RESEARCH &
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САМҰРЫҚ
КАЗЫНА

KAZAKHSTAN'S MACROECONOMIC OUTLOOK & INVESTMENT OPPORTUNITIES IN DIGITALIZATION

SEPTEMBER 2017

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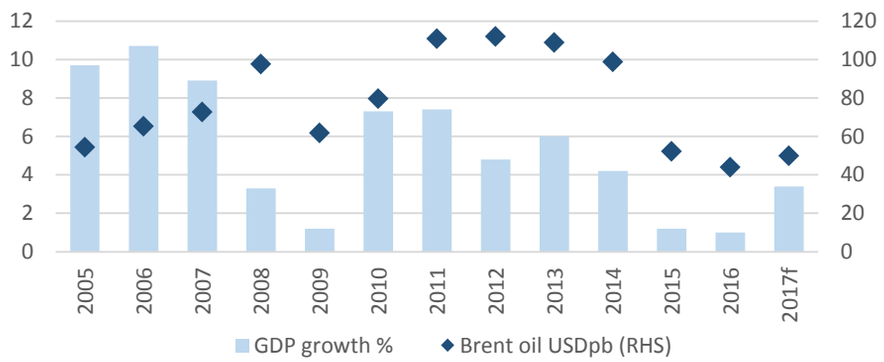
Section 1.0 Executive Summary

- Kazakhstan's GDP growth stood at 1.0% in 2016 amidst a challenging global economic backdrop, supported by effective stimulus measures introduced under the Nurly Zhol program and anti-recessionary plan. For 2017, GDP growth is projected to strengthen to 3.4%, mainly attributable to higher global oil prices, increase oil production, continued fiscal stimulus and improved economic performance in key trading partners.
- Monetary policy for stimulus would also bode well for domestic demand, business investments and the general economic activities. Inflationary expectations are well-anchored and inflation is projected to ease to 6.0%-8.0% in 2017 (2016: 8.5%).
- The tenge has stabilized since March 2016, supported by relatively positive developments on the domestic and global fronts. The USD-KZT exchange rate is anticipated to remain stable at conservative 330 average in 2017 (2016: 342.2 average).

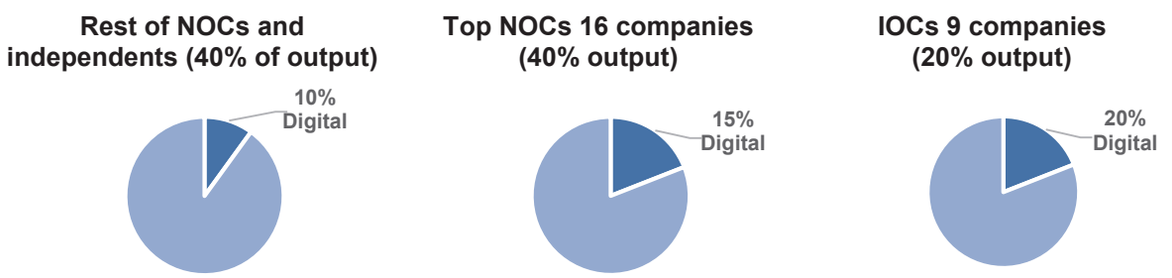
GDP Growth vs. Brent Price (2005-2017f)



Source: Ministry of National Economy, Bloomberg, Samruk-Kazyna

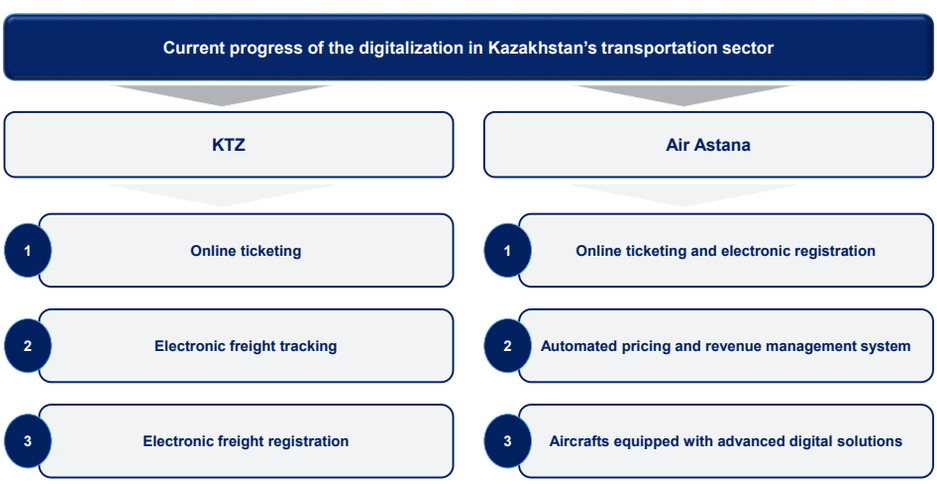
- Kazakhstan's economy is highly reliant on natural resources and extractive industries, and the constant change in global economic dynamics has made it more challenging for the country to stay competitive. Now is the time for Kazakhstan to explore new opportunities and venture into new growth areas, especially through the modernization and application of technology in key economic sectors. This will result in economic diversification and enhance sector value add to GDP contribution in the longer-term – one of the key priorities for economic transformation under Modernization 3.0.
- In line with expectations of more modest oil prices moving forward, improving the level of digitalization is one of the ways for the oil & gas industry to stay competitive. Today, only 3-5% of oil & gas equipment is integrated and less than 1% of data is utilized to make decisions, leaving companies with significant potential to optimize assets and operations. Out of 93mln bpd of oil output, only 9-18mln bpd come from oil fields that are digitally enabled. Top national oil companies, which are responsible for 40% of world oil output, produce only 15% of output using digital technology. Oil & gas companies in Kazakhstan lag behind its international peers in terms of the level of digitalization. The implementation of such projects requires substantial investments, and thus a revision of investment programs, which were recently cut down due to low oil prices. We recommend to start by deploying digital in areas where technology can affect the cost curve in the short-term and deliver immediate results.
- Digital technology creates value within the oil and gas context by enabling better and faster operational decisions, leading to greater asset utilization, reduced operating costs and

increasing efficiency. It can simplify and synchronize processes and accelerate integrated decision-making. Smarter decisions lead to faster incident correction and prevention, as well as greater insight into operations and collaboration. The oil & gas industry is expected to generate USD1.1tln in digital value at stake from 2015-2024.



** NOCs – national oil companies, IOCs – international oil companies*
Source: Ernst & Young "How ready are your assets to perform in the digital world?"

- The transportation sector is currently undergoing significant transformation. R&D investments in digital railways, intelligent streets and next-generation vehicles are expected to change the way companies do business, generating opportunities for additional revenue growth or operating expenses optimization.
- In Kazakhstan, the national railway operator has already started the integration of digital technologies in customer services and traffic management, introducing online ticketing and electronic freight tracking. Passengers are now able to purchase domestic and international railway tickets from various internet platforms without the need to wait in queues. In addition, freight forwarders will have an opportunity to place and track their orders online through an electronic document and contracting system using a computer or a smartphone, which will lead to the reduction in the overall transaction costs and will further enhance operational efficiency. Meanwhile on aviation sector front, Kazakhstan's national airline operator has already adopted state-of-the-art digital technologies in order to enhance service quality and optimize operating performance. The company is currently utilizing special automated revenue management system, allowing it to dynamically adjust pricing based on load factors and capacity on routes.

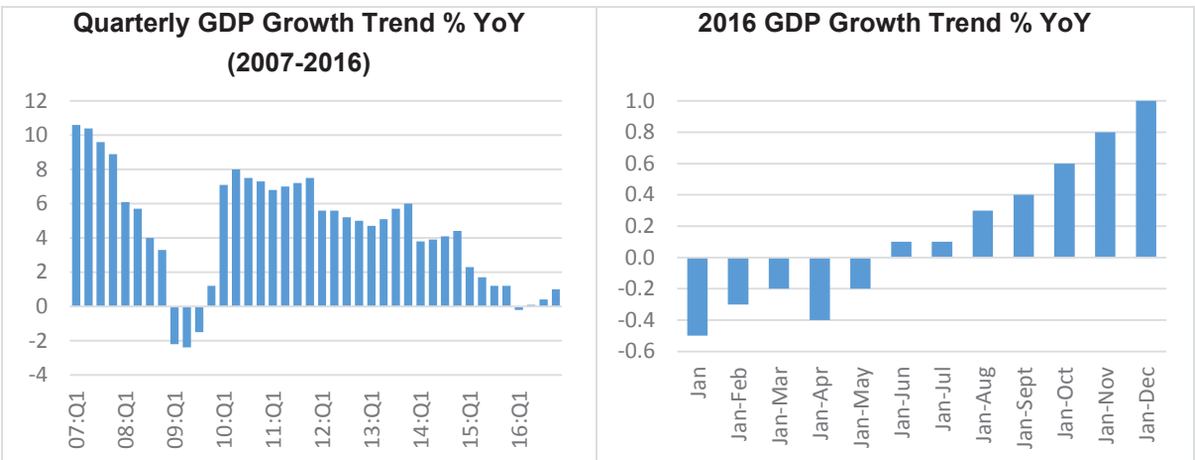


Source: Samruk-Kazyna

Section 2.0 Kazakhstan's Macroeconomic Outlook

Review of 2016 and 1H17 GDP growth

2016 GDP review. Kazakhstan's economy remains resilient; it has withstood shocks from low oil prices, devaluation of the tenge and growth slowdown in key trading partners. The economy is gradually adapting to the "new normal" environment. For 2016, GDP growth stood at 1.0%, above official forecast of 0.5% and beating market expectations of as low as -1.0%, supported by infrastructure spending, gradual recovery in oil prices and the resumption of oil output from Kashagan in 4Q16. The government's fiscal stimulus packages (transfers from the National Fund to the budget amounted to 6% of GDP in 2015 and 8% of GDP in 2016) had cushioned the declines in private sector consumption and investment.



Source: Ministry of National Economy, Bloomberg, Samruk-Kazyna

A sectoral review of 2016 results showed that growth momentum was supported by construction (7.9%), agriculture (5.5%), transportation services (3.7%) as well as manufacturing (0.7%). At the same time, growth last year was impacted by a slowdown in the mining (-2.7%), retail and wholesale trade (-1.4%) and communication (-2%) sectors. Overall volume of produced goods increased by 1.3%, while the volume of services grew by only 0.8%. Consequently, production of goods contributed more to GDP growth than services for the first time since 2010. In 2016, Kazakhstan's economy became slightly less dependent on commodity sectors.

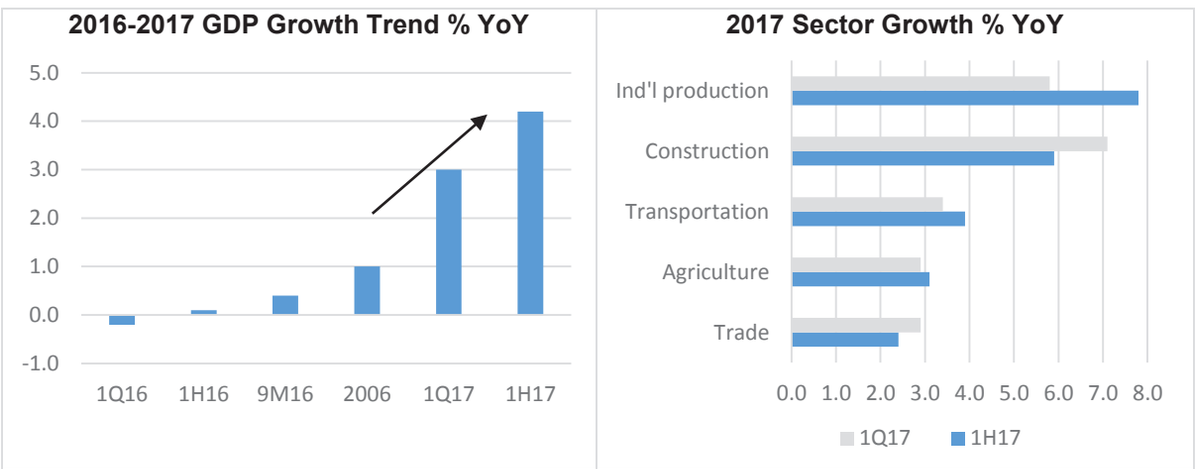
The slowdown in mining was due to the decreased production of crude oil (-1.8%), coal and lignite (-4.9%) and iron ores (-12.9%). The decline in iron ore output was due to a drop in Chinese demand for iron ore and pellets, decrease in exports of pellets to Russia, and decline in world prices for iron ore. The manufacturing sector recorded a growth rate of 0.7% in 2016, up slightly from 0.5% in 1H16. Metallurgy (6.6%) and production of food products (3.9%) contributed most to this output increase.

Investment in fixed assets provided some support for the economy, the physical volume of expenditures on construction, capital investments, as well as machinery and equipment grew by 5.1%. The total volume of investment in fixed assets in 2016 was estimated at KZT7.7tln.

Economic growth in 2016 was higher than expectations of 0.5%, mainly attributed to the implementation of the state infrastructure development programs, as well as the construction of affordable housing within the Nurly Zhol initiative. Consequently, construction alone contributed more than 50% of the

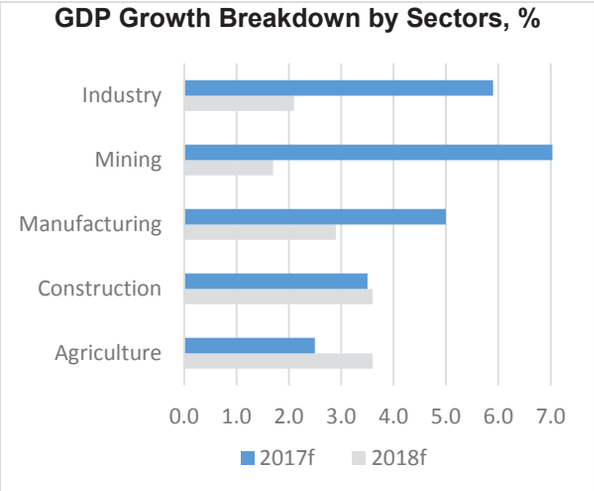
observed economic growth in 2016. At the same time, the commissioning of the Kashagan oilfield in 4Q16 alongside the recovery in global oil prices towards the fourth quarter also boosted growth for the year. External environment improved throughout the year, which helped stabilize the national currency. Decreasing inflationary pressures and the subsequent gradual reduction of the base rate from 17% to 12% by the regulator towards end-2016 helped accelerate economic growth.

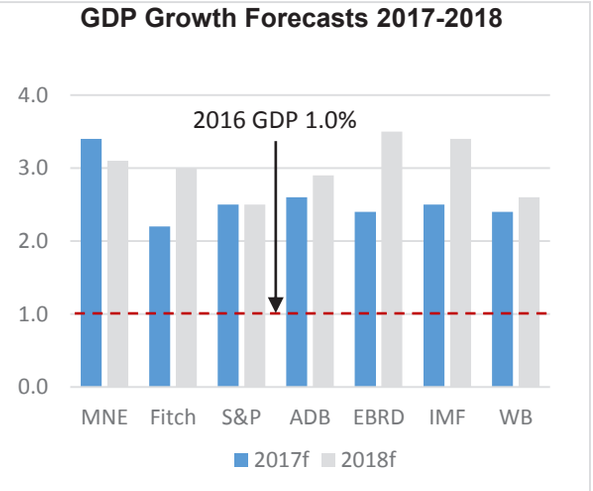
1H17 GDP review. Growth momentum has continued into 2017, which saw GDP expanded by 4.2% YoY in the first half of the year, compared to 0.1% in the same period of 2016. Growth in 1H17 was driven by broad-based expansion across economic sectors and also partly due to the low base effect in 1H16. Mining, manufacturing, construction and transportation were the largest growth contributors in 1H17, while overall industrial production grew by 7.8%. The short-term economic indicator, which is a gauge for change in production indices of basic industries, rose by 5.8% YoY over the same period.



Source: Ministry of National Economy, Bloomberg, Samruk-Kazyna

Based on the positive growth momentum observed in the first half of this year, Kazakhstan's economic growth is on track to meet a stronger full year growth target of 3.4% in 2017. Key growth drivers this year include higher global oil prices, increase oil production, continued fiscal stimulus and improved economic performance in key trading partners. The government allocated KZT441.6bln for the implementation of Nurly Zhol program in 2017 with the possibility of an increase to KZT720bln subject to budget revision depending on the economic situation. These funds will be used for the construction and reconstruction of infrastructure including highways, railways and airports. Other measures include construction of affordable housing as well as projects for the EXPO 2017. These measures are expected to have a multiplier effect on economic growth. In the medium-term, GDP growth will average at 3.7% per annum between 2018 and 2022, in line with the Ministry of Economy's projections. Transformation at sovereign wealth fund Samruk-Kazyna and the privatization of the Fund's key portfolio companies in 2018-2020 will form strategic growth factors that will be key drivers for sustainable growth and economic value creation for Kazakhstan in the medium to longer-term.

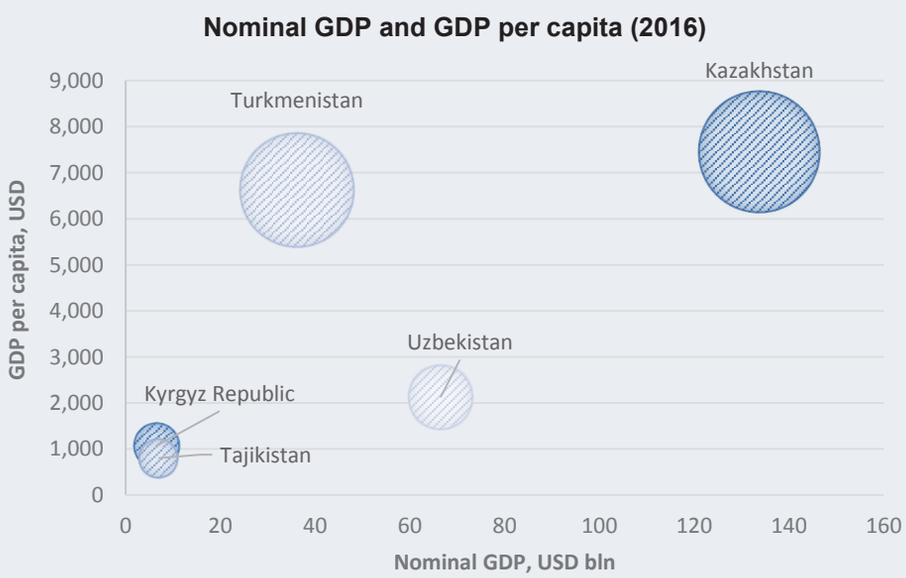




Source: Ministry of the National Economy, rating agencies, multilateral organizations, Samruk-Kazyna

Box 1: Kazakhstan's macroeconomic dynamics vs. CIS peers

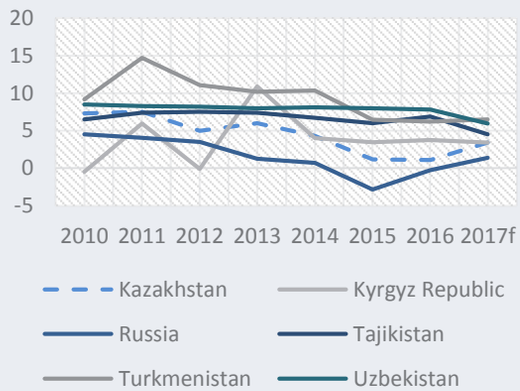
Kazakhstan's economy is the largest in Central Asia and the second largest after Russia in the Commonwealth Independent States (CIS). Nominal GDP value stood at USD133.8bln as at 2016. Consequently, Kazakhstan's GDP per capita was the highest in the region at USD7,453 in 2016, slightly below Russia's USD8,929. Other countries of the region, Turkmenistan, Uzbekistan, Kyrgyz Republic and Tajikistan, have significantly smaller GDP per capita of USD6,622, USD2,122, USD1,073 and USD800 respectively.



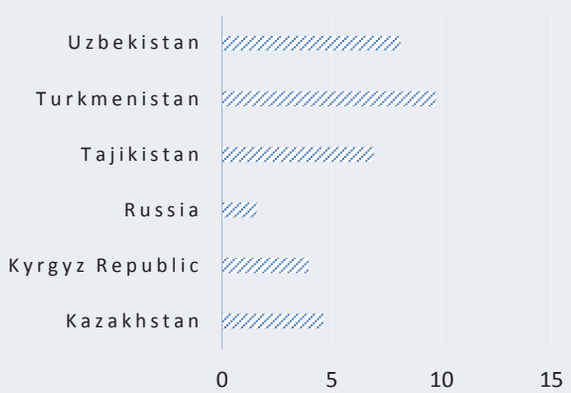
Source: IMF, Samruk-Kazyna

Kazakhstan's GDP growth remains positive and relatively high, averaging at 4.6% per annum between 2010 and 2016. While growth was lower than in some other Central Asian economies, Kazakh economy performed commendably well considering its relative size and the level of development. The only other comparable country, Russia experienced significantly lower GDP growth of 1.4% per annum over the same period.

GDP growth, % (2010-2017f)



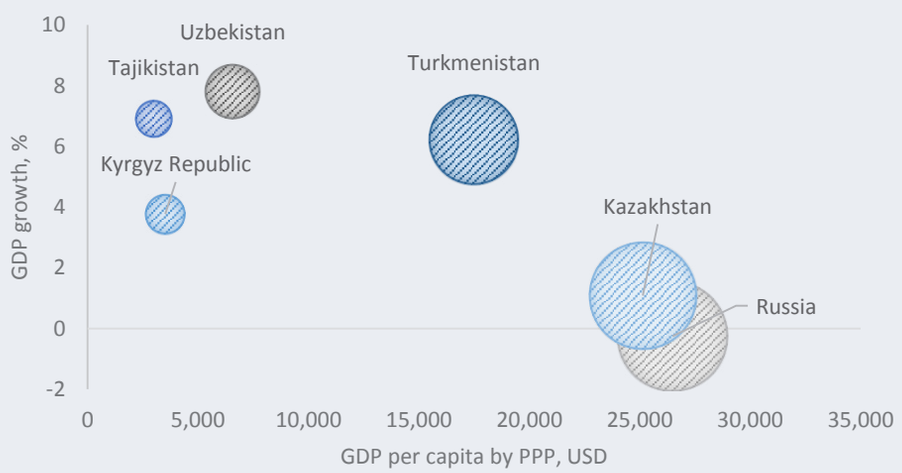
Average GDP growth, % (2010-2016)



Source: IMF, Samruk-Kazyna

Kazakhstan's GDP per capita by purchasing-power parity (PPP), estimated at USD25,145 is marginally smaller than in Russia (USD26,490), but significantly higher than neighboring peers. GDP per capita by PPP in Kazakhstan is almost 1.5 times higher than in Turkmenistan, 3.5 times higher than in Uzbekistan, 7 times higher than in Kyrgyz Republic and 8 times higher than in Tajikistan.

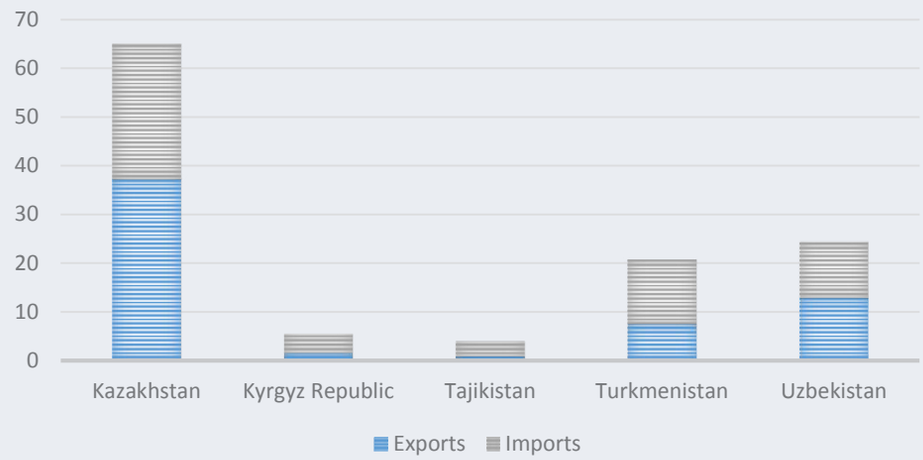
GDP Growth vs. GDP per capita by PPP (2016)



Source: IMF, Samruk-Kazyna

On external trade, Kazakhstan's trade turnover amounted to more than USD65bln in 2016, or 48.9% of GDP. Exports reached USD37.2bln and imports amounted to USD27.9bln. Both exports and imports are larger than the trade turnover of Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan combined. Kazakhstan's main trade partners are Russia, China and the EU.

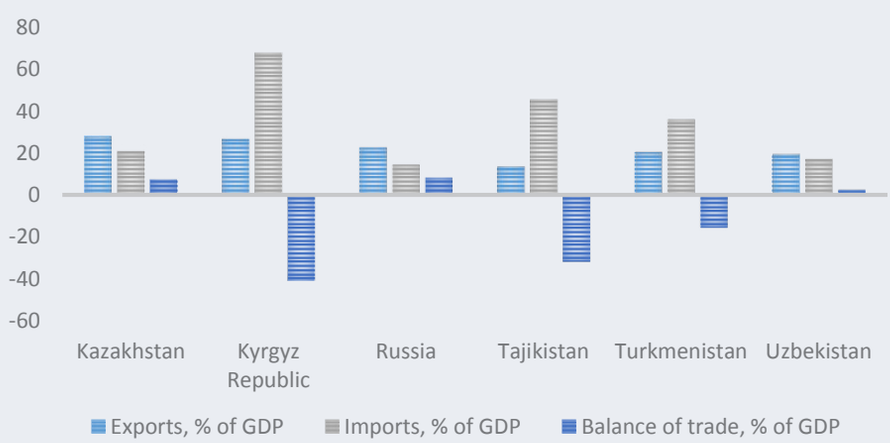
Exports and Imports, USD bln (2016)



Source: Statistics committees of Kazakhstan, Kyrgyz Republic, Russia, Tajikistan, Turkmenistan, Uzbekistan, UNCTAD, Samruk-Kazyna

Kazakhstan is the only country in the region, except Russia, that holds a large and consistent trade surplus. Peer countries are more import-dependent and have external trade deficits. Kazakhstan's main export destinations are Italy, China, Switzerland, Russian Federation and the Netherlands.

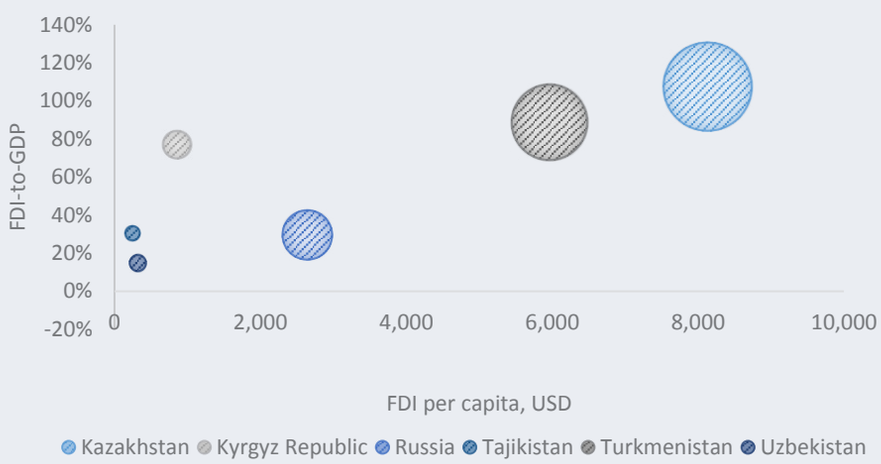
Exports, Imports and balance of trade, % of GDP (2016)



Source: Statistics committees of Kazakhstan, Kyrgyz Republic, Russia, Tajikistan, Turkmenistan, Uzbekistan, UNCTAD, Samruk-Kazyna

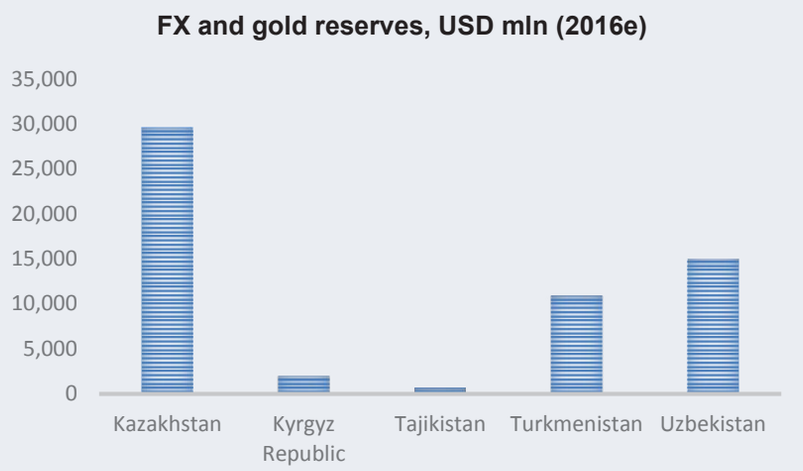
Kazakhstan has attracted more than USD280bln gross foreign investments since its independence in 1991, leading other CIS countries. As such, Kazakhstan ranks first in terms of its FDI stock per capita, and is only second to Turkmenistan in terms of FDI stock to GDP ratio. This is significantly higher, compared to peers. Despite unfavorable global investment climate, which decreased foreign investment into emerging markets and transitional economies, Kazakhstan maintained its attractiveness for foreign investors. Consequently, FDI stock as of 2016 amounted to USD143.8bln. Total investment stock, which includes portfolio and other investments, amounted to USD218.3bln. Netherlands remains by far the largest investor in Kazakhstan, other major investors include the US, France, Russia and China. Government policy has been encouraging foreign investment with measures such as reduction and in some cases waiver of taxes for five years, state subsidies, partial or total exemption from duties and taxes on equipment and other materials.

FDI stock per capita and FDI stock to GDP ratio



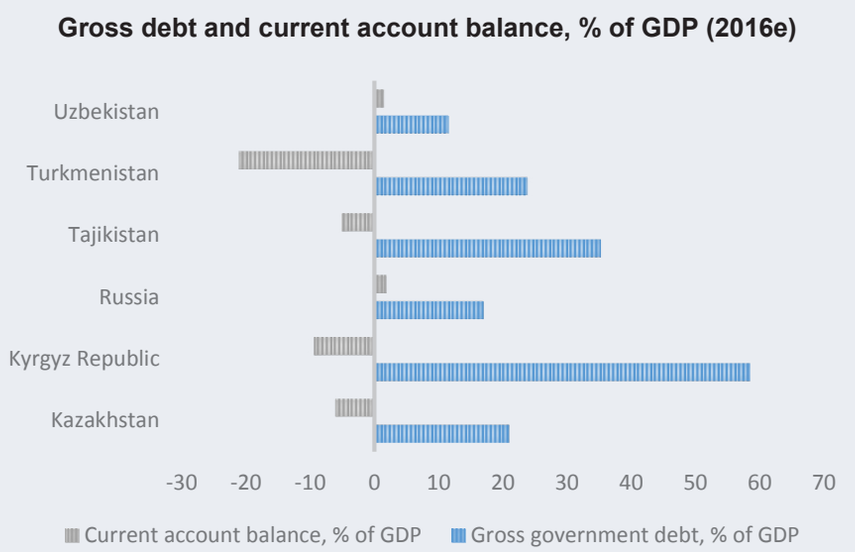
Source: National banks of Kazakhstan, Kyrgyz Republic, Russia, Tajikistan, Turkmenistan, Uzbekistan, UNCTAD, Samruk-Kazyna
For Kazakhstan, Russia and Kyrgyz Republic, statistics were based on official sources as at 2016, for other countries the numbers were official sources as at 1Q16

Kazakhstan also holds the largest amount of reserves. Reserves have been growing throughout 2016, as tenge appreciated and stabilized gradually. According to Guidotti-Greenspan rule, reserves should be sufficient to cover all short-term external obligations. For Kazakhstan, reserves to short-term debt ratio is 115.8 as of end 2016. Another measure of reserves adequacy is import coverage. Kazakhstan's reserves are sufficient to cover 12.6 months of imports. Kazakhstan's import coverage is significantly higher than in Kyrgyz Republic (5.9 months) and Tajikistan (1.7 months), but smaller, compared to Turkmenistan (20.6 months) and Uzbekistan (15.7 months).



Source: National banks of Kazakhstan, Kyrgyz Republic, Russia, Tajikistan, Turkmenistan, Uzbekistan, UNCTAD, Samruk-Kazyna

Kazakhstan's fiscal and external position is much more stable compared to its peers. Government debt remains low and current account deficit is minimal. Other countries in the region, excluding Russia and Uzbekistan, have higher levels of government debt. Gross government debt in the Kyrgyz Republic reached 58.4% of GDP, while its current account deficit amounted to 9.4% of GDP.



Source: IMF, Samruk-Kazyna

Since its independence, Kazakhstan has actively pursued a program of economic reform designed to establish a free market economy. For much of the past 15 years, Kazakhstan was deemed as having one of the best investment climates in the region. In 2002, Kazakhstan became the first sovereign among CIS countries to receive an investment-grade credit rating from an international rating agency i.e. Standard & Poor's. The country's strong fiscal position is reflected in international rankings.

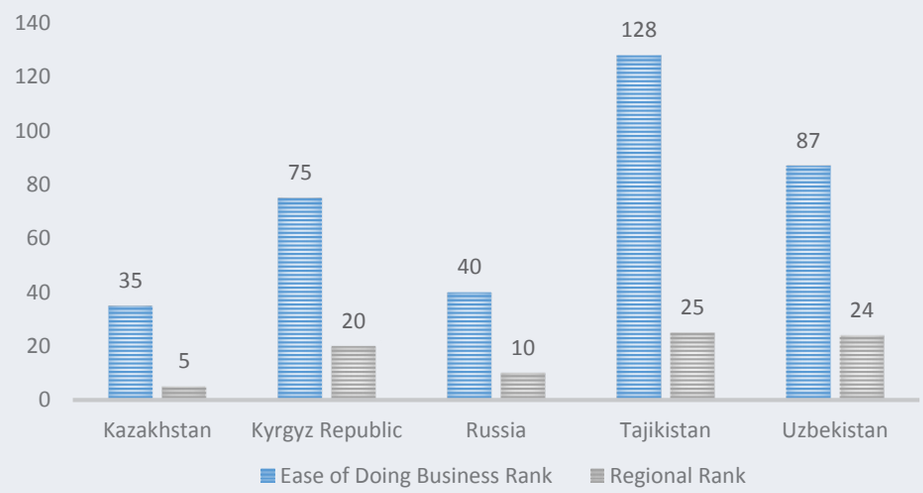
Sovereign Ratings Comparison, as at 31 August 2017

Country	S&P	Moody's	Fitch
Kazakhstan	BBB-/Negative	Baa3/Stable	BBB/Stable
Kyrgyzstan	N/A	B2/Stable	N/A
Russia	BB+/Positive	Ba1/Stable	BBB-/Stable

Source: S&P, Moody's, Fitch, Samruk-Kazyna

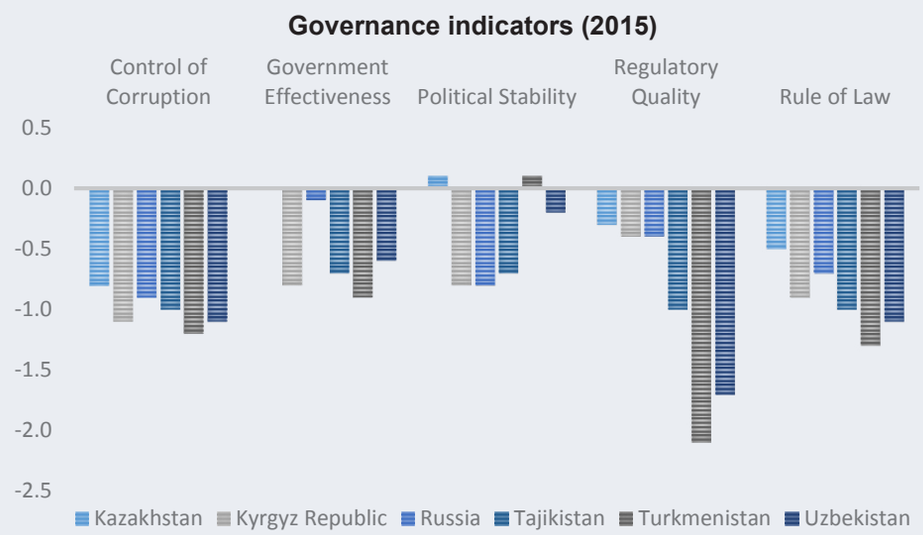
The World Banks' Doing Business 2017 ranks Kazakhstan in the 1st place in terms of ease of doing business among CIS countries, and the 5th place within Europe and Central Asia. Investors' protection, index of transaction transparency, index of manager's responsibility and index of investment protection are well above the average for Eastern Europe and Central Asia. The government has implemented a number of pro-business reforms that have been recognized by various international organizations.

Ease of Doing Business Rank (2017)



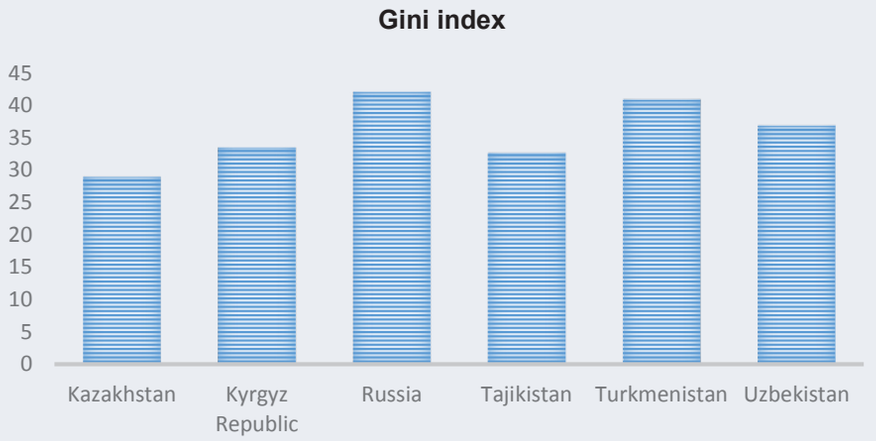
Source: World Bank Doing Business 2017, Samruk-Kazyna

Kazakhstan is the only country in the region that has a positive political stability index, calculated by the World Bank. Kazakhstan also outperforms its peers in terms of control of corruption, government effectiveness, regulatory quality and rule of law. Investors in Kazakhstan note economic, political and social stability as one of the most attractive factors for investment.



Source: World Bank Group, Samruk-Kazyna

Kazakhstan has a more inclusive growth, compared to its peers. Revenues are more-or-less evenly distributed among the population. In this regard, Kazakhstan's Gini index, which measures income distribution, is the smallest in the region and one of the lowest in the world.



Source: CIA Factbook, Samruk-Kazyna

Fiscal position

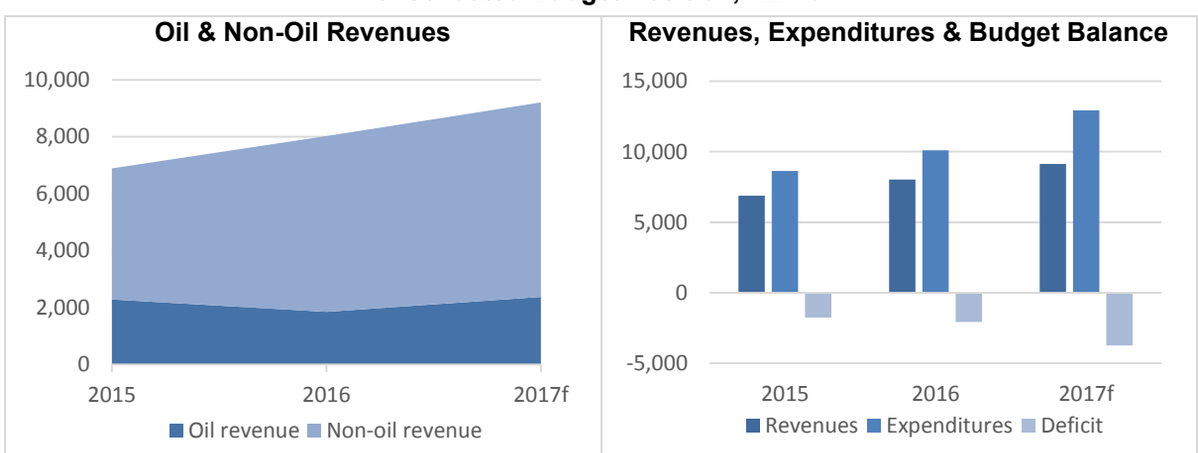
Consolidated budget revenues are expected to increase in 2017 to KZT9.2tln or 17.7% of GDP vs. KZT8.0tln or 17.5% of GDP in 2016. The main increase in revenues is expected from corporate income tax and value-added tax due to an improvement in the overall economic performance. At the same time, budget oil revenues are also expected to increase to KZT2.4tln mainly due to an improvement in the oil price outlook from USD35pb to USD50pb and additional production at the Kashagan oilfield. Oil production forecast for 2017 was revised up to 84.5mln tons vs. 78mln tons in 2016.

Planned consolidated budget expenditures for 2017 amount to KZT12.9tln or 24.9% of GDP. One of the largest expenditure items is the rehabilitation of the banking sector, which will require up to KZT2tln, of which the National Fund will finance KZT1.1tln. These expenditures are needed to recapitalize the

largest banks and stimulate lending to the economy. KZT231bln are allocated for technological modernization of the economy and improving the business environment in specific sectors, including KZT60bln for the development of the agricultural sector and KZT127bln for the development of transport and transit potential.

Consequent implementation of the government infrastructure development plans and additional anti-recessionary measures in 2017 would require a target transfer from the National Fund in the amount of KZT1.5tln, previously KZT1.1tln. The target transfer in 2016 amounted to only KZT0.7tln. At the same time the consolidated budget would receive KZT2.9tln in guaranteed transfers. As a result, planned budget deficit in 2017 was revised upwards by 2.6 times to KZT3.7tln or -7.3% of GDP vs. a deficit of KZT1.4tln or -3.2% of GDP in 2016. Non-oil deficit will increase further to KZT6.2tln or -12.8% of GDP from KZT3.8tln or -8.4% of GDP.

Consolidated Budget Position, KZT bln



Source: Ministry of National Economy, Samruk-Kazyna

Despite the challenging external environment and the overall economic slowdown in the past two years, Kazakhstan's fiscal position remains very strong to support fiscal stimulus programs. Resources of the National Oil Fund allow the government to execute massive infrastructure projects (assets of the National Fund stood at USD73.3bln or 53.7% of GDP as at end-2016). According to official projections, with oil prices at a conservative level of USD50pb, National Fund assets are expected to remain robust at USD65bln or 41.6% of GDP by the end-2017. This provides ample fiscal space, since government debt including government guaranteed debt remains relatively low at USD13.7bln or 10.2% of GDP as at end-2016.

Inflation and monetary policy

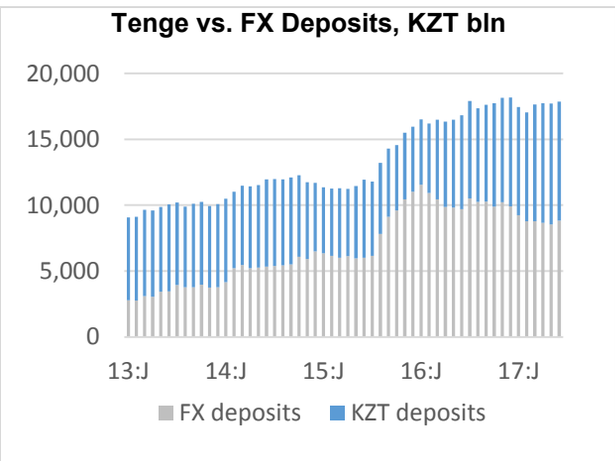
In line with our earlier expectations of monetary policy for stimulus, National Bank of Kazakhstan (NBK) cut the base rate four times by a total of 500bps in 2016, from 17% in February to 12% in December. In 1H17, the key interest rate was reduced by another 175bps to 10.25% as at 21 August 2017. The decisions on the base rate in 2016 and 1H17 were taken premised on the following factors:

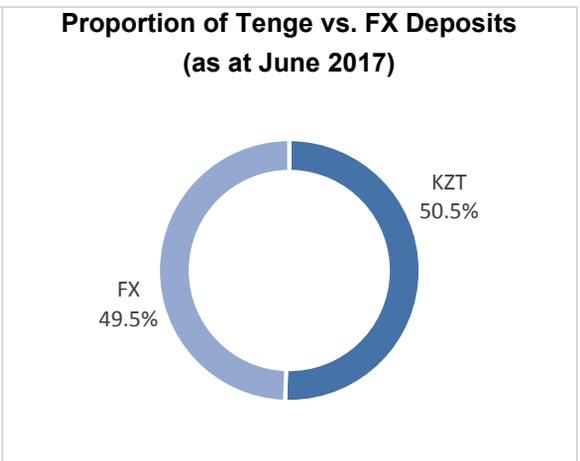
- Inflation trends have corresponded to the expectations of NBK, with the risks of acceleration being minimal under current circumstances. In January 2017, inflation stood at 7.9% YoY, within the official target band of 6.0%-8.0% for 2017. The general price level eased further to 7.1% YoY in July 2017. In the absence of negative shocks, inflation is expected to reach 6.5%-7.0% towards

December 2017, lowering to 5.0%-7.0% in 2018 and potentially heading below 4.0% by 2020. Inflation expectations also remain well-anchored since the beginning of 2017. The survey undertaken in June on inflation expectations of the population showed that inflation in a year ahead amounted to 6.4%, which is below actual inflation rate and is within the target range for 2018.

- The USD-KZT exchange rate has stabilized since March 2016, reflecting the combination of an improved external and domestic environment, with the exception of the short-term turbulence in the global financial markets created by Brexit in June 2016. Direct risks of Brexit are estimated to be limited on Kazakhstan. Global oil prices improved significantly since 4Q16, providing the added support needed by the tenge. Similarly on the domestic front, improved economic stability reduced the negative expectations on currency risks. These developments have contributed to the conversion of foreign currency denominated assets to tenge-denominated assets in both the foreign exchange cash market and the bank deposit market.

  Total deposits in the banking sector grew close to 14% to reach KZT18.16tln in 2016. Tenge deposits grew by 66.4% in 2016, while FX deposits fell by 10%. Tenge and FX deposits stood at KZT8.24tln and KZT9.93tln respectively as at end-2016. The rebound in tenge deposits since February 2016 was supported by recovery in global oil prices and the changes in interest rates in favor of local currency deposits (interest rates on tenge deposits were raised from 10% to 14%, while FX deposits were reduced from 3% to 2% effective 1 February 2016). As at June 2017, the proportion of tenge deposits improved further to 50.5% of total deposits, up from 45.4% as at end-2016.

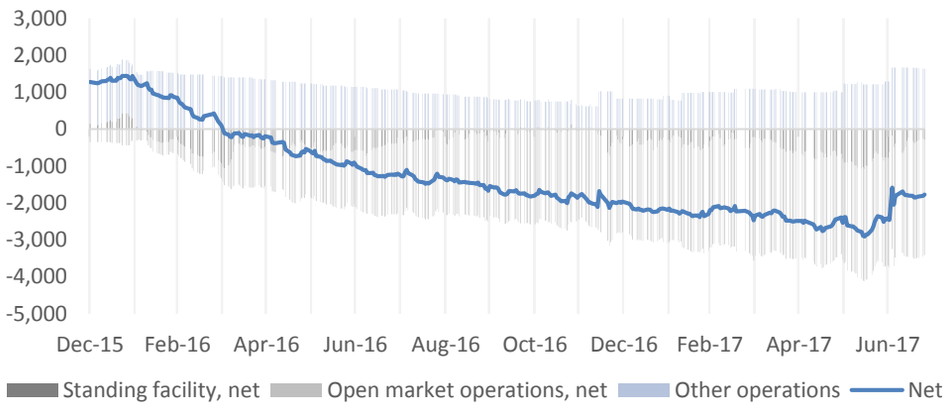




Source: National Bank of Kazakhstan, Samruk-Kazyna

- The domestic money market has been experiencing structural liquidity surplus condition, with the NBK continues to actively conduct operations to absorb excess liquidity since March 2016. The net volume of tenge liquidity injected into the financial system amounted to KZT1,278bln in December 2015 and KZT1,438bln in January 2016, before declining to KZT849bln in February 2016. This was followed by excess tenge liquidity leading to an absorption of KZT1,224bln in March 2016, rising to KZT2,519bln in December 2016 and KZT2,405bln in June 2017. NBK absorbs liquidity from the market through notes, repo auctions and deposits.

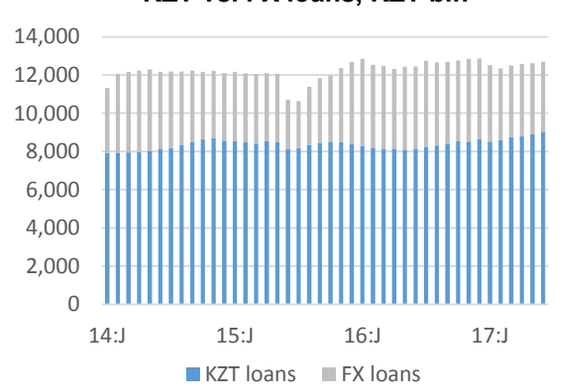
Open position of NBK's operations, KZT bln (December 2015 – June 2017)



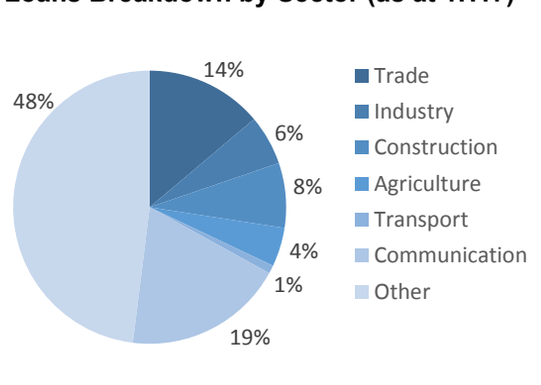
Source: National Bank of Kazakhstan, Samruk-Kazyna

Despite this, excess liquidity has yet to translate into significant credit growth. The still high dollarization level of deposits, ensuing currency mismatch (on balance sheets) and ongoing consolidation processes in the banking sector restrict banks from expanding loans to businesses and individuals. On a monthly basis, the amount of tenge-denominated credit has been growing gradually since June 2016 after the base rate cuts. However, total credit to the economy grew by a marginal 1.5% YoY to KZT12.9tln as at December 2016. Credits are mostly concentrated in sectors such as retail, transportation and other sectors, while industry only holds 14% of the aggregated credit portfolio. Implementation of program aimed at increasing the financial sustainability of the banking sector is expected to support further recovery of credit activities in 2H17.

KZT vs. FX loans, KZT bln



Loans Breakdown by Sector (as at 1H17)

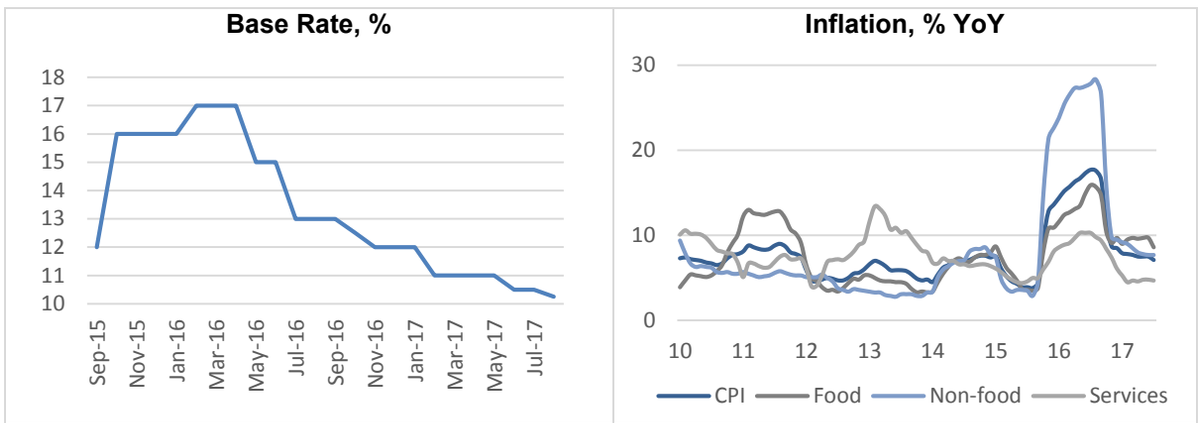


Source: National Bank of Kazakhstan, Samruk-Kazyna

Further actions on the base rate will depend on the dynamics of fundamental factors influencing domestic demand and stability of the financial sector. Amongst external factors being monitored include volatility of global commodity prices, speed of economic recovery in key trade partners and the revision of budget expenditures.

Overall, we welcome NBK's move in cutting the base rate which would bode well for domestic demand, business investments and the general economic activities. The index of business sentiment, based on the survey of top management of real sector enterprises, moved into positive territory, signaling a gradual recovery in economic activity. The cut in the base rate has stimulated banks to lower market

rates since July 2016, which will be crucial in lifting the demand for resources and the expansion of credit activities moving forward.

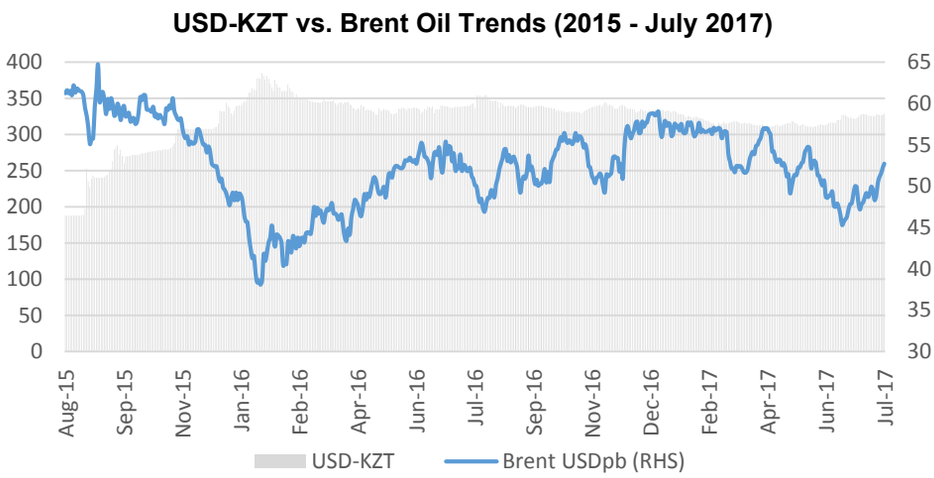


Source: Bloomberg, Samruk-Kazyna

USD-KZT exchange rate

On the currency front, the USDKZT exchange rate started to stabilize since March 2016, owing to favorable external and domestic conditions. As at 30 December 2016, the tenge closed at 333.69/USD. In 2016, the tenge averaged at 342.2 and appreciated by 2.0% against the USD.

The tenge continued to strengthen in the first six months of 2017, trading at the range of 310-334. As at 30 June 2017, it closed at 322.18/USD, an increase of 3.4% in the first six months of this year, mainly boosted by higher global oil prices since 4Q16. For 2017, we expect the tenge to remain stable at 330 average, barring external factors potentially affecting the local currency.

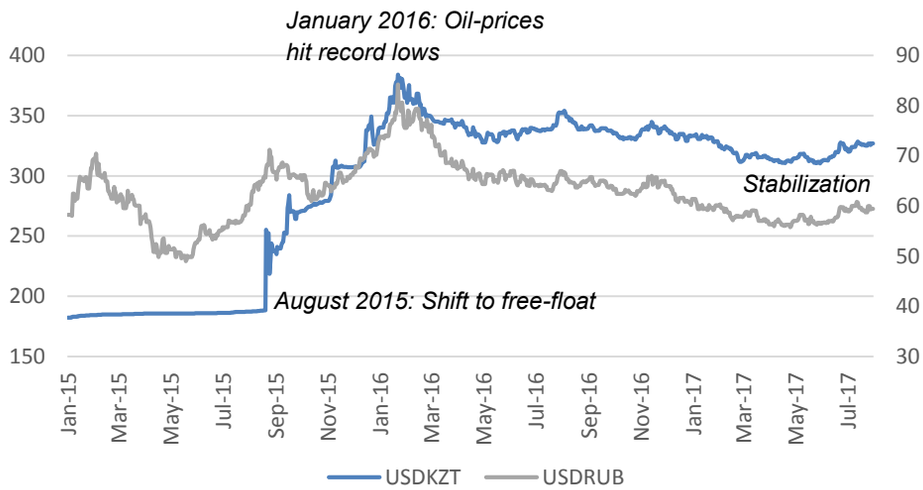


Source: Bloomberg, Samruk-Kazyna

We caution that volatility in global oil prices may cause the tenge to move in either direction. However, any movement of the tenge would not be sharp, as we believe the regulator would participate in FX market to smooth out significant fluctuations, if the need arises. In August 2016, NBK sold almost USD146mln on the exchange market. However, since September 2016, the regulator has not intervened in the FX market as the tenge stabilized along with stronger oil prices.

Apart from global oil prices, movement in the currencies of major trading partners may also impact the tenge. Since the shift to a free-floating regime in August 2015, the USDKZT exchange rate has closely mirrored that of the USDRUB exchange rate. Russia is one of Kazakhstan's most important trade partners and to ensure competitiveness, the country's authorities have maintained a RUBKZT exchange rate of approximately 1:5 ratio.

USDKZT vs. USDRUB Exchange Rate Trends (2015 – July 2017)

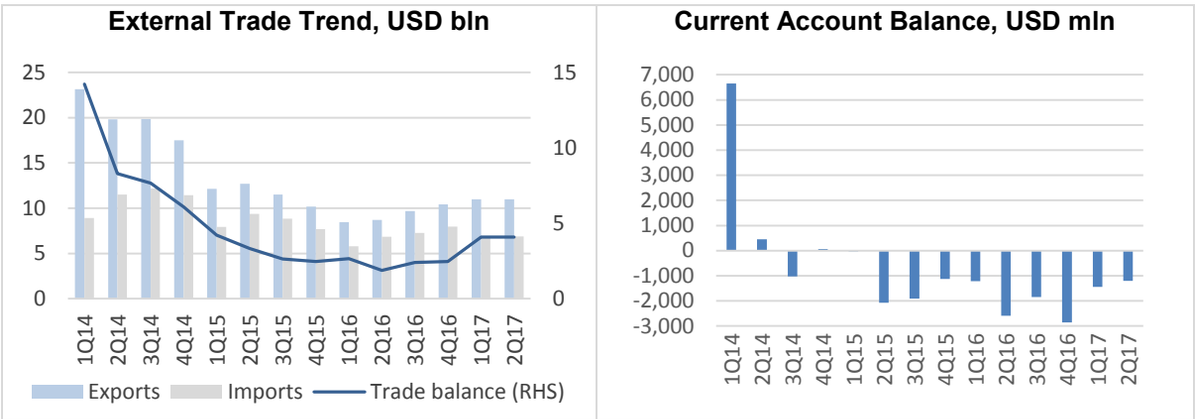


Source: National Bank of Kazakhstan, Bank of Russia, Samruk-Kazyna

External positions

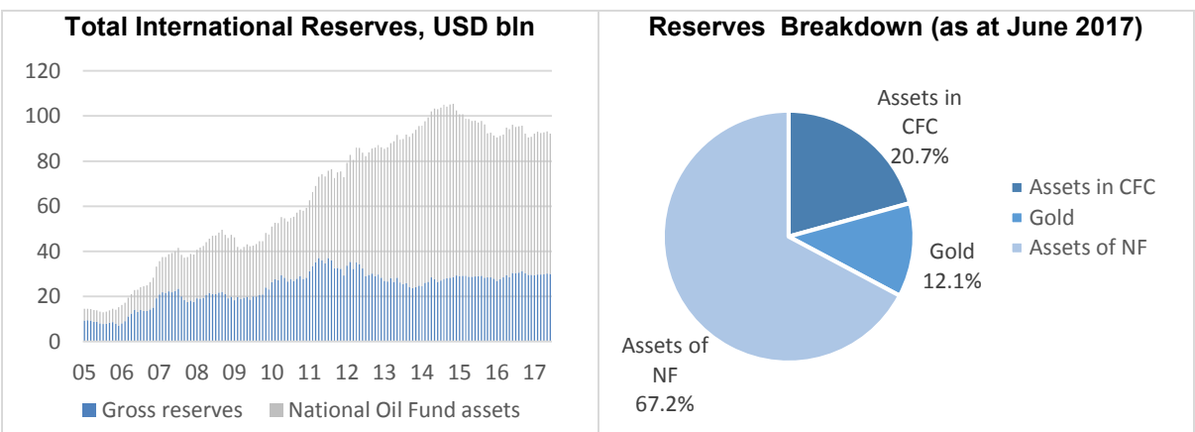
On external trade, total trade turnover decreased by 18.9% YoY to USD65.17bln in 2016, whereby exports fell 19.8% YoY to USD37.3bln and imports contracted 17.6% YoY to USD27.9bln. The decline in exports was due to lower commodity prices while lower imports was driven by weaker purchasing power arising from slower growth, lower incomes and the devaluation of the tenge. Consequently, current account deficit was at USD8.52bln or 6.4% of GDP in 2016, a second year the country registers a current account deficit since 2009.

For 2017, total trade turnover is projected to improve by approximately 22.2% YoY to USD79.64bln, with exports and imports expected to increase by 25.9% YoY and 17.2% YoY respectively, underpinned by stronger global growth, gradual recovery in commodity prices and improved economic performance from key trading partners. As such, current account balance is anticipated at –USD7.13bln or -4.5% of GDP in 2017. Kazakhstan's total trade turnover is projected to increase moderately in the medium-term, potentially exceeding USD100bln by 2022. Following this, current account balance is expected to improve gradually from -4.5% of GDP in 2017 to -3.2% of GDP in 2022.



Source: National Bank of Kazakhstan, Bloomberg, Samruk-Kazyna

On reserves, Kazakhstan's official international reserves comprise of foreign-exchange assets at the NBK and in the National Oil Fund. Total international reserves stood at USD92.14bln as at June 2017. This amount comprised of FX reserves of USD30.01bln at the NBK and USD62.18bln at the National Oil Fund. The National Fund assets are expected to remain robust at 44% of GDP in 2017, reflecting ample fiscal space and flexibility for the country to absorb economic shocks, if the need arises.

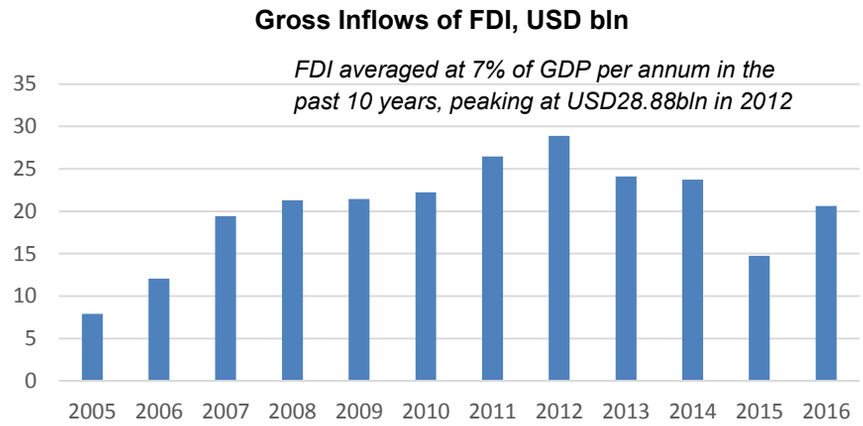


Source: National Bank of Kazakhstan, Samruk-Kazyna

Foreign direct investment

Gross inflows of FDI picked up momentum in 2016, amounted to USD20.64bln, USD5.89bln or 39.9% higher than in 2015. Since independence, Kazakhstan attracted cumulative FDI of more than USD200bln.

Inflow of investments went to traditional sectors, such as mining with total investments of USD65.89bln or 27.1% (mainly in the extraction of crude petroleum and natural gas), as well as investments into professional, scientific and technical activities at USD86.95bln or 35.8% (majority relates to geological exploration and prospecting activities). The oil and gas, natural resources and extractive industries continue to remain the most attractive sectors for investments, comprising more than half of Kazakhstan's accumulated FDI inflows to-date. Nonetheless, the manufacturing, wholesale and retail trade, financial services, and construction attracted commendable investments of USD29.99bln (12.3%), USD21.54bln (8.9%), USD12.17bln (5.0%) and USD8.53bln (3.5%) respectively, reflecting relative success of Kazakhstan's efforts to diversify the economy.

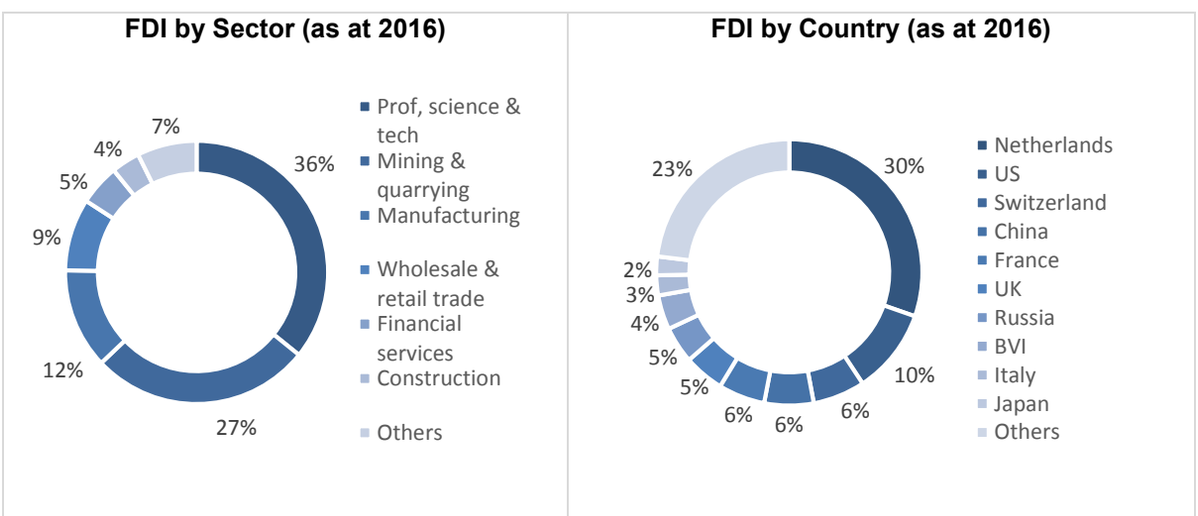


Source: National Bank of Kazakhstan, Samruk-Kazyna

Netherlands remains the largest investor (domiciled by country) in Kazakhstan with investments amounted to USD71.67bln, while the US has USD27.22bln investments in the country. Other major investors include Switzerland, China, France, UK and Russia. Kazakhstan has increasingly been receiving FDI from China namely within the Chinese “One Belt, One Road” initiative.

New Asian partners such as China, India and even Iran are replacing Kazakhstan's traditional investment partners. However, they have not been able to fully substitute Russia and western investors, many of which have been deterred by lower oil prices, weakening domestic and regional economic cycles.

Kazakhstan has a high ranking in terms of investor protection, according to the World Bank Doing Business 2017 report. Index of transaction transparency, index of manager’s responsibility and index of investment protection are well above the average for Eastern Europe and Central Asia. Government policy has been encouraging foreign investment with measures such as reduction and in some cases waiver of taxes for five years, state subsidies, partial or total exemption from duties and taxes on equipment and other materials.

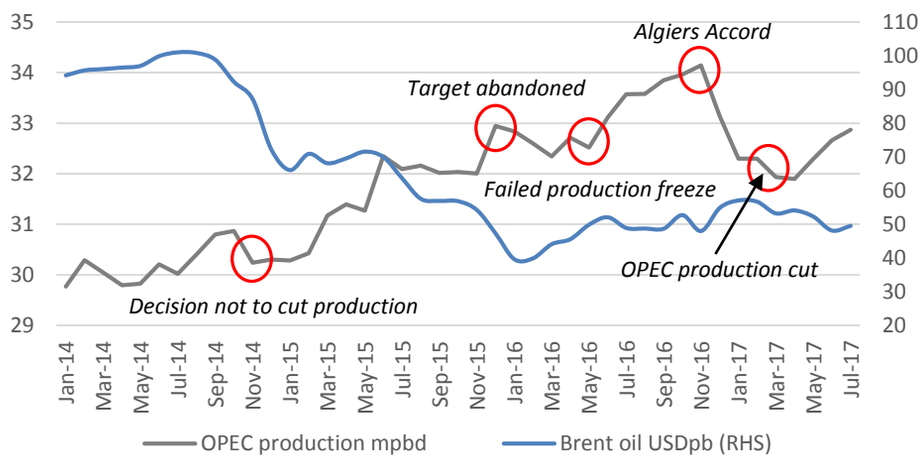


Source: National Bank of Kazakhstan, Samruk-Kazyna

Global oil market

Global oil prices rebounded since December 2016 after OPEC and selected oil producing countries agreed to cut oil production into the first six months of 2017. Oil prices averaged at USD55.78pb in 1Q17, up by 2.5% QoQ. At one point, Brent oil touched USD58.2pb in January 2017, a 14-month high. However, oil prices receded in 2Q17 to average at USD51.29pb, a decline of 8.1% QoQ, mainly attributed to strong US' oil stockpiles and increased supply (from Nigeria and Libya).

OPEC Oil Production vs. Brent Oil (2014-July 2017)



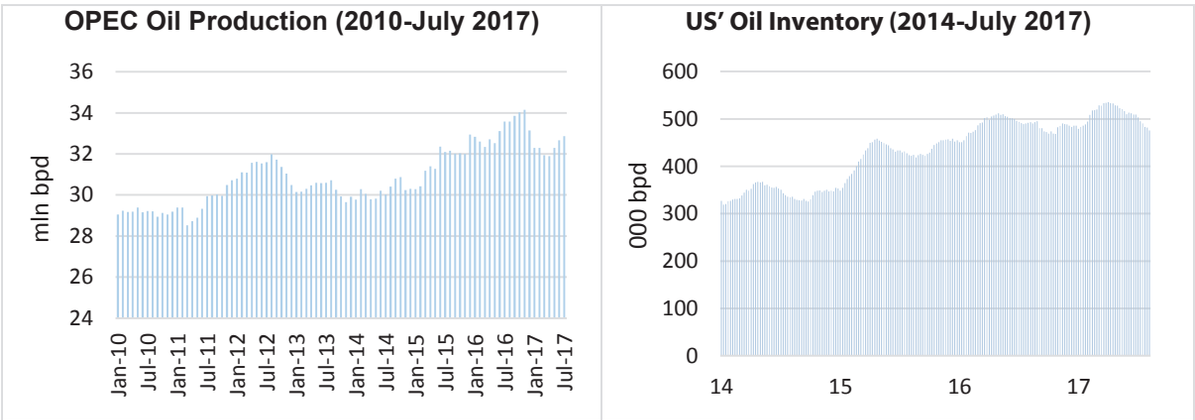
Source: Bloomberg, Samruk-Kazyna

In June 2017, OPEC's oil output climbed to 32.6mln bpd due to the increase of supplies from Saudi Arabia and Libya. OPEC's compliance of production cut quota was estimated at 78%. The return of disrupted Libyan and Nigerian supply has offset a significant part of the OPEC and non-OPEC oil supply cuts. Nonetheless, the underlying political situations in both countries remains precarious, meaning that these gains could be reversed. In June, Saudi Arabia pumped slightly above its oil production target for the first time since output curbs were introduced in January.

Amongst non-OPEC countries participating in the global oil production cut include Kazakhstan. In June 2017, Kazakhstan produced 7.1mln tons or 1.73mln bpd, which is 11% higher than YoY and 2% higher 1.70mln bpd implied by the country's commitment to cut production by 20,000 bpd from November output. The energy ministry expects the overall output to fall summer, mainly in mature fields in the Aktobe and Kyzylorda regions. Tengiz, Karachaganak and Kashagan output could also shrink in the summer due to "technical reasons", according to the energy minister. Kazakhstan's energy ministry forecasts that the country's crude and condensate production will pick up by nearly 8.3% to 84.5mln tons in 2017 (2016: 78mln tons), with exports also rising by 5% to 65mln tons.

Uncertainty remains high in the oil markets underpinned by OPEC policy and production, US shale growth and China's demand. The primary concern of the market is that rising supply from exempt OPEC members and the US is undermining their efforts to rebalance the market, and that US shale growth reverses the inventory draws seen in early-2017. We expect volatility in global oil prices to remain high for the remainder of 2017 due to risks arising from OPEC actions, slower-than-expected oil demand growth as well as geopolitical factors. Upside potential of oil prices is seen limited by strong rebound in US output. Market players have reduced oil price projections for 2017 and 2018 on doubts that OPEC

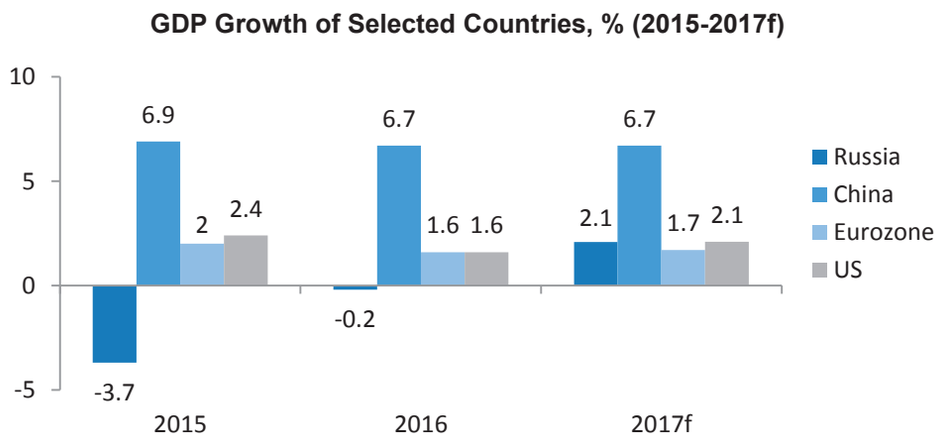
and non-OPEC output cuts will rebalance the market. We maintain our average Brent price forecast for 2017 at USD50pb-52pb (2016: USD44pb average).



Source: Bloomberg, Samruk-Kazyna

Regional economies

Global economic activity improved in 2H16 and continued to pick up pace in 1H17, driven by major advanced (Japan and euro area) and emerging economies (China, India and ASEAN-5). Nevertheless, there is a wide distribution of possible outcomes of global growth outlooks, underpinned by uncertainties associated with the US policies and potential implications. Renewed steepening of the US yield curve following June 2017's rate hike, rise in equity prices reflecting market optimism on corporate earnings, and substantial appreciation of the USD reflect market expectations of fiscal stimulus and continued normalization of the monetary policy moving forward. The International Monetary Fund projects global GDP of 3.5% in 2017 vs. 3.2% in 2016, while the World Bank expects more subdued global growth of 2.7% in 2017 vs. 2.4% in 2016.



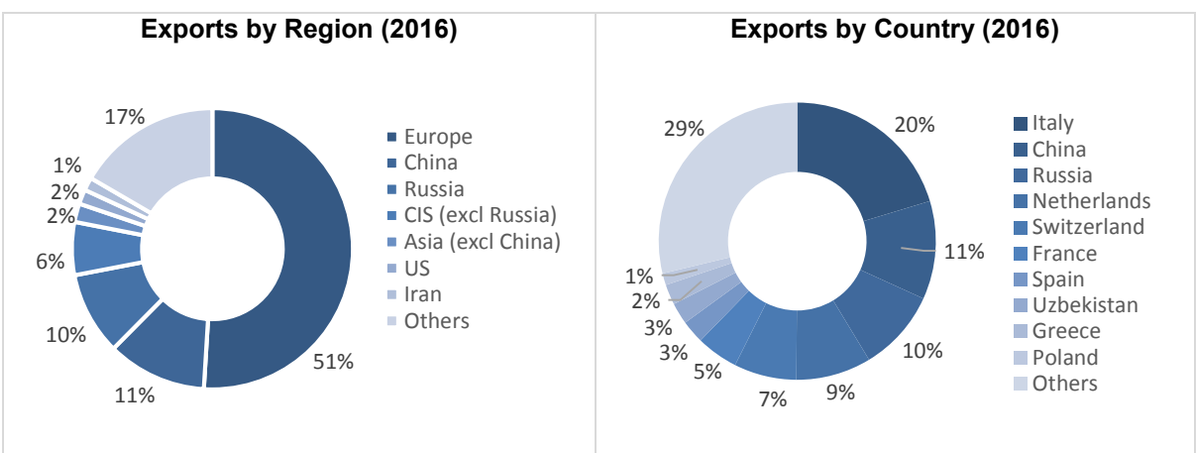
Source: International Monetary Fund, World Bank, market consensus

Being Kazakhstan's largest oil export market, Europe showed positive surprises in economic activity in late-2016 and 1H17. First half growth was above expectations for Germany, France, Italy and Spain. Solid readings on purchasing managers' indices in the second quarter indicated continued growth momentum and stronger domestic demand than previously anticipated. As such, World Bank has lifted its 2017 GDP projection for Europe from 1.5% to 1.7%, while the IMF raised the region's growth forecast from 1.7% to 1.9%.

China, being Kazakhstan's largest export market for oil and metal products, also witnessed stronger-than-expected growth with 1H17 GDP of 6.7%, supported by continued fiscal stimulus. Premised on this, 2017 economic growth is expected to remain at 2016's level of 6.7%. Market consensus is that China's GDP growth is likely to moderate to between 6.2% and 6.5% over the medium-term as the economy rebalances and reforms are being implemented and calibrated by policy easing.

Russia's growth momentum started to accelerate as higher oil prices this year supported consumer confidence and reduced fiscal pressure. For 2Q17, Russia's GDP growth was at 2.5%, accelerating from 0.5% YoY growth observed in 1Q17. Inflation is close to the central bank's target of 4%, allowing the regulator to further reduce the key interest rate, which is expected to further boost consumption and aggregate demand. Following a 0.2% contraction in 2016, GDP is forecasted to grow at 2.1% in 2017.

Positive economic performance of China, Russia and Europe will have spillover effects to Kazakhstan through trade and commodity prices, as well as through the degree of confidence and stability in financial markets. China and Russia account for 11% and 10% respectively of the country's total exports, while European countries collectively account for ~50% of total exports.



Source: Statistics Committee, Samruk-Kazyna

Macroeconomic indicators of Kazakhstan's key trading partners

Indicator	Eurozone	Russia	China	Kazakhstan
GDP growth 2017f	1.7%-1.9%	2.1%	6.7%	**3.4%**
Unemployment rate %, June 17	9.1%	5.1%	3.97%*	**4.9%**
Inflation % YoY, July 17	1.3%	3.9%	1.4%	**7.1%**
Benchmark interest rate %, as at August 17	0%	9%	4.35%	**10.25%**
PMI Manufacturing, July 17	56.6	52.7	51.1	N.A.
PMI Services, July 17	55.4	52.6	51.5	N.A.

Source: Central Banks, Eurostat, Russian Federation Statistics Service, National Bureau of Statistics of China, Ministry of National Economy

** data as at 1Q17*

2017 outlook

In summary, Kazakhstan's economy remains resilient and is gradually adapting to the "new normal" environment. GDP growth stood at 1.0% in 2016, above official forecast of 0.5% and beating market expectations of as low as -1.0%, supported by infrastructure spending, gradual recovery in oil prices and the resumption of oil output from Kashagan in 4Q16. The government's fiscal stimulus packages had cushioned the declines in private sector consumption and investment.

For 2017, GDP growth is expected to strengthen to 3.4%, supported by higher global oil prices, increase oil production, continued fiscal stimulus and improved economic performance in key trading partners. The government allocated KZT441.6bln for the implementation of Nurly Zhol program in 2017 with the possibility of an increase to KZT720bln subject to budget revision depending on the economic situation. These funds will be used for the construction and reconstruction of infrastructure including highways, railways and airports. Other measures include construction of affordable housing as well as projects for the EXPO 2017. These measures are expected to have a multiplier effect on the economic growth.

In line with our earlier expectations of monetary policy for stimulus, NBK cut its base rate four times by a total of 500bps last year, from 17% in February to 12% in December. As at 21 August 2017, the base rate stood at 10.25%. Further actions on the base rate will depend on the dynamics of fundamental factors influencing domestic demand and stability of the financial sector. Amongst external factors that should also be monitored include volatility of global commodity prices, speed of economic recovery in key trade partners and the revision of budget expenditures.

Overall, we welcome NBK's move in cutting the base rate which would bode well for domestic demand, business investments and the general economic activities. Inflation trends have corresponded to the expectations of NBK, with the risks of acceleration being minimal under current circumstances. In January 2017, inflation stood at 7.9% YoY, within the official target band of **6.0%-8.0% for 2017**. The general price level eased further to 7.5% YoY in June 2017. In the absence of negative shocks, inflation is expected to reach 6.5%-7.0% towards December 2017, lowering to 5.0%-7.0% in 2018 and potentially heading below 4.0% by 2020.

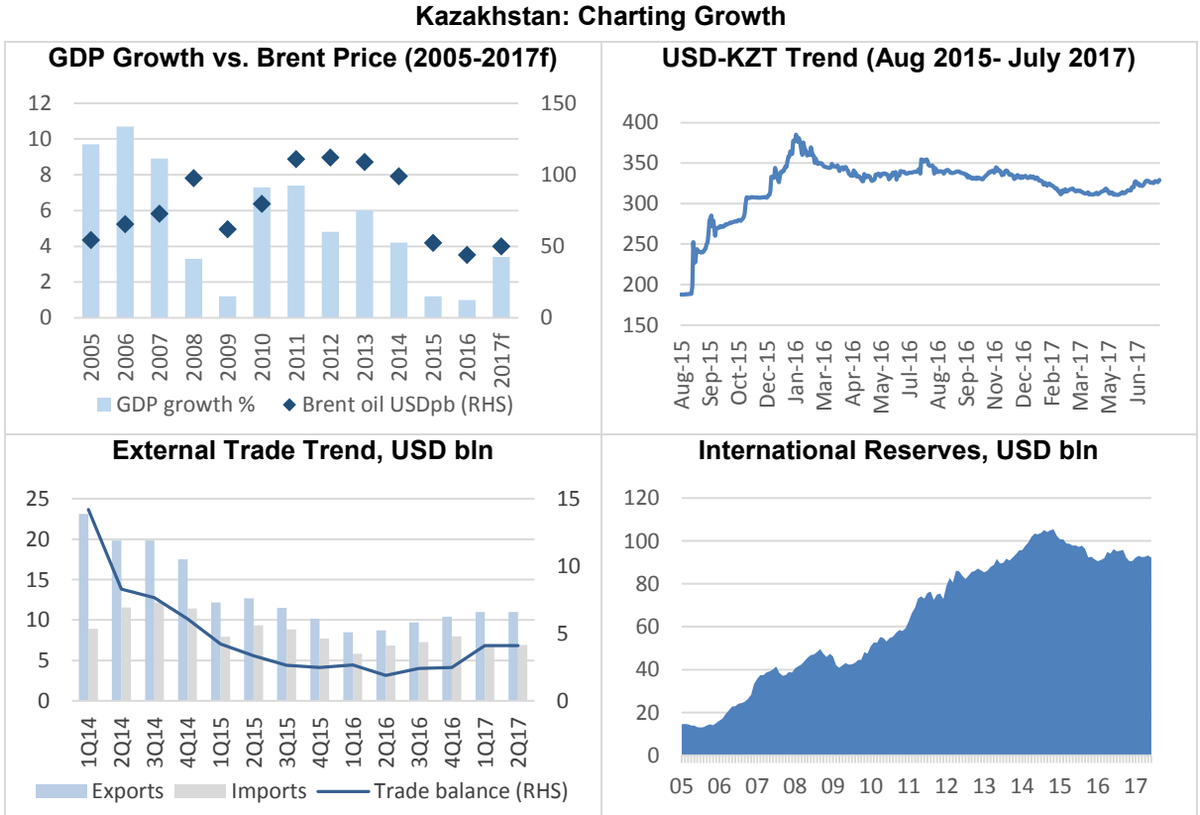
On currency, the USDKZT exchange rate has stabilized since March 2016, owing to favorable external and domestic conditions. The tenge continued to strengthen in the first four months of 2017, trading in the range of 310-334. As at 30 June 2017, it closed at 322.18/USD, an increase of 3.4% in the first six months of this year, mainly boosted by higher global oil prices since 4Q16. **For 2017, we expect the tenge to remain stable at conservative 330 average**, barring external factors potentially impacting the local currency.

On global oil market, we expect volatility in global oil prices to remain high for the remainder of 2017 due to risks arising from OPEC actions, slower-than-expected oil demand growth well as geopolitical factors. Upside potential of oil prices is seen limited by strong rebound in US output. Market players have reduced oil price projections for 2017 and 2018 on doubts that OPEC and non-OPEC output cuts will rebalance the market. We maintain our average Brent price forecast for 2017 at **USD50pb-52pb** (2016: USD44pb average).

On regional economies, Russia's growth momentum started to accelerate this year as higher oil prices supported consumer confidence and reduced fiscal pressure. Inflation is close to the central bank's target of 4%, allowing the regulator to further reduce its key interest rate. Following a 0.2% contraction in 2016, Russia's GDP is forecasted to grow at 2.1% in 2017. China, being Kazakhstan's largest export market for oil and metal products, also witnessed stronger-than-expected growth with 1Q17 GDP of 6.7%, supported by continued fiscal stimulus. Premised on this, 2017 economic growth is expected to remain at 2016's level of 6.7%. Meanwhile, Europe showed positive surprises in economic activity in late-2016 and 1H17. Solid readings on PMIs in the second quarter of 2017 indicated continued growth momentum and stronger domestic demand than previously anticipated. As such, Europe's growth prospects have been lifted to 1.7%-1.9% in 2017. Positive economic performance of China, Russia and Europe will have spillover effects to Kazakhstan through trade and commodity prices, as well as through the degree of confidence and stability in financial markets.

Kazakhstan's economy is highly reliant on natural resources and extractive industries, and the constant change in global economic dynamics has made it more challenging for the country to stay competitive. Now is the time for Kazakhstan to explore new opportunities and venture into new growth areas, especially through the modernization and application of technology in key economic sectors. This will result in economic diversification and enhance sector value add to GDP contribution in the longer-term – one of the key priorities for economic transformation under Modernization 3.0.

Kazakhstan: Charting Growth



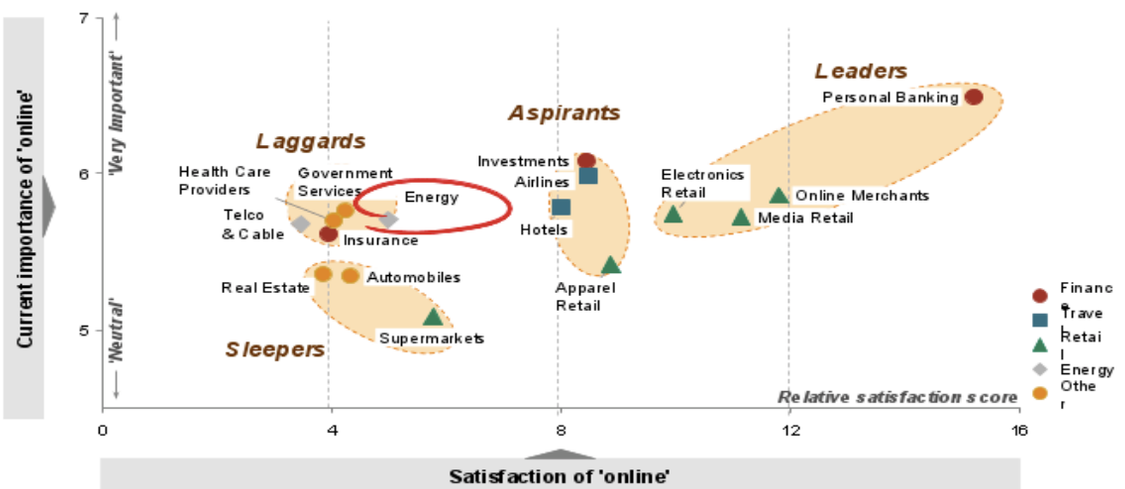
Source: Ministry of National Economy, National Bank of Kazakhstan, Bloomberg, Samruk-Kazyna

Section 3.0 Investment Opportunities in Digitalization

3.1 Digitalization in oil & gas industry

Despite the penetration of digitalization, not all industries are responding to the challenges and opportunities. In contrast to industries such as media and retail, where digital technology has been a significant disruptive force, process-oriented industries such as energy, transportation, industrial goods, have yet to experience its full effects. Currently, energy companies lag behind other industry companies in terms of adoption of and accessibility to digital technology, representing huge growth potential in this area moving forward.

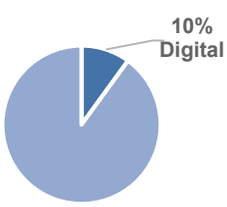
Energy companies currently still lagging in the digital trend



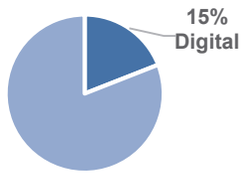
Source: BCG

Out of 93mln bpd, only 9-18mln bpd is produced using digital technology. Top national oil companies, which are responsible for 40% of world oil output, produce only 15% of output using digital technology.

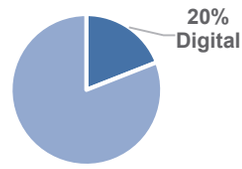
Rest of NOCs and independents (40% of output)



Top NOCs 16 companies (40% output)



IOCs 9 companies (20% output)

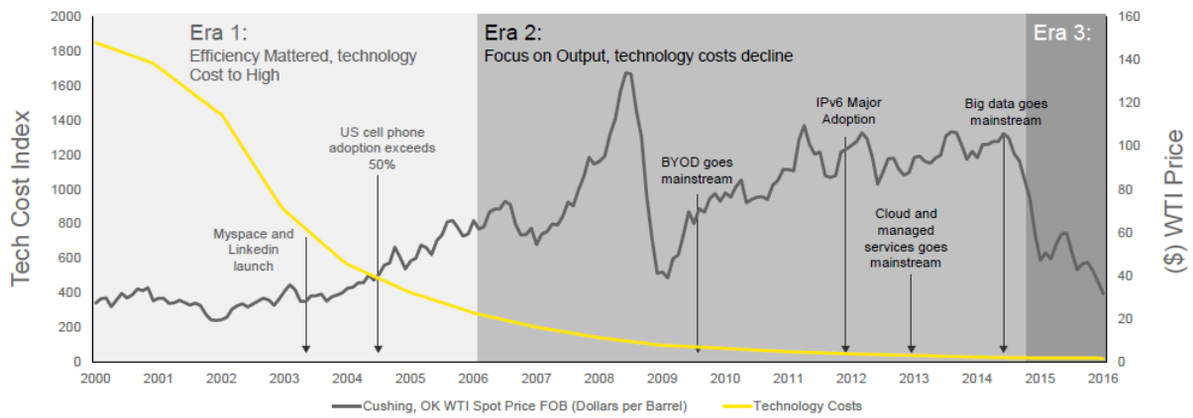


** NOCs – national oil companies, IOCs – international oil companies*
Source: Ernst & Young "How ready are your assets to perform in the digital world?"

Today, only 3-5% of oil and gas equipment is integrated and less than 1% of data is utilized to make decisions, leaving companies with significant potential to optimize assets and operations. Now, it is time to accelerate investment in the digital technology, as technology cost continues to decline. In

expectation of more modest oil & gas prices than in the past, improving the level of digitalization is one of the ways that the oil and gas industry can stay competitive. This also allows the industry to improve efficiency and safety, and reduce costs, while relying on higher oil prices to drive growth and returns is risky. Reducing unplanned downtime is one key opportunity areas for oil & gas through digitalization.

WTI spot price vs. technology costs



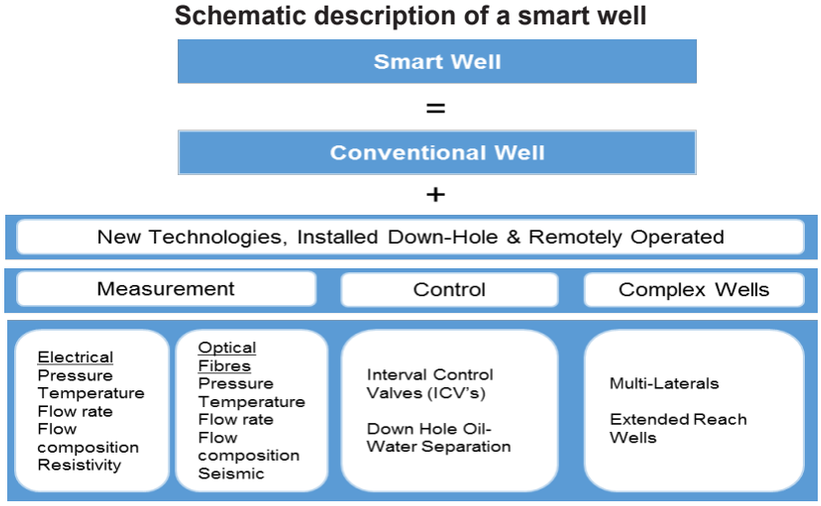
Source: E&Y

Digital (smart) well and oilfield

In the last few years, the need to produce cheaper and more oil from a reservoir has resulted in the development of a variety of technologies to better measure and control the production process through the wells. Typically, these technologies are installed within the well and can be operated remotely. Flexibility of smart well enabled it to adapt to changes in the oil-water and gas-oil contacts, in the reservoir properties, the completion of new wells, failure and maintenance in neighboring wells, maintenance and problems in the facilities.

Digital oil field technologies allow companies to capture more data, with greater frequency, from all parts of the oil and gas value chain and analyze it in real or near-real time, thus optimizing reservoir, well, and facility performance. These engineering-based and information-based technologies can have a profound positive or negative impact on human capital efficiency depending on how they are introduced and embedded into the organization.

Schematic description of a smart well

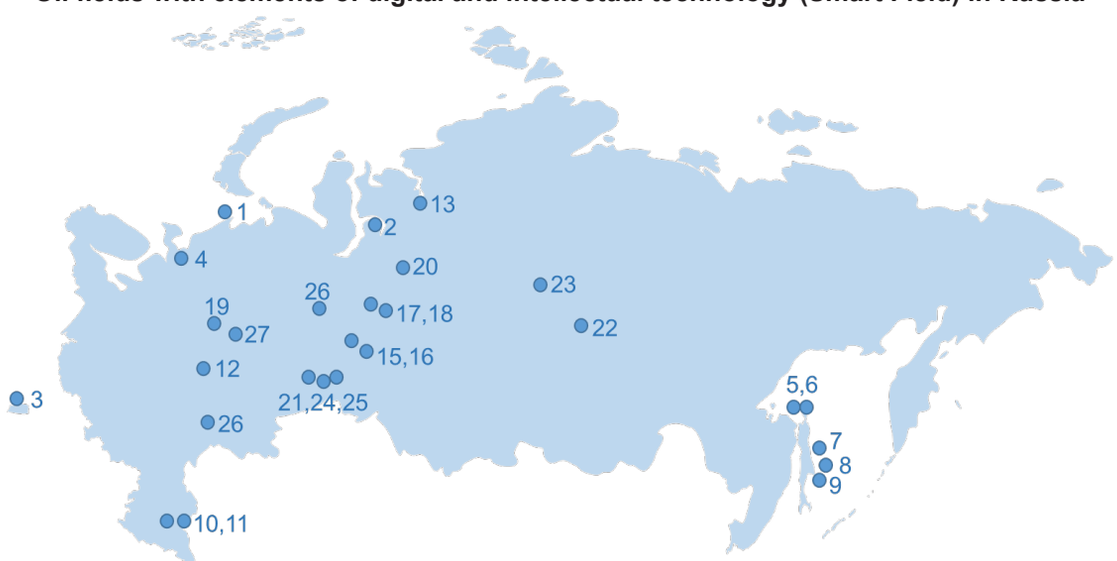


Source: Samruk-Kazyna

These smart oil fields allow to manage production process and assets based on automation, integrate between processes with financial indicators and other indicators. It is worth noting that there is no ideal smart field globally, each company develops and implements those elements of digital and intellectual technology, which are most appropriate for the field.

The first smart field abroad was activated in 2001, while in Russia in 2008. Shell and BP are leading companies in terms of introduction of smart field technology. As a result of application of integrated operations at BP, the flow rate of producing wells increased by 2.5-5.5%, while labor costs declined by a quarter. At Saudi Aramco, indicators such as labor costs and the number of onsite visits fell by almost a third.

Oil fields with elements of digital and intellectual technology (Smart Field) in Russia



Gazprom: 7, 8 – Piltun-Astokhskoye, Lunskoye (Sakhalin II); 9 – Kirinskoye – unmanned (Sakhalin III); 1 – Prirazlomnoye – Pechora Sea; 21 – Z.Salimskoye; 24 – V. Salimskoye; 25 – Vadelipskoye; Rosneft: 5, 6 – Chaivo, Odoptu (Sakhalin I); 13 – Vankorskoye; 14 – Priobskoye; 15, 16 – Uvatskaya field group – Urnenskoye and Kamennoye; 17 – Samotlorskoye; 18 – Vanyeganskoye; 22 – Verkhnechonskoye; 23 – Yurubcheno-Tokhomskoye; Lukoil: 3 – Kravtsovskoye – Baltic Sea; 10, 11 – Yu. Korchagina, Filanofskogo – Caspian Sea; 19, 27 – Arkhangelskogo and Sukhareva (North of Perm region); Novatec 2 – Yurkharovckoye – Tazovskaya guba, 20 – Severbo-Khancheiskoye GCF – deserted; Tatneft: 12 – Romashinskoye; JSC “Ritech”: 26 – Kotovskoye; Zarubezhneft: 4 – Khryaginskoye.

Chevron was able to improve its workover efficiency by 5-10% and decrease on site visits to oil fields by 30%. The company was also able to reduce the non-production times thanks to real-time data analysis and the adaptation of technical means deployed, hunting unexpected variations in pressure gradients. For Chevron, even though investments in digital hydrocarbon fields amounted to USD5bln during the first 5 years of the project, then several hundreds of millions in the following years, benefits reached USD700mln in 2013 and are estimated at USD1bln per year from 2016 on. Production sites show improved profitability up to 4% for the production rate and 6% for the global recovery rate, as well as a reduction of operational costs reaching 25% for a global cost of projects diminished by 2 to 4%.

Enhanced oil recovery and extraction methods accounts for 70% of innovative solutions used by oil & gas companies, while the share of intellectual methods of improving production management amounts to 30%. According to Cambridge Energy Research Associates (CERA), introduction of intellectual technology will increase average oil recovery until 50%.

Digitalization in oil & gas industry in Kazakhstan

Nowadays, in Kazakhstan the trend of introduction of smart field technology is slow, but positive. Currently, oil & gas companies in Kazakhstan lag behind its Russian peers in terms of the level of digitalization. As of January 2015, the number of smart fields globally has reached 240, while 27 of them were in Russia, including 10 at Rosneft, 7 at Gazprom, 5 at Lukoil, and one at Tatneft.

EP Kazmunaigas (KMG EP) is now adopting technology of smart fields, optimizing logistics processes and equipment maintenance at its subsidiary companies. Also, the company approved the project in increase of the efficiency of oil production at some fields. Successful implementation of these projects will be scaled to whole KMG EP.

Smart fields at Embamunaigas

In 2015, KMG EP implemented “smart field” project at its subsidiary, Embamunaigas’s Uaz field, which was a pilot project. At all stages of oil production at the Uaz field, equipment has been installed that takes readings and delivers them in real time to the control center. The whole cycle of oil production and processing at Uaz field is equipped with complex remote touch and control system with technological parameters in online mode. The well parameters are broadcast to the control center. Simultaneously, all the data recorded is submitted to the Center of visualization of production processes at Embamunaigas (EMBA), where it is analyzed and based on which long-term planning is being introduced.

The project allows to promptly identify the location of oil leak, to improve the quality of identifying the reasons of oil leakage, to control production equipment, to boost the effectiveness of producing and injection well stock, and to reduce operating expenses and costs. According to the preliminary forecast, production at the Uaz field could be increased by about 3% thanks to the smart field project, the time required to repair wells will be cut by 15-20%.

Installation of Smart control system at EMBA

Source: Danfoss

The implementation of “smart field” at Uaz allowed to reduce the electricity consumption by 32%, to increase active well utilization rate and consequently, to reduce the number of well remedial

maintenance operations. Currently, records of oil extracted are kept for each field. For a detailed assessment of the effectiveness of the project a considerable time period is required.

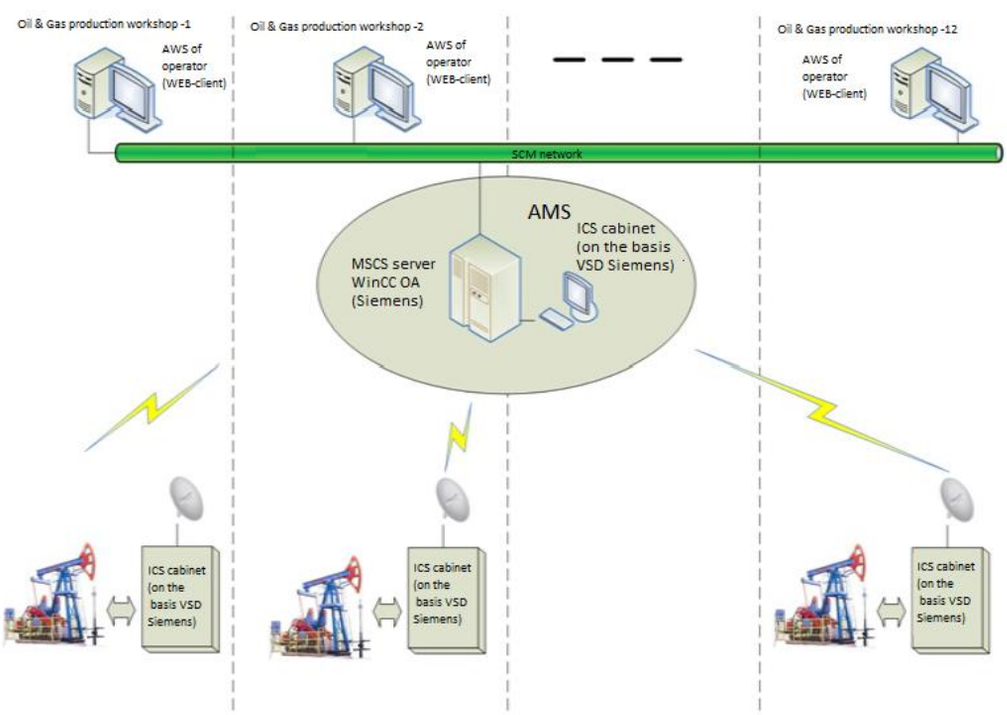
The smart field concept after its testing at EMBA was considered by investment committee of NC Kazmunaigas. The company decided to extend the implementation of this project at other fields of the group of companies of EP Kazmunaigas, such as Uzen, Karazhanbas, S. Nurzhanov, Aktobe and others.

EMBA performed a pilot test using Sensorless Artificial Lift Technology (SALT). This technology is a well automation and control system that minimizes energy consumption, helps reduce mechanical failures, maximizes or optimizes production, and is cost effective; a control system that automatically makes intuitive adjustments to match the well's productivity, prevents loading violations, and minimizes costly shutdowns; an automation system that helps mitigate well intervention, minimizes energy consumption, and provides a more favorable return on investment.

Smart control system at Ozenmunaigas

In 1H14, Ozenmunaigas introduced a smart control system as a part of the modernization project of 300 wells in 12 oilfields. There are more than 3,000 wells at the company. Supervisory control system (SCM) "Smart control system for sucker-rod pumping unit" is provided for supervisory control and telemetering, optimizing operating modes of the sucker-rod pumping units of oil rigs. This is a distributed system which consists of two main levels. The lowest level implements the function of smart control station of sucker-rod pumping units. The highest level consists of SCM server and operators' automated workstations (AWS). The data between SCM server and control station is exchanged via GSM communication.

Supervisory control system structure



Source: Siemens

The main benefits of SCM are a decrease of electricity expenses, operating expenses, improvement of working conditions and efficiency of oil production. Improving efficiency of oil production is achieved by increasing filling of the plunger with formation water to the maximum level by automatically forming optimum pattern of change of the pumping frequency within the time base. The most important point is that the operation visibility of the sucker-rod pumping unit allows to diagnose preaccidental situations or accidents in the ground and underground downhole equipment. This helps to extend the life span of mechanical downhole equipment. The selection of the most optimal operating modes for the sucker-rod pumping unit allows to reduce electricity consumption due to an increase of total KPI of SRPU by increasing pump filling rate and by using frequency controlled drive with recovery function.

State program on "Digital Kazakhstan"

Industrial sector has a high level of equipment deterioration (49% on average), low level capacity utilization (61%) which imply low labor productivity, poor and obsolete technical level of equipment. This requires a gradual modernization and inauguration of new information and IoT systems.

Within the framework of the state program on "Digital Kazakhstan", the "national database" of mineral resources is planned to be established as a foundation for the information and communications technology (ICT) infrastructure. This will help to protect data on resources, collected from current subsoil users and to attract new investments by providing this data for potential investors. This will also allow to improve transparency in governance of mineral resource complex due to automation of the process of granting right o subsoil use. Moreover, the creation of the "national database" will allow to introduce monitoring and accounting treatment system of mineral database in real-time.

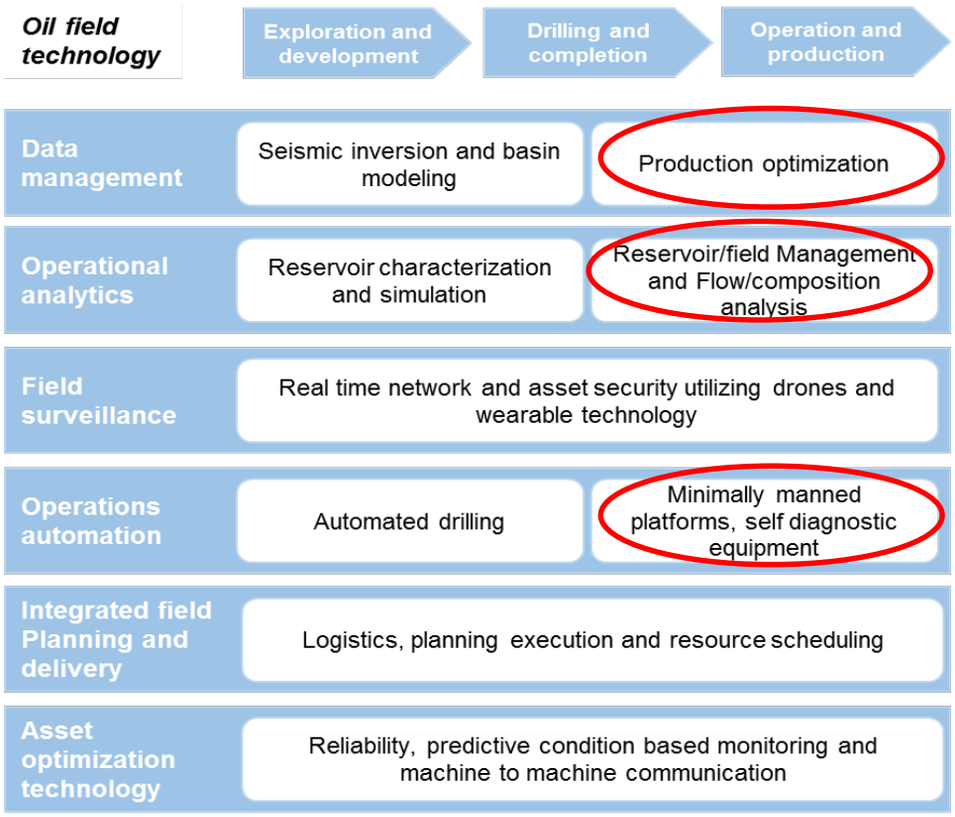
Currently, the government has only an access to the data on oil pumped to the custody transfer metering station, taking into account losses estimated based on the approved standards. Mineral extraction tax (MET) is calculated based on the oil volume at the oil metering station. We do not rule out that there may be losses and theft while transporting oil from field to the oil metering station, which might reach 10-12%. Therefore, the improvement of hydrocarbon accounting system and the creation of the state accounting information system is important.

Why invest in digital technology?

According to Gartner, leveraging digital technologies to improve business performance remains a top priority for oil and gas chief information officers. Chairman and chief analyst of Wood Mackenzie stated that digital technology has a major part to play in the next stage of structural cost reduction. PWC claims that digital is a critical capability to accelerate operational efficiency and drive margins in oil & gas.

It is estimated that the oil & gas industry will generate USD1.1tln in Digital Value at Stake from 2015-2024. While digital technologies and processes can improve efficiency and cost savings throughout the oil and gas value chain, the research analysis indicates that they can make the biggest impact in upstream operations: improvements in recovery efficiency and production automation drive the largest benefits.

Six areas of digitalization exist for significant value creation in upstream operations



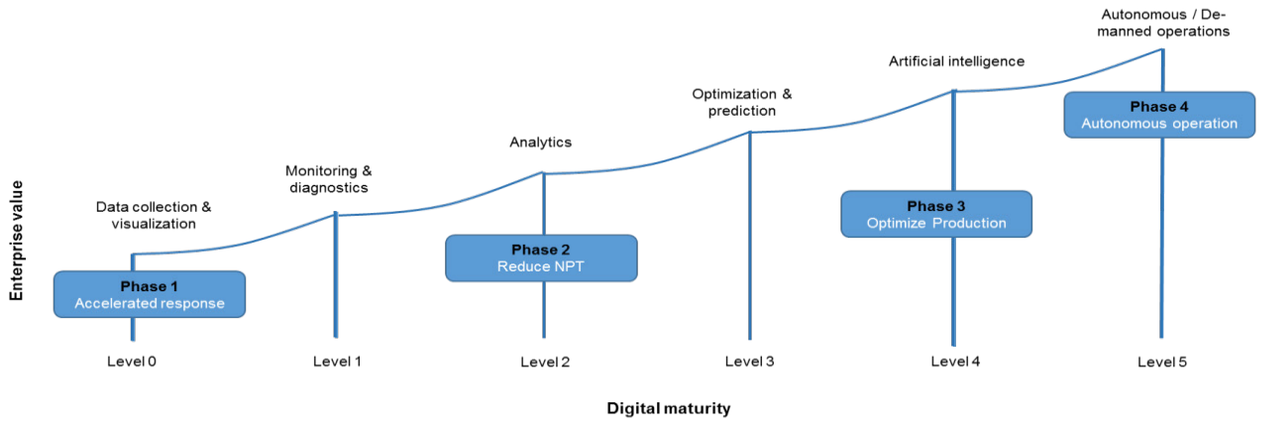
Source: PwC

The main benefits are optimization of expenses, minimization of losses, and maximization of oil output.

1) With the help of integrated model the level of oil output and oil recovery rate can be forecasted, operating and capex expenses can be optimized.
2) It becomes possible to adapt flexibly to conditions, where oil production is carried out, and provides in real time adjustments to the production planning.
3) Leading oil & gas companies in digital oil production are more resilient to highly volatile oil market.
4) Digital technology allows to increase the average oil recovery at oilfield with light crude oil by 30-50% due to a substantial decline of operating costs and relevant reserves growth.

The global smart oilfield market is expected to grow at a CAGR of more than 4% by 2020. Smart oilfield services are forecasted to increase the NPV of an oilfield by 25% by reducing exploration and production costs and shortening schedules, increasing productivity, and reducing downtime. Furthermore, smart oilfield services also improve worker safety and health and extend the lifetime of brownfield, which in turn will impel the growth prospects for this market segment until the end-2020.

The journey to value for oil & gas companies



**NPT means non-productive time*[1]
Source: GE oil & gas

Top areas of digitalization where oil & gas companies should focus on:

- **Recovery efficiency:** Enhanced oil-recovery techniques include permanent reservoir monitoring and advanced analytics of 4D seismic data analysis.
- **Lifting-process automation**: Automate and remote manage the production process, and streamline operations through accurate measurement of critical field parameters such as pressure, flow rate, and temperature in near-real-time.
- **Remote monitoring**: Early detection and swift reaction to leakages, theft, and rig downtime through remote monitoring. Also supports faster problem resolution by spotting the exact failure code prior to dispatching a technician.
- **Drilling optimization**: Data management and Big Data analytics drive efficiencies through standardization and simplification. This reduces non-productive learning time and enables faster well execution.
- **Project planning**: By using Big Data analytics to improve project outlay estimates, firms can prevent cost escalations.

The production growth rate depends on the efficiency of the chosen technical solution. Thus, methodological approach is required to determine the economic efficiency new equipment. A sample set of technologies that are receiving universal industry acceptance includes the following:

- Remote Real-Time Facility Monitoring and Control;
- Real-Time Drilling;
- Real-Time Production Surveillance;
- Intelligent Wells;
- 4-D Visualization and Modeling;
- Remote Communications Technology;
- Integrated Asset Models;
- Workflow and Knowledge Management Systems;
- Production Volume Management Systems.

[1] *The Non-Production Times is a very high cost item for exploring and producing hydrocarbons. They are reduced thanks to real-time data analysis and the adaptation of technical means deployed, hunting unexpected variations in pressure gradients, which are still accountable for nearly 40% on NPT nowadays.*

Total investments in digitalization and intellectualization of oil & gas industry in Russia may reach USD0.5-2.0bln annually during the next 5-15 years. In Russia, smart injection and commercial wells construction technology, establishment of real-time operations centers and fiber system for collecting, data transfers and management parameters are mostly in demand.

Key challenges

1) Digitalization challenges increase substantially with the age of oil field and level of reserves.
2) Lack of highly qualified human resources affects the intellectualization process of oilfields. This can be resolved by hiring foreign specialists or by forming corporate (governmental) competency building and development system on integrated modelling and integrated operations.
3) Technical readiness of Kazakh oil & gas companies to introduce digital technologies is high. Moreover, some of them are implementing pilot projects. The implementation of such projects requires substantial investments, and thus a revision of investment programs, which were recently cut down due to low oil prices. The key obstacles to allocating funds on digital projects are uncertainties associated with achieving positive effects, while the examples of successful stories in implemented projects by international peers are insufficient substantiation.

International practices

Smart fields at Salym Petroleum Development

Optimization of oil production, enhanced oil recovery, reduction of operating costs - all these are the results of the introduction of Smart Fields technology systems in the Salym group of oilfields. SPD has managed to improve production by 2–2.5% per year on average and reduced unscheduled downtime, and the average failure free performance period of the well equipment has increased.

Before operators used to regularly visit well pads and managed to service 15-20 wells, nowadays the operator spends most of the time in the office, being responsible for 30-40 wells. This has become possible due to the implementation of “smart fields”. Smart Field technology allows real time data transfer from wells to the control unit. Consequentially, the number of operator visits to the well pads decline considerably, allowing the operators to respond faster to the performance of the well equipment.

The implementation of Smart Field technology allowed SPD to create an integrated production model, which represents a reliable foundation for further projects targeting oil production growth. This system allowed the whole well and reservoir cycle to be integrated in one loop. SPD specialists receive information in real time, process this information using well stock integrated control instruments, identify the corrections needed for each well via an automatic control system.

Smart field management at Statoil

Statoil is the Norwegian largest oil & gas producer, which needed a way to offset the natural trend toward declining production levels. Statoil sought to incorporate new technologies into production processes in order to transform, streamline and improve them. Compared with a worldwide average recovery rate of 35%, Statoil sought to increase its rate to 55% for sub-sea platforms and 65% for fixed platforms. Statoil teamed with an industry consortium that includes IBM, ABB, Aker Kvaerner and SKF to combine advanced sensing technology with integrated operations to optimize the management of its oil and gas fields.

IBM provides the key elements required for Statoil to implement "smart field management" practices. Using data from wireless sensors, which monitor subsurface conditions, such as the pressure, temperature at different points in the field, the movement of gas or oil deposits within the field, the solution provides Statoil's engineers with the information they need to know when, where and how much to pump. By combining information from all of its production facilities, Statoil gains a much more comprehensive view of the state of its oil fields, vastly improving its ability to optimize its extraction activities.

Conclusion

Digital technology has a major part to play in the next stage of structural cost reduction. Today, only 3-5% of oil and gas equipment is connected and less than 1% of data is utilized to make decisions, leaving companies with significant potential to optimize asset and operations.

The global smart oilfield market is expected to grow at a CAGR of more than 4% by 2020. Smart oilfield services are forecasted to increase the NPV of an oilfield by 25% by reducing exploration and production costs and shortening schedules, increasing productivity, and reducing downtime. Furthermore, smart oilfield services also improve worker safety and health and extend the lifetime of brownfield, which in turn will impel the growth prospects for this market segment until end-2020.

Nowadays, in Kazakhstan the trend of introduction of smart field technology is slow, but positive. Currently, oil & gas companies in Kazakhstan lag behind its Russian peers in terms of the level of digitalization. The implementation of “smart field” at some fields will reduce the electricity consumption by 32%, increase active well utilization rate and consequently, reduce the number of well remedial maintenance operations. The most important is that it allows to diagnose preaccidental situations or accidents in the ground and underground downhole equipment.

Technical readiness of Kazakh oil & gas companies to introduce digital technologies is high. The implementation of such projects requires substantial investments, and thus a revision of investment programs, which were recently cut down due to low oil prices. The key obstacles to allocating funds on digital projects are uncertainties associated with achieving positive effects, while the examples of successful stories in implemented projects by international peers are insufficient substantiation.

There are still challenges in introducing digital technologies in Kazakhstan in relation to highly qualified human resources. This can be resolved by hiring foreign specialists or by forming corporate (governmental) competency building and development system on integrated modelling and integrated operations. Digitalization and intellectualization challenges increase substantially with the age of oil field and level of reserves.

The introduction of such technologies is impossible without integrating people, technology and business processes. The application of “smart” and integrated technologies allows the specialists to exchange the knowledge more effectively, which finds its reflection in the productivity of the operations and makes it possible to take considered and accurate decisions ensuring the largest profits.

3.2 Digitalization in transportation industry

The transportation sector is currently undergoing significant transformation. R&D investments in digital railways, intelligent streets and next-generation vehicles are expected to change the way companies do business, generating opportunities for additional revenue growth or operating expenses optimization. As the proportion of the global population living in cities is rising faster than transportation sector's capacity, this excess infrastructure demand facilitates a considerable capital spending, aimed to develop technologies that will improve overall efficiency of passenger and freight transportation.

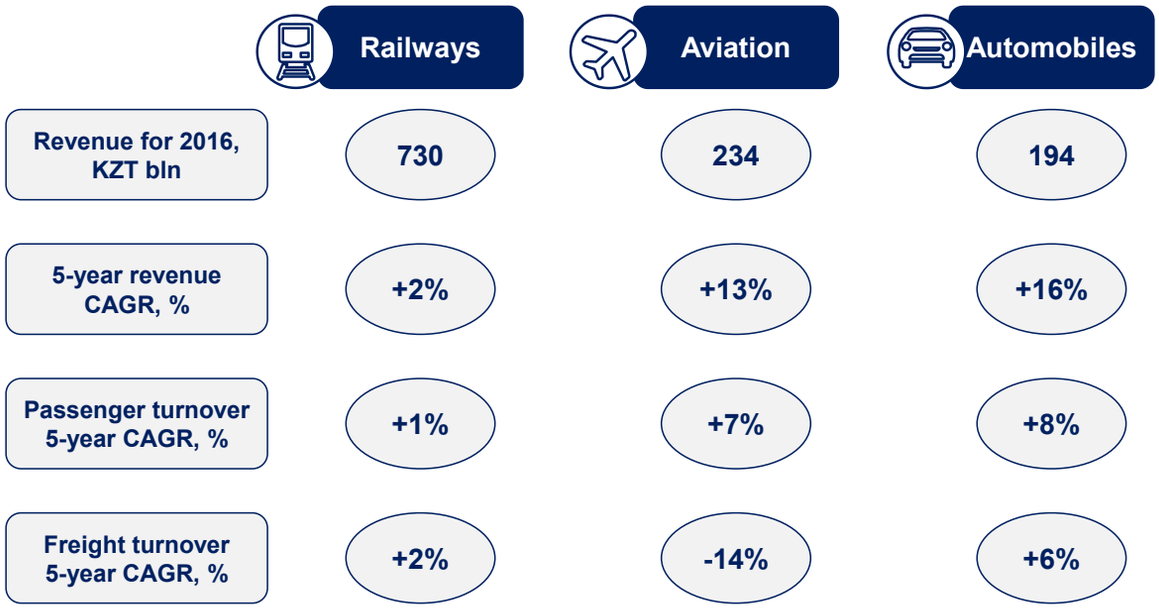
Today, as a result of advances in automation, data processing and analysis, passengers have an access to open traffic data, real-time planning and social services via smart phones. This disruptive change allows customers to choose among different carriers based on travel time, comparable pricing and other factors, leading to more rational buying decisions and driving competition among transportation service providers.

Consequently, digital transformation started to affect consumer experience in all sectors, creating potential inflexion points that may sharply change transportation demand composition. In industries, including retail, media and marketing, innovations led to disruptive shifts in business and operating models while the pace of technological modernization in the transportation industry varies across segments. In particular, the aviation sector managed to successfully utilize benefits of latest digital technologies, creating new value-adding services and improving operating margins. Meanwhile, railway industry and automobile transportation remain in transitory stage, adopting technologies, which are expected to increase efficiency and safety of services using intelligent networks and automated vehicles.

Transportation sector plays an important role in Kazakhstan's economy because of its commodity-based orientation, and the country's immense territory. Water transport accounts for only a minor part of the total freight turnover due to the country's continental location while automobile transport is not an ideal choice for long distances due to high cost. Meanwhile, Kazakhstan's aviation sector remains in the emerging stage, mainly attributable to affordability of air travel, which results in the preference for cheaper options of rail and automobile transport.

Kazakhstan's transportation sector revenue rose from KZT1.3tln in 2011 to KZT2.2tln in 2016, demonstrating 12% CAGR. The sector's aggregate freight turnover stood at 515 bln ton-km in 2016, compared to 444 bln ton-km in 2011. Meanwhile, the volume of freight transported grew from 3.0 bln tons in 2011 to 3.7 bln tons in 2016 with 5% CAGR. The sector transported more than 22 bln passengers in 2016, compared to 17 bln passengers in 2011, while overall passenger turnover reached 264 bln revenue passenger kilometers (rpk) in 2016, with 5-year CAGR amounting to 7%. Rail transport is the basis of the national transport system, comprising about 46% of the country's overall freight turnover in 2016 (237 bln ton-km), while automobile transport accounted for 31%, pipeline transport - 22%, air and water transport - 1%. However, by the volume of transportation (tons) automobile transport exceeds rail transport by more than nine times, constituting around 85% of overall freight volume transported in 2016. This can partially be explained by a relatively short average distance of automobile transport, compared to railways.

Selected indicators of Kazakhstan's transportation sector (2016)



Source: Committee on Statistics of the Republic of Kazakhstan, Samruk-Kazyna

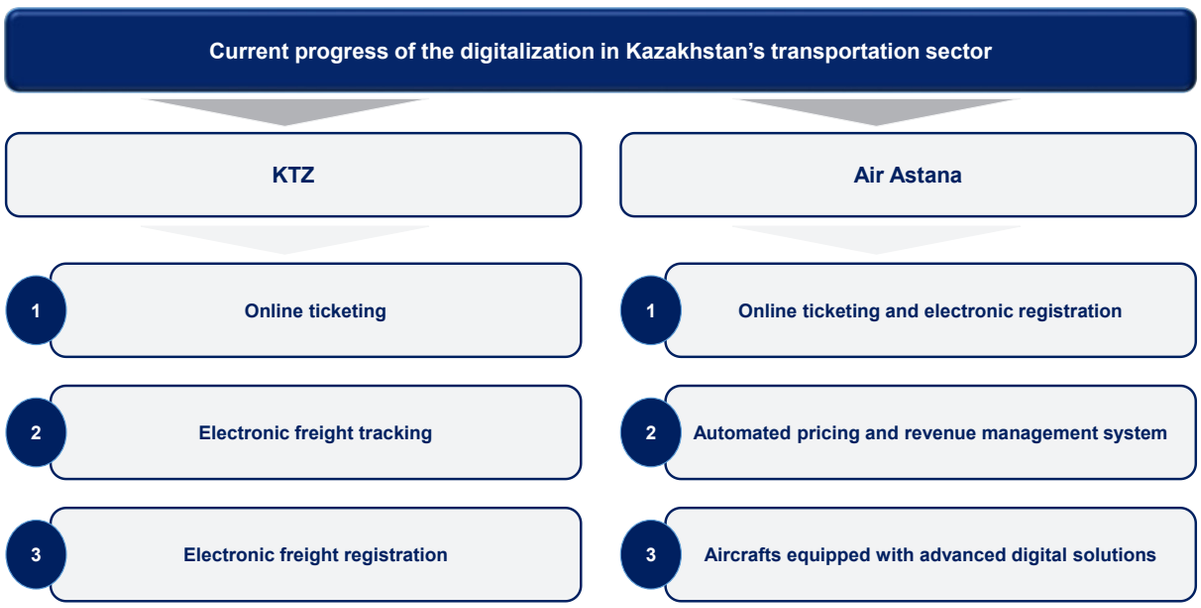
Since Kazakhstan's economy is still significantly correlated with commodity markets, which are demonstrating high volatility, the country needs to implement a proactive approach and transform its industries to remain competitive. Digitalization has the potential to facilitate transformation of all Kazakhstan's industries, with the digital revolution spearheading overall diversification of the country's economy and stimulating entrepreneurial activity.

On the railway sector front, Kazakhstan Temir Zholy (KTZ), the national railway operator, already started the integration of digital technologies in customer services and traffic management, introducing online ticketing and electronic freight tracking. Passengers are now able to purchase domestic and international railway tickets from various internet platforms without the need to wait in queues. In addition, freight forwarders will have an opportunity to place and track their orders online through an electronic document and contracting system using a computer or a smartphone, which will lead to the reduction in the overall transaction costs and will further enhance operational efficiency. All locomotives will be equipped with sensors, enabling real-time location tracking via satellite and fiber optic communication lines.

Based on the availability of customer data and real-time order information, KTZ will be able to integrate demand forecasting and planning solutions for freight and passenger segments, optimizing the use of the network and rolling stock. Meanwhile, potential introduction of digital analytical capabilities, aimed to complement traditional performance measurement tools, may improve service planning processes, increasing the affordability of railway transportation and reducing delays and interruptions in services.

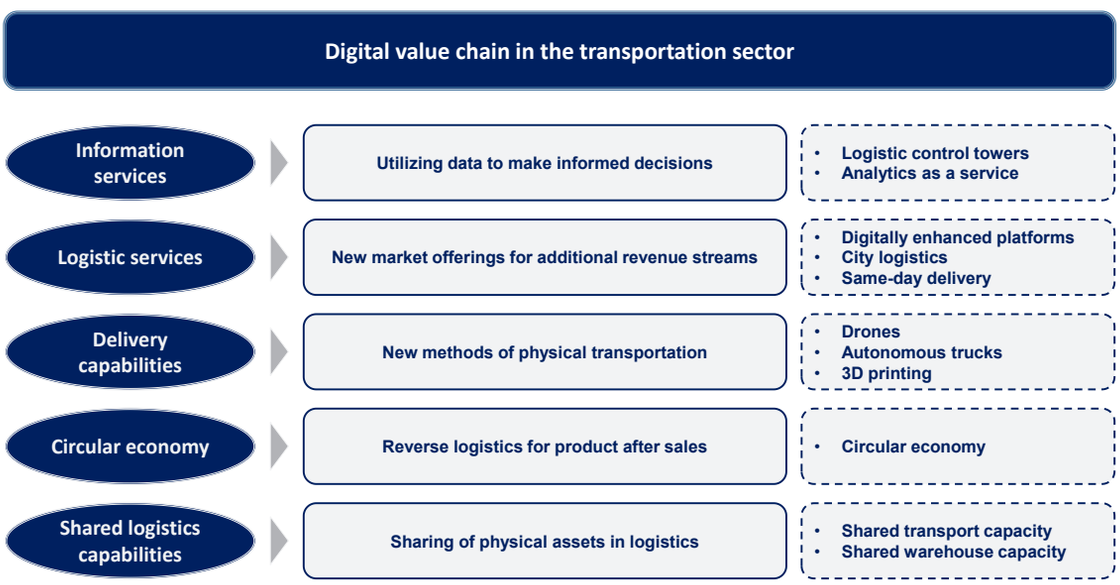
Meanwhile, on aviation sector front, JSC Air Astana, a leading Kazakhstan's airline operator, has already adopted state-of-the-art digital technologies in order to enhance service quality and optimize operating performance. The company is currently utilizing special automated revenue management system, allowing Air Astana to dynamically adjust pricing based on load factors and capacity on routes. In addition, all the company's aircrafts are equipped with interactive digital solutions, allowing customers to view movies and TV shows during flights. Air Astana was the first operator, which introduced online

ticketing and electronic registration on all its flights, reducing transaction costs and improving customer experience.



Source: Samruk-Kazyna

Kazakhstan's road transportation sector is also equipped with modern digital technologies, supporting the efficient operations of carriers. Solutions, based on specialized software, provide the opportunities to monitor technical conditions of vehicles, track vehicle traffic and fuel consumption, increasing profitability and quality of services.

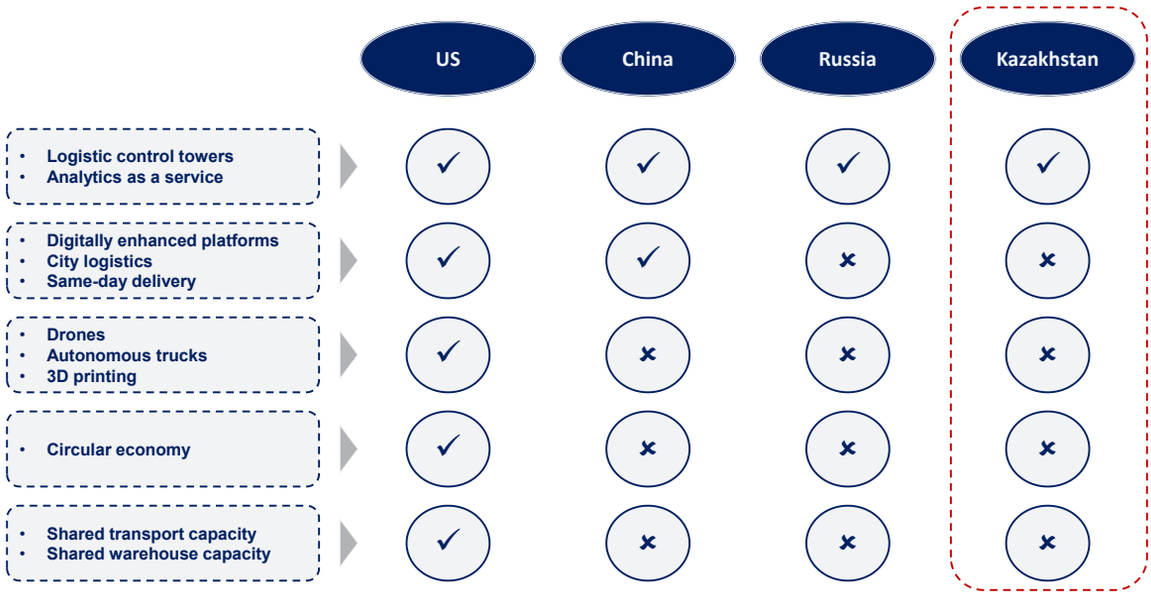


Source: World Economic Forum, Samruk-Kazyna

Compared to other developed and emerging countries, Kazakhstan managed to stay in line with CIS peers, with the degree of digital penetration in Russia's transportation sector being mostly the same as in Kazakhstan. As mentioned earlier, in a bid to improve profitability, the country's transportation industry players in all sub-sectors have already started to adopt digital infrastructure, aimed to collect and analyze traffic, route and customer-related data. However, emerging countries still need to develop

appropriate legal and infrastructure framework to incorporate technologies, including enhanced delivery capabilities (drones, self-driving vehicles and 3D printing), circular economy and shared logistic assets, which are currently present in developed markets like US.

Digitalization progress across countries

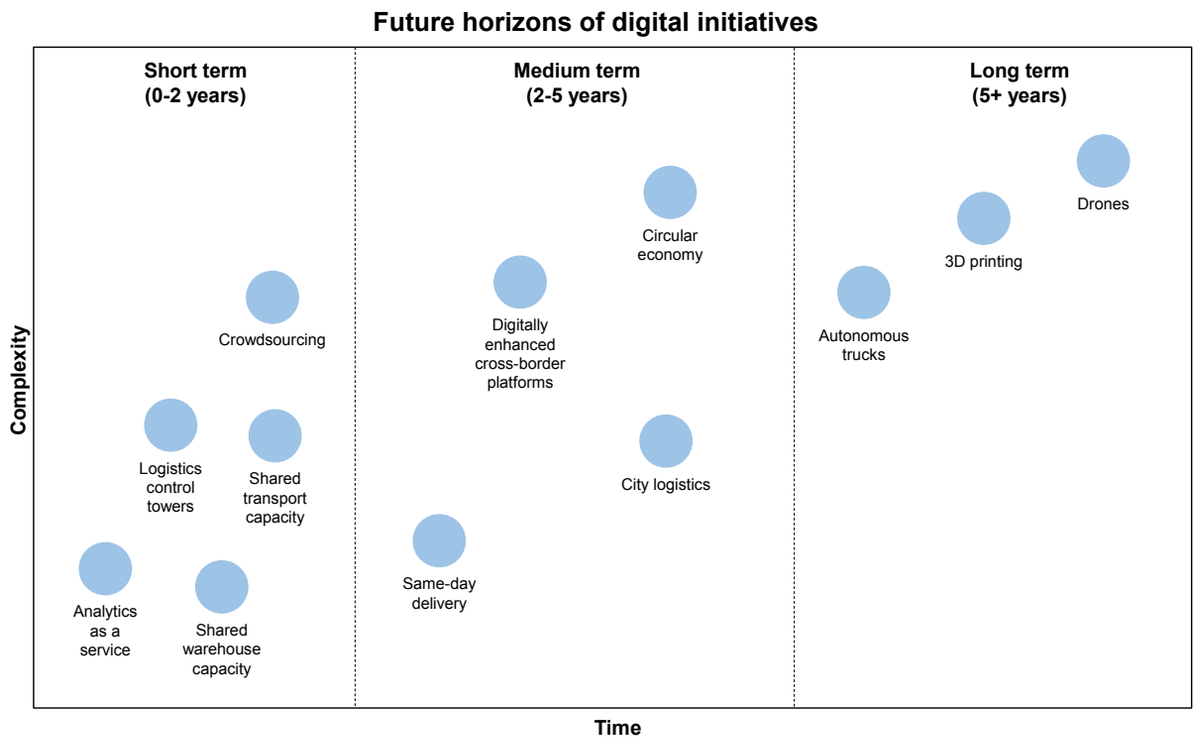


Source: World Economic Forum, Samruk-Kazyna

Internet of Things (IoT)

IoT is expected to affect transportation and logistics sectors, connecting almost any device to the Internet and promoting data-based logistic solutions. This will form a completely new view on processes, transforming storage, monitoring and maintenance operations. In particular, IoT will be directed to the monitoring of assets throughout the supply chain via a variety of technologies and tools, processing a huge number of generated data sets and using these data in ideas for finding new solutions. The technology's advantages can be observed throughout the whole logistic value creation chain, including warehousing, cargo transportation and the "last mile" delivery and impacting areas such as operational efficiency, security, customer service quality. In addition, automation of business processes will provide an opportunity to eliminate the need for interference by operators, improving quality and predictability and allowing to coordinate joint activities of people, systems and resources.

Internet of Things provides much more opportunities for freight transportation than just tracking and monitoring. Suppliers of logistics services will get a clear idea of the movement of goods, as well as the ability to monitor the state of products, which will ensure the arrival of goods at the right time, in the right place and in the right condition. The information sensors for trucks and the multi-touch tags for goods convey information about location, condition (reaching thresholds) and facts of opening parcels (to detect possible theft). To date, many of the existing solutions are autonomous and do not relate to each other, implying that new platforms must be created, combining various existing hardware and software solutions to control the integrity of the entire supply chain.



Source: World Economic Forum, Samruk-Kazyna

On fleet and asset management front, sensors can monitor how often a truck, container, or goods picking device is used or idle, and transmit this data for optimal utilization analysis. Today, many logistics vehicles are already equipped with numerous sensors, embedded processors, and wireless communications. Sensors measuring the volume of each load can provide additional information regarding the reserve capacity of vehicles on certain routes, with IoT-supporting devices providing solutions, focused on determining reserve capacities on the main routes. In addition, it is possible to increase fleet efficiency, save fuel and reduce distances traveled by vehicles without cargo, which accounted for up to 10% of the routes. A joint management of a fleet can also lead to predictive management of the assets life cycle, using analytics to predict failures in the operations and automatically plan technical condition checks.

On warehousing front, the introduction of goods identification using inexpensive flexible devices will allow to shift toward the smart inventory management in the warehouse operations, leading to wireless reading and collection of data transmitted from each pallet when they are moved to a warehouse. Such data can include product information, such as volume and size, which can be subsequently compiled and sent to the warehouse management system for further processing, eliminating the need for manual counting and processing. Cameras attached to locks can be used to scan pallets for potential damage or defects. Once the pallets are moved to the desired location, the chips will transmit the signals to the warehouse management system, enabling visibility of the stock level in real time, and preventing the costly shortage situations in a warehouse. If any goods have been moved, the sensors notify the control system, which can track the exact location of the goods, taking the necessary measures.

However, the application of the Internet of Things technology will be successful only when there is a synergy as a result of combined use of various IoT devices. A car, which cannot connect to another vehicle or an intelligent parking lot, will be less efficient, while a smart pallet that can be used to manage

inventories in a warehouse, but not in a retail store, will provide only limited benefits. Consequently, IoT will require creation and management of an intelligent network of assets connected to various vertical and horizontal elements of the supply chain.

Self-driving vehicles

Self-driving vehicles are vehicles that can operate with significant degree of autonomy, implying that a driver doesn't need to constantly monitor the road when driving in autopilot mode. While at the current stage of the digital technology, a human's oversight is still required for monitoring and safety purposes, over the medium term, autonomous technologies will be ready to perform all the necessary functions to transport safely from one location to another. However, in order for a vehicle to be self-managing, artificial intelligence should have the capacity to execute the four basic interdependent procedures, including navigation, situational analysis, traffic planning and trajectory management.

Daily impact of self-driving vehicles in US

Lives saved from crashes	Costs of crashes	Savings on potential traffic violations	Less daily fuel consumption, barrels	Annual traffic signal savings
42	USD576mln	USD14mln	420,000	USD2.4mln

Source: AUVSI, Samruk-Kazyna

The transportation industry is expected to be a primary beneficiary of the self-driving technology implementation, with potential spillover effects to manufacturing, mining and other sectors. However, in the first stage, autonomous vehicles will only be used in the freight transportation sub-sector as cargo delivery carries less potential litigation risks than the passenger segment. Self-driving trucks may transport goods inside some secured and controlled areas, such as private warehouses. Meanwhile, the integration of self-driving technologies outside warehouse operations in the external environment, including public streets, long-distance transportation and the "last mile" delivery is the next evolving step, unlocking substantial cost optimization and revenue enhancing synergies.

Autonomous technologies can improve response time to potential hazardous situations on roads and calculate the fastest maneuver, taking into account the current state of the truck and the driving conditions. Since this can dramatically reduce the number and severity of accidents, self-managed transport has the potential to play a crucial role in reducing driver errors and avoiding accidents. A truck equipped with such an assistance system will stick to the strip automatically, keeping a safe distance from the cars in front and respecting the maximum truck speed and prescribed high-speed limits on the road. The driver will still have to perform tasks such as pouring into the traffic, overtaking and leaving the motorway, but, in the future, these functions will also be automated. Nevertheless, with this system, a driver must be available and be ready to resume manual control at any time if situation and conditions require so.

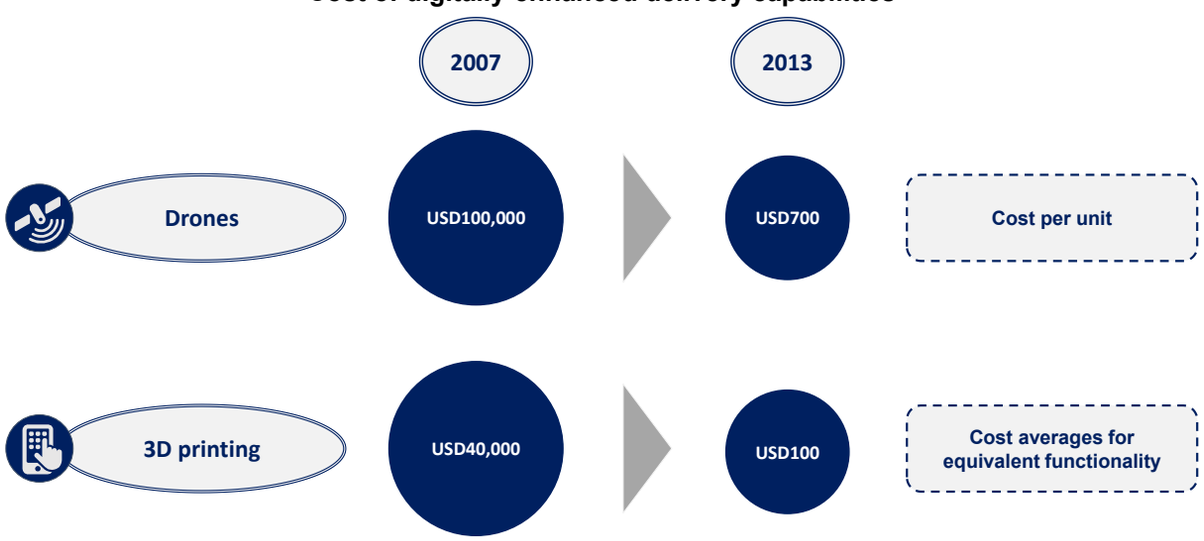
Over the long term, the transportation fleet can be reinforced with trucks capable of covering most of the way without driver's intervention or even managing the entire journey without a driver on board. For long-range shipments, a driver may not accompany the truck at all, driving it manually just to the entrance of the motorway. After that, a vehicle will automatically move non-stop until it reaches its destination, where another driver would wait and then drive the truck under the manual mode to the destination in the city.

Another potentially useful application for autonomous driving is a convoy, in which a driver of the first truck retains control over all functions and sets the pace, with following trucks and other vehicles moving without manual assistance. Autonomous trucking convoys are expected to provide significant fuel-efficiency gains to the transportation industry, saving approximately 12% of the fuel consumed by traditional trucks. In addition, automated convoys may optimize labor costs, as three or four trucks can be controlled by just one driver. Consequently, combined with 14% maintenance costs reduction potential, it is estimated that approximately USD30bln of value may be unlocked from the integration of self-driving technologies, leading to the reduction of 25 mln metric tons in emissions, and preventing up to 400 deaths from road accidents. These forecasts are based on assumptions that autonomous trucks will be offered for commercial use starting from 2020, reaching market penetration of 5% in developed markets by 2025.

Drones

On aviation front, unmanned aerial vehicles (UAVs) or drones still require more time for large-scale implementation, as the commercial use of UAVs is comprehensively regulated in most countries. However, the first tests indicated considerable potential of drones, especially in scenarios of delivery to rural regions. For the transportation industry, short-distance delivery by electric multi-copters seems to be the best practical application field. However, there are four possible additional applications, including first and last mile urban delivery, rural delivery, infrastructure inspection and in-house logistics.

Cost of digitally-enhanced delivery capabilities



Source: Accenture, Samruk-Kazyna

The UAVs can play an extremely important role in in-house logistics. Considering the automotive industry's mass production sites, the "strictly on time" operational processes and substantial costs of idle production lines, drones may offer in-house transportation, as well as urgent delivery from a supplier to a plant, replacing helicopters.

The mining sector may also benefit from express delivery of goods, which are critical for operations maintenance. Drones can be relocated easily, and they can follow a given flight path, eliminating a need for specially trained personnel to start and operate them. If operations are limited to a private area,

organizations will have to deal with minimal regulatory restrictions and confidentiality considerations, with load capacity being the most significant limitation.

Similar to self-driving vehicles, drones may also be used in warehouse operations, reducing operating costs of a multi-story warehouse. Sensors will enable the system to independently observe and analyze the warehouse environment, navigating drones inside the warehouse, finding logistic objects and executing inventory operations. Collected information can then be transferred to third-party systems through intelligent interfaces and services, allowing for the direct transmission of selected contextual information.

Drones will provide faster, cost-efficient and lower emission deliveries, attributable to off-road movement, the use of battery power and near-autonomous operations, with a group of UAVs may be controlled by just a single drone minder. Drones today perform less than 0.5% of all logistics deliveries globally. However, with the evolution of digital technologies and the adoption of appropriate regulations, transportation companies will be fully positioned to benefit from premiums for faster/same-day deliveries, offered by UAVs.

Amazon is currently developing a ninth-generation drone prototype, which will have the potential to transport payloads of up to 2.3 kilograms at 80 kph speed. In addition, these UAVs will eventually be able to locate the recipient of a delivery using data from their smartphone, having capacity perform approximately 400 mln deliveries per year. Meanwhile, DHL is utilizing autonomous quadcopters to deliver small packages to the sandbar island of Juist, located 12 kilometers off the German coast in the North Sea, while SF Express deployed a 1,000 drone's fleet to transport 500 packages per day across China. Swiss Post established a joint-entity with Matternet, a Silicon Valley-based drone producer, to assess the economic feasibility of up to 1 kilogram parcel deliveries by drones across distances of up to 10 kilometers. The integration of UAVs is also expected to benefit the society, leading to a reduction of 15 mln metric tons in emissions, and preventing up to 4,000 deaths from road accidents.

3D printing

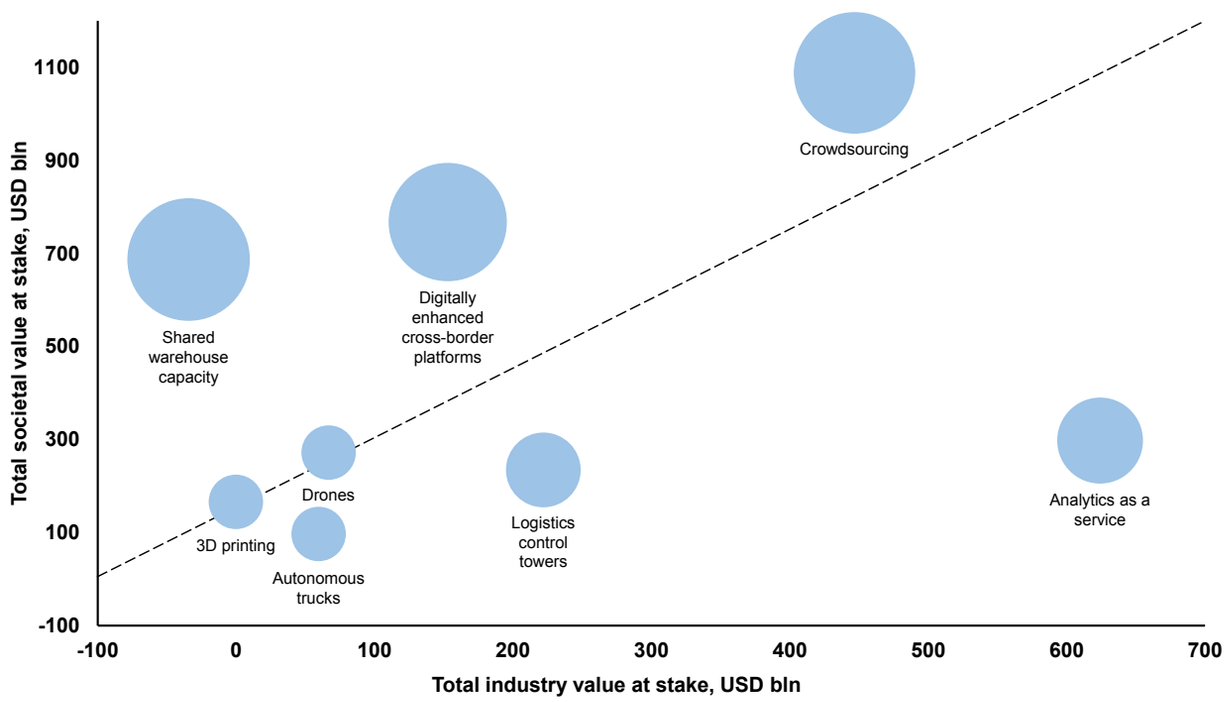
3D printing, also called additive layer manufacturing (ALM), creates three-dimensional solid objects from digital blueprint files, with objects being formed by integrating successive layers of material, each of which is a thinly sliced horizontal cross-section of the final object. Applied to aircraft manufacturing, ALM is expected to reduce waste during the manufacturing process and lighten the final weight of a plane, reducing fuel costs and carbon emissions during its use by end clients. Compared to typical machining techniques that create a part by cutting away a solid block of material, ALM eliminates the problem of 5-10% material waste during printing process.

With costs and supply lead times for tooling dropping by 70%, the workload of 3D printers is expected to increase, especially applied to spare parts markets, which can be produced on demand, eliminating the need for long-period storage in large spaces. This is technology creates a considerable risk for the transportation sector, as customers can print required intermediate goods somewhere close to their own location, reducing freight transportation demand.

However, a proactive logistics service provider may still benefit substantially using 3D printing as an opportunity to extend the range of value-added services, with a blueprint file arriving from a manufacturer that a single logistics service provider then prints and ships, perhaps even installing the final object at the customer's location.

Consequently, ALM technology carriers both the revenue-enhancing potential and a demand disruption risk. Despite 3D printing may result in the reduction of operating profits by USD1bln due to decline in demand, this technology may allow transportation companies to upgrade their services, supporting asset turnover and profitability.

Transportation sector's digitalization value at stake



Source: World Economic Forum, Samruk-Kazyna

Conclusion

Digitalization has the potential to facilitate transformation of all Kazakhstan's industries, with the digital revolution spearheading overall diversification of the country's economy and stimulating entrepreneurial activity. Compared to other developed and emerging countries, Kazakhstan managed to stay in line with CIS peers, with the degree of digital penetration in Russia's transportation sector being mostly the same as in Kazakhstan.

In a bid to improve profitability, Kazakhstan's transportation industry players in all sub-sectors have already started to adopt digital infrastructure, aimed to collect and analyze traffic, route and customer-related data. However, most emerging countries still need to develop appropriate legal and infrastructure framework to incorporate technologies, including enhanced delivery capabilities (drones, self-driving vehicles and 3D printing), circular economy and shared logistic assets, which are currently present in developed markets such as the US.

Appendix: Kazakhstan's Key Indicators

Kazakhstan: GDP Composition (2015-2017f)

Key indicator	2015	2016	2017f
GDP			
GDP growth, % YoY	1.2	1.0	3.4
GDP per capita, USD	10,509.9	7,585.2	8,708.6
Agriculture, % YoY	3.5	5.5	2.5
Industry, % YoY	-1.5	-1.1	5.9
Mining & quarrying, % YoY	-2.5	-2.7	7.2
Manufacturing, % YoY	0.2	0.7	5.0
Construction, % YoY	4.4	7.9	3.5
Oil price, USDpb	52.40	44	50-52
Indicators of monetary policy			
Inflation (year-end), % YoY	13.6	8.5	6.0-8.0
Official NBK's refinancing rate, % end of period	5.5	5.5	5.0-8.0
Credit to the economy, KZT bln end of period	12,674	12,859	13,121
Deposit of residents, KZT bln end of period	15,970	18,164	19,883
Money supply, KZT bln end of period	17,207	19,913	21,795
USD-KZT	221.7	342.2	330
Current account balance			
Export, USD mln	46,294.2	37,301.2	46,981.4
Import, USD mln	33,645.3	27,869.3	32,662.2
Trade balance, USD mln	12,649.0	9,431.9	14,319.2
Current account balance, USD mln	-5,823.2	-8,517.8	-7,131.6
% of GDP	-3.2	-6.4	-4.5
Consolidated budget			
Revenue, KZT bln	6,885.8	8,008.7	9,199.3
% of GDP	16.8	17.5	17.7
Oil revenue, KZT bln	2,277.6	1,776.9	2,375.3
Non-oil revenue, KZT bln	4,608.2	6,310.6	6,823.9
Expenditure, KZT bln	8,639.1	9,452.6	12,932.1
% of GDP	21.1	20.7	24.9
Consolidated budget, KZT bln	-1,753.3	-1,443.9	-3,732.8
% of GDP	-4.3	-3.2	-7.2
Non-oil balance, KZT bln	-4,030.8	-3,220.8	-6,108.1
% of GDP	-9.9	-6.6	-11.8

Source: Ministry of National Economy socioeconomic indicators as at August 2017, National Bank of Kazakhstan, Samruk-Kazyna

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