Agricultural Development Program for 2013–2020 (also known as Agribusiness-2020), aimed at increasing the competitiveness of agricultural producers through “increased financial assistance, improved marketing of agricultural products, and enhanced governance.” As such, agriculture and the related industries have become a major priority in the government’s initiatives for promoting economic development through diversification.

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76 Ibid.
78 Ibid.
The Kazakh government has plans to promote sustainable agriculture and boost productivity through technology and modernization. Modernization 3.0, Kazakhstan’s economic transition agenda, places agriculture as one of the focuses of technological modernization. Kazakhstan has tried to increase the existing domestic production of agricultural machinery and equipment, as nearly 80 percent of current machinery is at the end of its lifecycle and needs replacement. This offers another prospective venue for both foreign investment and employment. In recent years, Kazakhstan launched several assembly projects with firms from Russia, Ukraine, and Belarus, which are now under active development. The demand for food from neighboring countries, including China and Russia, presents an opportunity for Kazakhstan to increase existing domestic production of agricultural machinery and equipment, establish new manufacturing and assembly facilities, and employ large masses of its population.

Agribusiness could become one of the most promising sectors for Kazakhstan. To align with government aims, agricultural development must focus on raising productivity, enhancing competitiveness, moving up the value chain with comparative advantages, and adopting new technologies in this space. Policies must be implemented to help farmers during this transformation process execute more efficient production, processing, storage, and post-harvest distribution. Small farmers, who make up 76 percent of agricultural outputs in Kazakhstan, need assistance in adopting modern agricultural farming skills with adequate production tools and financial support. This is a crucial element that must align with the government’s plan in fostering this sector. The government’s agribusiness subsidy allocation increased more than threefold from 2007 to 2011. The total budget for 2013–2020 was estimated to be 3.1 trillion tenge (approximately $20.5 billion) to help increase the competitiveness of local food producers and processors.

**Renewable Energy: Promising, but Longer-Term**

Driven by the awareness that oil prices could drop significantly, the government of Kazakhstan has been promoting renewable energy as an alternative source of energy and thus, employment. President Nazarbayev has pledged that at least 50 percent of Kazakhstan’s energy consumption must come from renewable energy sources, notably solar and wind power, by 2050. The Concept of Transition of the Republic of Kazakhstan to the Green Economy 2013–2020 focuses on the careful use of water and the widespread adoption of renewable energy technologies. The government has announced plans to get to at least 3

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88 Export.gov, "Kazakhstan – Agricultural Sector."
90 Ibid.
92 FAO, "Eastern Europe and Central Asia Agro-industry Development Country Brief. Kazakhstan"
93 Utegenova, "Kazakhstan’s 2030 Development Strategy."
percent of solar and wind energy by 2017 and 10 percent by 2025.\textsuperscript{96} Currently, renewable sources (excluding hydropower) account for less than 1 percent of total power produced in Kazakhstan.\textsuperscript{97}

Recognizing the sustainable profit potential of renewable energy, foreign investors have begun to provide funding to several high-profile pilot projects. For example, the European Bank for Reconstruction and Development (EBRD) has allocated $244 million in investments for Kazakh renewable energy projects in the north and south of the country.\textsuperscript{98} Through cooperation with China, Russia, and Turkey, there will also be 145 investment projects that amount to $47.8 billion.\textsuperscript{99} Although employment in renewable energy remains low at 2,522 jobs,\textsuperscript{100} the upcoming projects have the potential to generate more jobs. For example, the projects with China, Russia, and Turkey are expected to create 35,000 jobs for Kazakhstan, or 0.3 percent of the labor force, concentrated in the construction and electricity subsectors.\textsuperscript{101} Another project, a green-energy power plant in southwest Kazakhstan called the Balkash Thermal Station, is expected to produce 1,320 megawatts (MW) of electric power, approximately 9 percent of Kazakhstan’s total power output.\textsuperscript{102} This power station was built to address the energy shortage problem in the southern region of the country.\textsuperscript{103}

The high cost of transitioning to green energy remains challenging, but Kazakhstan has enormous potential for renewable energy development. Renewable energy can play a role in developing cost-efficient energy resources for energy-deficit and low-density areas.\textsuperscript{104} Providing electricity for rural areas can create new industries and jobs.\textsuperscript{105} According to expert assessments, Kazakhstan’s solar energy potential is quite high, at 2,300 to 3,300 kwh/m² per year.\textsuperscript{106} Kazakhstan also has the uninhabited land mass needed for solar panel installations. Given the lack of talent in technical professions, however, many Kazakhstani see this as another sector that will quickly become managed by, and employ, expatriates. Due also to the current reliance on the oil and gas sector for revenues and cheap coal production for electricity generation, many Kazakhstanis are skeptical that this sector can change employment prospects in the near-term. The projected 35,000 additional jobs in the construction and electricity sub-sectors of renewable energies are expected to take longer to come to fruition.\textsuperscript{107}

**Infrastructure**

The successful ability of the above sectors to increase employment depends on improved infrastructure throughout the country. Increased capital spending on infrastructure will need to be significant, driven by

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\textsuperscript{96} Ministry of Environmental Protection of Republic of Kazakhstan, “CONCEPT for transition of the Republic of Kazakhstan to Green Economy.”


\textsuperscript{99} Ibid.


\textsuperscript{101} Sadykova, “EBRD to Invest $244 Million in Kazakh Renewable Energy Projects.”


\textsuperscript{103} Embassy of Republic of Kazakhstan in Washington DC, “Mining and Smelting.”


\textsuperscript{105} Ibid.

\textsuperscript{106} Ibid.

\textsuperscript{107} Embassy of the Kingdom of the Netherlands, “Special Energy Issue on Kazakhstan.”
government expenditures and foreign investment. China has already invested $20 billion since 2014 into Kazakhstan’s infrastructure as part of the BRI, with around $8 billion in 2017 alone.\textsuperscript{108} In the first nine months of 2017, Kazakh government investments in infrastructure, mainly in transportation and communications, increased by 20 percent.\textsuperscript{109} The Khorgos–Aktau railway construction and further modernization of the Khorgos Gateway are predicted to create more than 100,000 jobs by 2021.\textsuperscript{110} If increased levels of investment continue, this sector has the potential to create jobs in the short- and long-term.

Around 60 percent of national roads need major rehabilitation and maintenance.\textsuperscript{111} The cost of transporting goods is relatively high, at 10 percent of the cargo value. This is 6 percent more expensive compared to the value cost in developed countries.\textsuperscript{112} Because of imperfect highway systems, the size of the land mass, and the spread of the population, railways could be an opportunity for foreign investment to improve transportation logistics throughout the country.

Agriculture in Kazakhstan also has ineffective, or nonexistent, irrigation systems. Agriculture consumes 69 percent of the country’s water supply.\textsuperscript{113} According to the Food and Agriculture Organization (FAO), Kazakhstan needs around 3,500 m$^3$ of water to produce a ton of crops, while it only takes 1,000 m$^3$ to produce the same in the United States.\textsuperscript{114} Investments in new irrigation technology and techniques offer the potential to foster agriculture development and use a scarce resource such as water more strategically.

\textsuperscript{109} World Bank Macroeconomics & Fiscal Management Global Practice, “Kazakhstan, The Economy is Rising: Is It Still All about Oil?”, Kazakhstan Economic Update (Fall 2017).
\textsuperscript{111} Asian Development Bank, “Summary of Sector Assessment on Transport, Information and Communication Technology (Road Transport Subsector),” Sector Knowledge and the Government’s Transport Infrastructure Development Program (TIDP), 2010.
\textsuperscript{112} Ibid.
4 | Recommendations

Kazakhstan faces many challenges in diversifying its economy and reducing its reliance on the oil and gas industry to create more jobs in emerging, more sustainable, sectors. The government needs to begin reinvesting its tax revenue to support other sectors of the economy that are struggling, like education and agriculture. The oil market has fluctuated in recent years, and another drop in oil prices could dramatically impact the country’s economic growth and employment rates.

In this concluding section, recommendations are made based off current literature and interviews with experts in country. While many of these items are needed to prepare its workforce for the future, they will realistically take time to come to fruition. The main challenges for labor market reforms will be to prioritize the policy interventions focused on key areas that are poised to have a meaningful impact. Some of these policies will be “easier” to implement, while others will be more complex to design, more politically difficult, and will need significant financial resources so they will require more time. We classified the timeline as “short-run” taking 1-2 years to implement, “medium-run” would involve 3-5 years and “long-run” would involve a longer time of 5-10 years (Figure 5).

**Figure 5: World of Work – Mapping of Recommendations**

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**Short Run (1-2 years)**

**REVAMP THE PRIMARY AND SECONDARY SCHOOL CURRICULA FOR THE NEEDS OF THE TWENTY-FIRST CENTURY**

_Government:_ Besides increasing the funding available to schools, the government of Kazakhstan should give public schools more independence and move away from the Soviet-style education system. The Ministry of Education controls almost all aspects of public schools right now. It is nearly impossible to update the

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curriculum or make any substantive changes to schools without the approval of the Ministry. The curriculum in the primary and secondary schools in Kazakhstan needs rapid improvements to reflect the changes in skills needed for the workforce of the twenty-first century. Schools need to focus on STEM training, digital literacy, English proficiency, and critical thinking skills to make their students more competitive in the global market. There are more multinationals operating in the country because of the oil and mining sector as well as China’s Belt and Road Initiative. For Kazakhstan’s workforce to remain competitive vis-à-vis foreign workers, the quality of education must improve.

**Private Sector:** The private sector should continue to work with the development community to support training and extracurricular programs. The private sector can help the government and the development community identify the skills that are most needed to fill their open positions. They can also identify ways to further improve labor productivity. The World Bank has reported that labor productivity in the Atyrau region is four times higher than the country average, demonstrating the increase over the past decade, particularly in the oil-extracting sector.¹¹⁶

**Development Community:** The development community throughout Kazakhstan should focus on offering extracurricular activities that will enhance the skills developed during primary and secondary education. Organizations like the International Youth Foundation and the World Bank have launched programs focused on developing STEM (Science, Technology, Engineering, and Mathematics) and life skills to filling open jobs in the labor market in Kazakhstan (Box 3). It is key that young Kazakhstanis begin developing the leadership and training necessary to take over these jobs as well.

**BOX 3: ZANGAR PROJECT**

*Zangar* is a program in the Atyrau region that combines training in work-relevant life skills with programing in science, technology, engineering, and mathematics (STEM). This four-year experiential learning initiative equips youth (age 10 to 22) for success in education, life, and employment. Working closely with community organizations, institutions, and businesses, *Zangar* fosters community engagement and builds capacity in Atyrau. The program was launched in 2015 as part of Chevron’s Atyrau Youth Development Initiative and was developed by the International Youth Foundation (IYF) in partnership with the local government, Akimat of Atyrau region. The first digital fabrication laboratory in Kazakhstan, “Fab Lab Atyrau,” was opened within the program in 2016 to enable innovation and enhance opportunities for Atyrau youth in STEM education programs. These kinds of partnerships are critical for Kazakhstan in general, and especially so for more remote regions such as Atyrau, which are surrounded by oil and gas reserves and have little access to work beyond this sector.

Source: [https://www.iyfnet.org/initiatives/zangar](https://www.iyfnet.org/initiatives/zangar)

**CONTINUE INFRASTRUCTURE INVESTMENTS, ESPECIALLY IN TRANSPORTATION**

*Government:* Kazakhstan is a part of China’s BRI and should continue to support both Chinese and government infrastructure projects throughout the country especially roads, highways, and railroads. It is critical to improve transportation between the two major cities, Almaty and Astana, and the southern region where most of the agricultural production is. Weak transportation systems in the country are a barrier for exporting as well as getting fresh produce to cities.

The government must also encourage foreign construction companies to employ Kazakhs over foreign workers. In 2015, Kazakhstan had around 30,000 foreign workers and more than 31 percent of them were Chinese. Of those foreign workers, 66.5 percent were involved with construction. With the evolution of the BRI, these numbers are only expected to grow given Chinese companies’ histories of bringing in their own workers for large-scale construction projects. Despite the number of jobs going to foreign workers, the construction sector employed 7 percent of Kazakhstan’s labor force in 2017, and this sector is projected to grow dramatically in coming years. As a result, the construction industry could be one of the largest suppliers of new jobs in the next five years.

**Development Community:** The Multilateral Development Banks (MDBs) have a key role to play in creating an infrastructure boom in Kazakhstan by providing loans to the government. Since May 2018, the European Bank for Reconstruction and Development (EBRD) has disbursed more than €5.1 billion in Kazakhstan. EBRD’s current portfolio in Kazakhstan is €2.5 billion with 42 percent going to the private sector. 46 percent of EBRD’s current portfolio is going to energy, and 40 percent is going to infrastructure. The Asian Development Bank also works in Kazakhstan, financing upgrades to the Central Asia Regional Economic Cooperation transport corridors, aimed at strengthening regional trade and economic integration.

**SUPPORT RENEWABLE ENERGY PROGRAMS**

**Government:** The theme at Astana’s 2017 World Expo was “The Future of Energy.” Kazakhstan has huge potential for solar and wind energy because of the large amount of open space throughout the country. The government and President Nazarbayev must keep the momentum from the conference going and follow through with implementing the initiatives launched during the Expo. The government approved the *Concept of Transition of Republic of Kazakhstan to Green Economy*, which set the goal of reducing energy consumption by 25 percent of 2010 levels by 2020 and achieving at least 3 percent of energy generation from renewable sources by 2017. Kazakhstan must increase its renewable energy production to diversify its economy and reduce the dependence on the oil and gas industry. Without the international spotlight, many of the initiatives launched during the Expo may fall apart and the country may focus predominately on the oil and gas sector again. This cannot happen if Kazakhstan wishes to become a more diversified economy.

**Development Community:** The development community should continue to work with the government and private sector to emphasize the importance of supporting renewable energy projects. More than 46 percent

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118 Ibid.
119 Author’s calculation using the Committee on Statistics of the Republic of Kazakhstan. Data is available at: Ministry of National Economy of the Republic of Kazakhstan, Committee on Statistics, [http://stat.gov.kz/faces/wcnav_externalId/homeNumbersLabor;jsessionid=NRvPqeXudTCPib8cN2XjcbO1aP12syNYDfQ8w0dHJjbI_NJWvDJ21247B30_/97695694?lang=en&_adfl.ctrl-state%3Db633e7a9eB4](http://stat.gov.kz/faces/wcnav_externalId/homeNumbersLabor;jsessionid=NRvPqeXudTCPib8cN2XjcbO1aP12syNYDfQ8w0dHJjbI_NJWvDJ21247B30_/97695694?lang=en&_adfl.ctrl-state%3Db633e7a9eB4).
121 Ibid.
122 Ibid.
123 Ministry of Environmental Protection of Republic of Kazakhstan, “CONCEPT for transition of the Republic of Kazakhstan to Green Economy.”

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of EBRD’s loans in Kazakhstan are to the energy sector. The MDBs should continue to finance wind, solar, and hydropower projects throughout the country to help the government reach its renewable energy goals.

**Medium Run (3-5 years)**

**Diversify mining efforts to include rare earth metals (REMs)**

*Government:* In his 2014 State of the Nation Address, President Nazarbayev emphasized the importance of “increasing the development of rare earth metals, taking into account their importance for knowledge-based industries—electronics, laser technology, telecommunications and medical equipment.” China currently produces 85 percent of the world's rare earth metals, but Kazakhstan remains the world’s largest uranium producer. Western countries are hungry for more REMs and want to rely less on China, which has had a monopoly on their production for the last few years. Between 2012 and 2015, 72 percent of imported REMs to the United States were from China. This dominance has allowed China to use its rare earth exports as a diplomatic tool. Kazakhstan could become an alternative supplier for the United States, Germany, and Japan if they are able to use technology to increase production. The Kazakhstani government should look to build off the co-production agreements they have secured with companies from Japan, Germany, and France to rapidly improve production. Like in the construction sector, the government must encourage foreign companies to hire local workers for rare earth mining projects instead of bringing in foreign ones.

*Private Sector:* Kazakhstan is geologically diverse with huge amounts of copper, gold, nickel, and iron. Current estimates suggest that Kazakhstan has 1,500 tons of gold, 28.2 million tons of copper, and 22.6 million tons of polymetals. These metals and other REMs are in high demand and could be exported to large markets in China and other neighboring countries. China accounts for 65 percent of the global demand for rare earth metals. Copper has a lot of potential because of the critical role it plays in construction projects related to the BRI. The private sector should use the technology available in other countries to teach the Kazakhstani workforce how to extract these rare earth metals properly.

**Increase funding for education to better prepare the Kazakhstani workforce to respond to private sector demands**

*Government:* OECD countries spend on average the equivalent of 4.5 percent of GDP on educational institutions. In 2016, Kazakhstan spent only 3 percent. This is not enough: a larger percentage of the money earned from the oil and gas sector should be spent on revitalizing the stagnant education system. Programs like the “100 New Textbooks in Kazakh” project launched by President Nazarbayev

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125 “Address of the President of the Republic of Kazakhstan N. Nazarbayev to the Nation,” January 14, 2014.


129 Silk Road Reporters, “Kazakhstan Eyes Rare Earth Minerals.”


should be continued and supported. Currently, there is a huge gap in the quality of schools in Kazakhstan, particularly between rural and urban areas. The Ministry of Education should increase the number of Nazarbayev Intellectual Schools, a network of high-quality schools for ages 6-18 years that are extremely competitive. New mechanisms of education financing should be explored to improve access to high-quality schools and to fund programs for students with learning disabilities or who may require special attention.

**Development Community:** The World Bank, regional MDBs, and others can continue to pressure the government of Kazakhstan to be transparent about its spending and the benefits it provides, particularly related to education. Development organizations should raise awareness about the need to pay taxes and the benefits that Kazakhstanis are entitled to.

**Long Run (5-10 years)**

**UPDATE AGRICULTURAL TECHNOLOGY AND PROCESSES**

**Government:** Agriculture has been the largest source of jobs for years in Kazakhstan. In 2017, more than 18 percent of the Kazakhstani labor force was employed through the agriculture, forestry, and fishing industries. However, the number of jobs in the agriculture sector is declining because the sector is remaining stagnant at 5 percent of GDP (Figure 1). To feed its population and reduce the country’s reliance on food imports, Kazakhstan will need to create jobs in the agri-business sector.

The government must work with the development community and private sector to encourage youth to work in this sector by leveraging the role that technology can play in reducing post-harvest loss and improving transportation logistics. Most youth see agriculture as outdated and a sector of the past, yet opportunities remain to dramatically increase productivity through drip irrigation and improved packaging techniques. The Kazakh labor market cannot be limited just to the major cities.

Kazakhstan has a comparative advantage in agricultural activities that require a lot of space like grain farming and meat production. Kazakhstan is one of the top ten grain exporters in the world, exporting to more than 70 countries. Kazakhstan should continue to increase production by improving transportation methods and infrastructure. Kazakhstan also has the potential to be one of the largest meat producers in the world. In 2017, the population of cattle in Kazakhstan increased by 340,000 head to 6.7 million head. In addition, Kazakhstan’s proximity to two of the largest populations in the world, China and Russia, gives it a unique advantage over its competitors. Kazakhstani meat producers were certified to export beef to China in 2017, opening the door for Kazakhstani exports.

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134 Author’s calculation using the Committee on Statistics of the Republic of Kazakhstan. Source: Ministry of National Economy of the Republic of Kazakhstan, *Committee on Statistics*.

135 Export.gov, “Kazakhstan Agricultural Sector.”


137 Ibid.

138 Ibid.
**Private Sector:** The private sector needs to work with the government and development community to improve work efficiency in the sector. While agriculture in Kazakhstan has a lot of potential, it is being wasted due to inefficient methods of production and lack of incentives. According to the World Bank, a domestic agricultural worker in Kazakhstan produces $3,000 worth of crops per year, while a farm worker in a developed country produces $50,000-70,000 worth of crops, around 17-23 times more. Increasing productivity would create more jobs in rural areas with very few opportunities for employment besides agriculture.

**Development Community:** Kazakhstan’s agricultural sector has struggled to grow in recent years. Many rural farmers continue to use outdated techniques and processes that result in underproduction. With help from Western development agencies like the U.S. Agency for International Development (USAID), farmers could begin using drip irrigation, updated refrigeration techniques for transport, and other processes that would dramatically improve production and nutrition levels. Agriculture is closely linked to infrastructure because it is very difficult to transport goods around such a big country, let alone export them abroad. Western development agencies have the know-how and experience to offer education programs and technology advancements that would assist rural farmers throughout Kazakhstan.

Moreover, the MDBs and development actors should work with the government to reduce governmental regulations on exports and improve regional trade within Central Asia. According to the World Bank, it took Kazakhstan 79 days to export its products in 2014 because of the lack of infrastructure. In comparison, the world average was 21.5 days, and Russian and China can export even more quickly than average at less than 20 days. Improved transportation and refrigeration techniques are key to reducing the barriers to exports.

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5 | Conclusions: Key Takeaways

Ever since Kazakhstan gained independence from the Soviet Union, the country has struggled to diversify its economy beyond the oil and gas industry and struggled with corruption. Kazakhstan still has the ninth-largest oil reserves in the world. Natural resources such as minerals and oil and gas remain the main driver of Kazakhstan’s economy, accounting for 37 percent of GDP and 80 percent of total exports.141

Although 50 percent of the population now lives in urban areas, the country still has one of the lowest population densities in the world. Weak infrastructure and poor transportation networks linking population centers remain one of the country’s biggest challenges. Now that Kazakhstan is integrated into the BRI, China and the Multilateral Development Banks (MDBs) like EBRD and ADB have seen the opportunities for massive infrastructure growth in the country. Kazakhstan’s population is so geographically dispersed that it took an average of 79 days for Kazakhstan to export its products in 2014.142 For comparison, neighboring Russia and China can export goods in less than 20 days.143

Many of Kazakhstan’s challenges are the result of the country’s time as part of the Soviet Union. Education is one such legacy. Kazakhstan has made great strides towards universal access and enrollment in education, achieving 99.78 percent literacy among people ages 15 and above in 2010.144 The challenge is in improving the quality of education. Schools need more independence in adjusting curricula to meet the needs of twenty-first-century students and better resources to attract and retain quality instructors. Teaching remains one of the lowest-paid jobs in the country.

Kazakhstan relies too heavily on imports and does not produce many exports except for oil. It is blessed with many natural resources and could quickly become a leader in renewable energy programs, the mining of REMs, and food production if the government invests more heavily in these sectors. As Kazakhstan works to diversify its economy, CSIS has put forth a set of recommendations to create better jobs and make the labor market more dynamic for the short, medium, and long-term time horizons:

- Revamp Primary and Secondary School Curricula for the Needs of the Twenty-First Century
- Continue Infrastructure Investments, Especially in Transportation
- Support Renewable Energy Programs
- Diversify Mining Efforts to Include Rare Earth Metals
- Increase Funding for Education to Better Prepare the Kazakhstani Workforce to Respond to Private Sector Demands
- Update Agricultural Technology and Processes

142 World Bank Data, “Time to export (days).”
143 Ibid.
Annex A: Employment – Sectoral Overview

Figure A1 - Employment by Sector and Subsectors in Kazakhstan in 2017

<table>
<thead>
<tr>
<th>Sector</th>
<th>2017 (in thousands)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, Forestry, and Fishing</td>
<td>1,319</td>
<td>15.4</td>
</tr>
<tr>
<td>Industry</td>
<td>1,090</td>
<td>12.7</td>
</tr>
<tr>
<td>Mining and quarrying</td>
<td>284</td>
<td>3.3</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>582</td>
<td>6.8</td>
</tr>
<tr>
<td>Electricity, gas, steam, and air conditioning supply</td>
<td>151</td>
<td>1.8</td>
</tr>
<tr>
<td>Water supply; sewerage, waste management, and remediation activities</td>
<td>74</td>
<td>0.9</td>
</tr>
<tr>
<td><strong>Services</strong></td>
<td><strong>6,176</strong></td>
<td><strong>71.9</strong></td>
</tr>
<tr>
<td>Wholesale and retail trade; repair of motor vehicles and motorcycles</td>
<td>1,335</td>
<td>15.5</td>
</tr>
<tr>
<td>Education</td>
<td>1,056</td>
<td>12.3</td>
</tr>
<tr>
<td>Construction</td>
<td>614</td>
<td>7.2</td>
</tr>
<tr>
<td>Transportation and storage</td>
<td>608</td>
<td>7.1</td>
</tr>
<tr>
<td>Human health and social work activities</td>
<td>482</td>
<td>5.6</td>
</tr>
<tr>
<td>Public administration and defense; compulsory social security</td>
<td>479</td>
<td>5.6</td>
</tr>
<tr>
<td>Administrative and support service activities</td>
<td>280</td>
<td>3.3</td>
</tr>
<tr>
<td>Other service activities</td>
<td>263</td>
<td>3.1</td>
</tr>
<tr>
<td>Professional, scientific, and technical activities</td>
<td>239</td>
<td>2.8</td>
</tr>
<tr>
<td>Accommodation and food service activities</td>
<td>192</td>
<td>2.2</td>
</tr>
<tr>
<td>Financial and insurance activities</td>
<td>175</td>
<td>2.0</td>
</tr>
<tr>
<td>Real estate activities</td>
<td>162</td>
<td>1.9</td>
</tr>
<tr>
<td>Information and communication</td>
<td>156</td>
<td>1.8</td>
</tr>
<tr>
<td>Arts, entertainment, and recreation</td>
<td>134</td>
<td>1.6</td>
</tr>
<tr>
<td>Activities of households employing domestic workers and producing</td>
<td>5.2</td>
<td>0.06</td>
</tr>
<tr>
<td>goods and services for their own consumption (2014)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activities of extraterritorial organizations and bodies (2014)</td>
<td>0.6</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Note: Economic activity is based on the United Nations International Standard Industrial Classification of All Economic Activities, Rev 4. 2008

Data is available at Ministry of National Economy of the Republic of Kazakhstan, Committee on Statistics,
http://stat.gov.kz/faces/wenav_externalId/homeNumbersLabor?lang=en&_afrLoop=1564812373054253#!/%40%3F_afrLoop%3D1564812373054253%26lang%3Den%26_adf-state%3D50l0ihb04_120
Figure A2: Employment Trends by Economic Activity in Kazakhstan, in Thousands 2010-2016

Source: Author’s calculation using the Committee on Statistics of the Republic of Kazakhstan. (Data is available at Ministry of National Economy of the Republic of Kazakhstan, Committee on Statistics, http://stat.gov.kz/faces/wcnav_externalId/homeNumbersLabor?lang=en&_afrLoop=94653349228085%40%3F_afrLoop%3D94653349228085%26en%26_adf.ctrl-state%3Dortezm2a7_4).
Annex B: Methodology for Country Case Studies

CSIS prepared four country case studies in Brazil, India, Kazakhstan, and Nigeria, to do a deep dive analysis on their labor markets. The case studies analyze the current world of work in each country and the trends looming on the horizon. The case studies are divided into three parts: Part one is a general description of the challenges and main drivers that are disrupting the labor market. Part two presents the sectors that we believe will likely offer better employment and income opportunities in the next 5 years. Part three presents a set of policy recommendations across a variety of actors that would help make the labor market more dynamic and adaptable to the oncoming challenges.

During the period January through May 2018, a CSIS team traveled to these four countries and carried out a series of confidential and off-the-record interviews with a variety of stakeholders to get their perspective on the future make-up of the world of work. CSIS met with professionals in government, the academic community, companies in rising sectors (technology, tourism), traditional sectors (energy, finance, automotive), trade associations, labor unions, and NGOs. Overall, the CSIS team met over 100 institutions and 250 thought leaders in these four countries. CSIS also consulted a wide range of secondary sources and databases to conduct the case studies.

CSIS did not carry out a detailed survey, but posed a series of open-ended questions. The aim of the interviews was to get first hand perspectives from company executives, economists and thought leaders, to corroborate some of the findings from prior studies on the topic and at the same time, offer some new insights.

Interview questions included:

1. What does the future of ‘work’ in your country look like (5-10 years from now)?
2. What are the key drivers of change in your country (good and bad)? What are the big unknowns?
3. What do you see as the growing, stagnant, and declining sectors in your country? What type of jobs will be created? Which ones will disappear? Which will readapt?
4. How will vulnerable groups be impacted: the poor without education, workers in stagnant industries, informal sector, disabled?
5. What skills and training (higher education vs. vocational training) will be needed to meet the work needs of the future labor market in your country?
6. What’s needed beyond skills training?
7. How will artificial intelligence, technology, and the increasing presence of start-up companies change the way that people will work in your country? How will these things impact job opportunities and skills needed?
8. How is your organization adapting or preparing (policies, programs, training, etc.) to meet the future of work?
9. What are your overreaching recommendations to different stakeholders? How can they manage change? What’s working now? What’s not? What needs to change?
10. What keeps you up at night about your country? What gives you hope?