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# CONNECTING REGIONAL DEVELOPMENT, REGIONAL INTEGRATION AND VALUE ADDED CREATION

## Strategic elements for Industrial Development of Kyrgyzstan



INCLUSIVE AND SUSTAINABLE INDUSTRIAL DEVELOPMENT

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Image 1: Osh City

## INTRODUCTION

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Growing globalization increases the interconnectedness of countries embedded in complex supply and value chains. Countries also become increasingly interdependent through transnational transport corridors, the exchange of information and knowledge, investments, migrant flows, etc. The future of the Kyrgyz Republic—a small, landlocked and open developing economy—is heavily influenced by global and regional geopolitical and geoeconomic processes. The country’s reserves of natural resources, notably gold, makes it an important part of the global commodity trade network, albeit putting its economy in a vulnerable position due to the volatility of global commodity prices.

Kyrgyzstan’s geographical location at the crossroads of the People’s Republic of China, the Russian Federation and Europe creates significant potential for trade. The political and economic activity of the Russian Federation and People’s Republic of China in the region, including the expansion of the Eurasian Economic Union (EAEU) and the creation of the Silk Road Economic Belt initiative, involves Kyrgyzstan and will shape its economic and social spheres to a large extent. The vicinity to countries with rapidly growing populations and demands, such as India and Pakistan, offers new export opportunities.

To achieve sustainable economic growth and welfare of the society, it is crucial for Kyrgyzstan to reinvigorate its industrial sector, which practically eroded after the collapse of the USSR and to a large extent also due to the country’s highly volatile political situation. Weak and inefficient institutions and a large informal economy amplify the level of uncertainty. Dependence on remittances from labour migrants and official development assistance flows add to the already high level of volatility affecting the prospects of the Kyrgyz economy.

Environment and environmental services are becoming a limiting factor of economic development for many developing countries, with Earth approaching its planetary boundaries. Climate change is expected to significantly affect Kyrgyzstan’s water

resources which are crucial for the future development of several sectors of the economy, including agriculture and energy. Kyrgyzstan must devise an adaptation policy to cope with the adverse effects of climate change, anticipating a change in water availability and its predictability, a change in soil quality and public health effects. Moreover, the interdependencies between food production, energy generation and water availability, often referred to as food-water-energy nexus, must be taken into consideration. With growing demand and production, water will become a limiting factor for defining a feasible extension of cultivated land and the amount of crops a country can grow in relation to the amount of hydropower energy generated or coal produced and converted.

The further development of production can only be secured by deploying newer more efficient technologies, machinery, fertilizers and qualified human resources. If this is not pursued in a timely manner, the competitiveness of domestic agro-products could decline, leading to an increase in unemployment in rural areas and consequently to rural-to-urban migration or to migration of labour abroad, both having adverse consequences on economic growth. Such interconnections within the food-water-energy nexus are just one example of existential **systemic effects that policymakers must take into consideration when building a strategic plan in the face of an uncertain future.**

Careful strategic planning entails avoiding dead ends and ensuring that **short- and mid-term measures are compatible with long-term goals.** For example, extensive coal extraction and its use to generate energy may initially be an economically justified solution to improve the country’s energy security, which is crucial for supporting manufacturing development. However, in the longer run, investments that will have been made in coal-firing capacities will lock Kyrgyzstan into the most carbon-intensive and air-polluting activity, preventing it from transiting to more modern, efficient and clean energies.

This report outlines the current situation of Kyrgyzstan's industrial sector; it analyses the country's strengths and weaknesses, as well as its opportunities and risks. Based on this outline, the document provides recommendations on:

- Improvement of quality of governance;
- Securing access to financing and boosting investment;
- Enhancing regional and global economic integration and export opportunities;
- Integrating regional development with industrial development;
- Addressing social development goals and environmental sustainability;
- Creating infrastructure necessary for industrial development;
- Fostering the development of key strategic sectors – electricity, light industry, machinery, construction, information technologies (IT) and others.

The priorities for industrial development in Kyrgyzstan were identified and substantiated on the basis of a diagnostic study conducted by UNIDO, supplemented with further analysis carried out by IIASA such as foresight and scenario planning, an extensive review of strategic documents in Kyrgyzstan, analysis of data from a number of national and international databases, in-depth interviews with key stakeholders in Kyrgyzstan, extensive stakeholder engagement processes in the country, including the creation of a critical stakeholder group and four roundtable discussions in Bishkek, Osh, Karakol and Jalal-Abad held in May and July 2018.

The recommendations are drawn from a set of long-term scenarios used to represent possible paths of Kyrgyzstan's future industrial and economic development. The scenarios help delineate the uncertainty space that policymakers encounter in their decision-making.

## CHAPTER 1:

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# Potential for industrial development in Kyrgyzstan: strengths and weaknesses

# 1

Opportunities for industrial development in Kyrgyzstan build on its natural resource base and its strategic location in the proximity of the large and growing markets of the Russian Federation, China, Kazakhstan and Uzbekistan. The latter is an opportunity to tap into the current geopolitical and economic trends and regional integration processes. Kyrgyzstan features modest competitive advantages that derived mainly from its quality education base, low labour and other input costs, moderate inflation rate and positive business climate. The overall position of Kyrgyzstan in the Global Competitiveness Report 2017-2018 (WEF, 2017a) remains low – it ranks 102 of 137 countries considered. This is a significant improvement compared to its rank in the 2012-2013 report, namely 127. The country faces multiple and serious challenges.

According to the stakeholders' consultation process as well as the review of all strategic documents, the key strategic factors for the planning of Kyrgyzstan's industrial development can be broadly grouped into the following categories:

- Governance, institutions, legal base, government regulation and market mechanisms
- Production base, technology and infrastructure
- Human capital and labour market
- Finances, banking sector and financial market
- Domestic demand, global and regional competition and market access.

Based on the analysis conducted in 2018, we developed the following table of strengths and weaknesses of industrial development (Table 1).

**Table 1:** SWOT analysis of situation in Kyrgyzstan for industrial development (Source: IIASA, 2018)

	STRENGTHS:	WEAKNESSES:
<b>Governance, institutions, legal base, government regulation &amp; market mechanisms</b>	Low corporate tax; ease of starting a new business; strength of investor protection	Corruption; policy and government instability; problems of the institutional system; obsolete governance practices  Problems with the market economy; non-tariff barriers (incl. burden of the customs procedures); volatile exchange rates
<b>Environmental services, production base, technology &amp; infrastructure</b>	Rich in gold, coal and rare-earth metals Low prices for inputs, notably, energy	Low productivity High price of capital, low tariffs for electricity  Problems with water and water management; climate change; degradation of land; other environmental problems  Poor infrastructure notably transport and energy  Low level of technology and innovation
<b>Human capital &amp; labour market</b>	Broad education coverage Low labour costs	Low levels of skills and low labour productivity  Low labour market efficiency  High level of the economy's informality
<b>Finances, banking sector &amp; financial market</b>	Availability of foreign aid and loans Stable and low inflation rate	High government debt; highly unfavourable interest rates; limited access of small businesses to financing; low national credit ranking

## 1.1. Governance, institutions, legal base, government regulation and market mechanisms

**STRENGTHS:** Some business environment parameters in Kyrgyzstan are supportive of producers. For example, the Global Competitiveness Report 2017-2018 (WEF, 2017a) asserts that the corporate tax rate is only 29 per cent of profits; starting a business is relatively easy – it only involves four procedures and takes a total of 10 days; in terms of investor protection, Kyrgyzstan ranks 6.3 out of 10.

**WEAKNESSES:** Corruption, followed by policy and government instability (WEF, 2017b). Problems of the institutional system include low observance and enforcement of property rights, lack of judicial independence, highly burdensome government regulations, e.g. tax administration, labour and social security (social fund) and sanitation as well as in the issuance of licenses and permits (UNCTAD, 2013). The market economy faces problems due to the lack of local competition and the ineffectiveness of anti-monopoly policy. Non-tariff barriers, including the burden of customs procedures, restrict trade more than tariff policies.

Since the regulatory environment and the cost and administrative burden associated with meeting all the necessary requirements rises with firm size (ADB, 2013), firms have a strong incentive to remain small and forego any opportunity for growth by staying below a minimum efficient scale of production (UNIDO, 2018).

These results are confirmed by a UNDP analysis, which revealed a number of barriers obstructing investment in the hydropower industry (UNDP, 2016), including lack of government guarantees for returns on investment (both local and foreign), constantly fluctuating exchange rates, lack of rigorous rules in the Kyrgyz legislation on land allocation, unreliability of water use and excessive bureaucracy in land acquisition. Historical legacies shape water institutions in the region. The water administration is still characterized by a predominantly hierarchical culture, strong fragmentation and lack of horizontal coordination (Abdolvand et al., 2014). These challenges are not exclusive of the hydropower industry; the entire Kyrgyz economy faces them.

The Government of Kyrgyzstan has identified lack of transparency and accountability as one of the key problems preventing faster economic development in the country. Reforms to improve the situation have delivered only limited results. Hence, the industrial development strategy should take the existing institutional framework as its starting point. Since institutions are slow to change and the most pressing problems are often left untouched until a massive crisis erupts, the likelihood is high that the current

governance problems will prevail in the short- and medium-term. A prudent and realistic assumption is that the industrial development strategy has to be designed for and implemented within the current institutional confinements (UNIDO, 2018).

## 1.2. Environmental services, production base, technology and infrastructure

**STRENGTHS:** Kyrgyzstan is relatively mineral poor except for gold, coal and rare earth metals, the extraction of which plays an important role in the national economy. Generally, Kyrgyzstan benefits from low input prices (UNIDO, 2018). For example, abundant water resources contribute to low irrigation costs in agriculture, which generates about 15 per cent of the country's GDP and provides about 30 per cent of jobs (FAO, 2015). Rivers can be used in hydropower generation. Hydropower resources amount to 245.2 billion kWh, with a technically feasible potential of 142.5 billion kWh, and economic (production) potential of 60 billion kWh (GoK, 2008). Hydroelectric power plants are already of crucial importance for ensuring national energy security with virtually no oil and gas available in the country; they also offer high potential for exporting electricity (ADB, 2013).

**WEAKNESSES:** Kyrgyzstan suffers from extremely low input productivity due to insufficient managerial and technological practices and skills (UNIDO, 2018). This situation, in which productivity-related elements are the main bottlenecks for international cost competitiveness, is a common phenomenon in developing countries (Khan, 2014).

The price of capital is high, varying across industries and firm size; the general interest rate is high (≈20-30 per cent, annually), but subsidized loans are available for special industries (e.g. textiles) at 5 per cent annually (UNIDO, 2018).

Water resources (including rivers and lakes) in Kyrgyzstan have been threatened by both international and national problems. Poor water management, especially in agriculture, water pollution from manufacturing and mining along with an inadequate water sewage system in urban areas have negatively impacted both the quality and quantity of water resources. Water quality is deteriorating due to chemical and organic pollution attributable mainly to the numerous (untreated) dumps and waste tailings from mining enterprises. Additional pollution reaches the water systems through sewages, as only 56 per cent of cities and urban settlements have centralized sewage systems with adequate facilities. And even where treatment facilities exist, these often fail to meet basic sanitary standards. Therefore, concerns about drinking

water are well justified and are further aggravated by the fact that more than 90 per cent of drinking water is used in agriculture – primarily for irrigation. This high share of water up-take by the agricultural sector is due to inefficient use of water resources resulting from outdated irrigation technologies and a lack of water saving technologies (UNIDO, 2018).

Climate change is predicted to seriously impact semi-arid countries like Kyrgyzstan through decreased water levels. The observed temperature has risen twice as fast in Central Asia as compared to global levels since the 1970s (Schubert et al., 2007). Climate change is obvious in Central Asia, with the melting of glaciers negatively affecting the hydropower potential. Even in the most optimistic scenario, glaciers will lose up to two-thirds of their 1955 mass by the end of the 21st century, while in 2012, already 27 per cent was lost (Sorg et al., 2014; Zhupankhan et al., 2017). The government has already identified the negative impacts on water resources as one of the most severe climate change risks for Kyrgyzstan, and adaptation measures are important to secure safe and sufficient water resources for their consumers within the country and its neighbouring states (GoK, 2009b, 2009a, 2009c). This not only poses a challenge for sustainability but threatens the country's industrial potential as its energy generation is largely dependent on hydropower.

Another major environmental challenge that may directly affect the agro-processing industry is degradation of agricultural land, including the erosion of soil, salinization, loss of humus and contamination due to extensive use of fertilizers and suboptimal cropping patterns, which is not recoverable for decades. In 2011, for example, more than half of agricultural land, including arable land and pastures, was subject to degradation (Ubaidullaev, 2015).

According to an Opinion Survey by the World Economic Forum (WEF, 2017b), an inadequate supply of infrastructure is among the ten most problematic factors for doing business in Kyrgyzstan. The transport infrastructure is old and obsolete, largely inherited from the Soviet era. Roads are extensively used for transportation, but at least 13 per cent are in very poor condition and require rehabilitation or reconstruction (Autogid, n.d.). The railway network is small, only 467 kilometres in total length, with a broad track gauge (1520 millimetres). It is divided between the southern and northern regions and includes a number of dead-end branch lines. Separate railway lines connect Kyrgyzstan with Kazakhstan in the north and Uzbekistan in the south, but the two regions are not connected by rail (UNECE, 2015). While the existing capacity is in a reasonably good condition, it is expensive (UNIDO, 2018). Transport and logistics infrastructure, both in terms of overall capacity and adherence to international standards impede trade development in Kyrgyzstan (UNECE, 2015).

There are perceived problems related to the organization of road transport. Transport services are mainly provided by privately owned minibuses or road carriers which are predominantly private entrepreneurs using old trucks. This way of organizing commercial transport tends to be inefficient, resulting in relatively high transport rates (ADB, 2013; UNIDO, 2018). The outdated transport vehicles are emission-intensive and therefore problematic from an environmental perspective.

Energy infrastructure, notably access to electricity, represents another bottleneck for businesses. Kyrgyzstan's electricity infrastructure was built during the Soviet era, when Central Asia was treated as one region. The current infrastructure is old and inefficient and needs to be modernized. The energy sector had a deficit of USD 4.6 billion in 2013, covered by loans – it was already 6.3 billion dollars in 2014. Under these conditions, the industry's investment attractiveness is predictably low. It is afflicted by frequent outages during the winter months (due to low water flows) and a high loss of electricity transmission (UNECE, 2017; UNIDO, 2018).

The seasonal variation of the electricity load has a ratio of 3:1 between the month with the highest demand (January) and the month with the lowest demand (May). System overload to meet high demand in winter has accelerated the deterioration process and increased the number of service interruptions (Jorde & Terenteva, 2009).

An important barrier for development is an unsustainable electricity subsidy regime introduced in 2009, which has been maintained as a social security measure by the government. This and other institutional barriers result in a significant financial burden on the public budget; moreover, they seriously slow down modernization and the expansion of the electricity, heat and gas systems (IEA, 2015). Kyrgyzstan has one of the lowest electricity tariffs in the world; low tariffs generate higher demand, given the weak incentives to save energy. Residential demand increased by almost 58 per cent during the period 2007-2016, while the number of customers only increased by 12 per cent in the same period. Growing domestic demand means less surplus power to export and in fact often implies costly imports (World Bank, 2017a). According to UNECE, tariff reforms are considered the single most important policy action needed to improve the heating industry's financial viability and to incentivize end user energy efficiency (UNECE, 2017). The World Bank points out that the tariff structure is believed to incentivize fraud among small commercial users reportedly registering as residential consumers to bypass the higher tariff category. At present, the levels of both technology and innovation are extremely low in Kyrgyzstan.

### 1.3. Human capital and labour market

**STRENGTHS:** Kyrgyzstan's human capital is relatively strong. Its primary, secondary and tertiary education enrolment rates are very high at 98 per cent, 92 per cent and 47 per cent, respectively.

The stage of development Kyrgyzstan currently finds itself at allows for relatively low wages, which can be an advantage for the economy. According to (UNIDO, 2018), the hourly wage in Kyrgyzstan is about USD 1.4, which is lower than in other lower middle-income countries, for example, Moldova (USD 1.9 per hour) and Ukraine (USD 3.1 per hour). It is much lower than in upper middle-income countries, for example, Turkey where the hourly wage is USD 8.1. This, in principle, puts Kyrgyzstan in a favourable position since the country should, at its current income level, be able to hold (at least latent) comparative advantages in labour-intensive industries such as food processing and beverages, textiles and wearing apparel.

**WEAKNESSES:** The advantage of low labour costs is eroded by very low labour productivity. Real labour productivity is particularly low in the manufacturing sector, which is where it matters most because it should be the country's main tradable goods-producing sector. However, real labour productivity in manufacturing is lower than in the services sector on average, which lies in stark contrast to the situation in other low middle-income countries (LMICs). Moreover, labour productivity in manufacturing has deteriorated markedly over time. In 2012, real labour productivity was only a fraction of that in small LMICs and only half of that in Moldova and four times lower than that in poorer Tajikistan (UNIDO, 2018).

Despite the high enrolment rates at all stages of education, the quality of education is low at all levels. In terms of health, the situation in Kyrgyzstan is also sub-standard, as illustrated, for example, by the country's life expectancy which is only 70.7 years.

The overall rank of Kyrgyzstan's labour market efficiency in the Global Competitive Index is very low; due to its poor economic and social situation, the country cannot attract and retain talent. Female participation in the labour force is also low. On the other hand, despite the existing tax privileges, entrepreneurs complain about high social security payments, which prevent the development of labour-intensive sectors. Consequently, a significant share of the national economy is grey/informal, which is especially prevalent in agriculture and trade. Informal businesses not only evade taxes, thus withholding state budget revenues, they are also an obstacle to more dynamic productivity development.

### 1.4. Finances, banking sector, and financial market

**STRENGTHS:** One very important source of finance in the country is foreign aid and loans from a number of international donors including the World Bank, the International Monetary Fund, the Asian Development Bank, the European Development Bank, as well as bilateral sources, namely China, the Russian Federation and other development partners. These funds have enabled the modernization of out-dated infrastructure and the development of new projects, as well as the transfer of technologies and modern practices. Kyrgyzstan's monetary policy has been reasonably successful over the last years; a relatively stable and low inflation rate contributes to a more stable and predictable business environment.

**WEAKNESSES:** Other parameters that affect finances are lagging behind. For example, government debt reached 54 per cent of GDP in 2017 (Trading Economics, 2018). According to Enterprise Surveys by the World Bank, unfavourable interest rates are the prevailing reason why firms do not apply for a credit or loan (WEF, 2017b). Complex procedures are the second reason, but this reason only applies to the textile industry. These parameters, among others, are reflected in low national credit rankings.

Interviews conducted by IIASA with stakeholders in three strategic industries in 2018 showed that access to finance was a more acute obstacle for smaller firms with fewer fixed assets that could be used as collateral; generally, they have considerably more difficulties repaying expensive loans due to lower profit margins. Moreover, they hardly have the time and resources to handle complex application procedures. Limited access to finance is problematic as it undermines firms' investment potential and forces financially weak firms to either scale down or fully abandon planned investment projects. In the Kyrgyz case, where many firms still use outdated and inefficient production technologies, limited access to external funds significantly delays the shift towards more efficient and productive leading-edge production technologies and inhibits the expansion of existing production processes. Consequently, financially constrained Kyrgyz firms are unable to exploit existing growth potentials. In light of the generally bigger obstacles to financing smaller firms face and the predominance of small firms in the three strategic industries identified, such as food processing, textiles and electricity, the size of unexploited growth potential is substantial (UNIDO, 2018).

We developed the following long-, medium- and short-term priorities based on an analysis of the strengths and weaknesses of industrial development as well as other methods of analysis indicated above, (Table 2).

**Table 2:** Priorities, goals, indicators and risks for industrial development (Source: UNIDO, IIASA and State Committee for Industry, Energy and Subsoil Use, 2018)

PRIORITY	GOALS, INDICATORS AND RISKS		
<b>1. GOVERNANCE</b>			
	<b>Short term</b>	<b>Medium term</b>	<b>Long term</b>
<b>Goals</b>	Create conditions for realization of the goals of the programme on e-governance and digitalization, coordination between stakeholders as well as conditions for long term planning and realization of the strategy	Optimize and improve efficiency of the work of state organizations	Transfer governance practices from a short- to a long-term perspective, increase trust between public, private and civil society stakeholders
<b>Indicators</b>	<ul style="list-style-type: none"> <li>• Share of industry in GDP</li> <li>• Level of trust</li> </ul>		
<b>Risks</b>	<ul style="list-style-type: none"> <li>• Political instability and regulatory risks</li> <li>• Administrative risks at local level, weak enforcement</li> <li>• Financing risks and the lack of efficient financing mechanisms</li> </ul>		

PRIORITY	GOALS, INDICATORS AND RISKS	
<b>2. FINANCING</b>		
	<b>Short term</b>	<b>Long term</b>
<b>Goals</b>	Improve conditions of access to financing for industrial enterprises	Improve the country's positions in international ratings, decrease dependency on outside loans for state guarantee
<b>Indicators</b>	<ul style="list-style-type: none"> <li>• Credit rating</li> <li>• Share of debt in GDP</li> <li>• Volumes of financial means attracted through share market</li> </ul>	
<b>Risks</b>	<ul style="list-style-type: none"> <li>• Global crisis on financial markets, currency devaluation, increase of interest rates</li> <li>• Sanction and reduction of long-term credits</li> <li>• Negative balance of trade</li> </ul>	

PRIORITY	GOALS, INDICATORS AND RISKS	
<b>3. INVESTMENT</b>		
	<b>Short term</b>	<b>Long term</b>
<b>Goals</b>	Decrease existing risks for investors	Decrease the scope of the informal economy and increase positions in global competitiveness ratings
<b>Indicators</b>	<ul style="list-style-type: none"> <li>• Share of informal economy</li> <li>• Positions in the global competitiveness ratings</li> </ul>	
<b>Risks</b>	<ul style="list-style-type: none"> <li>• Decrease of investment volumes</li> <li>• Political tensions inside and outside the country and negative influence on investment climate</li> </ul>	

PRIORITY	GOALS, INDICATORS AND RISKS	
<b>4. EXPORT POTENTIAL</b>		
	<b>Medium term</b>	<b>Long term</b>
<b>Goals</b>	Increase competitiveness of Kyrgyz products and their adaptation to conditions of the global market	Increase in volume of Kyrgyz exports and diversification of exports (in terms of goods and markets)
<b>Indicators</b>	<ul style="list-style-type: none"> <li>• Share of high- and medium-tech MVA in exports</li> <li>• Share of export of raw materials in entire exports</li> </ul>	
<b>Risks</b>	<ul style="list-style-type: none"> <li>• Influence of sanctions on demand inside and outside the country</li> <li>• Devaluation of Kyrgyz currency</li> <li>• Decrease of competitiveness of Kyrgyz goods</li> </ul>	

PRIORITY	GOALS, INDICATORS AND RISKS		
<b>5. REGIONAL INDUSTRIAL DEVELOPMENT</b>			
	Short term	Medium term	Long term
<b>Goals</b>	Contribute to industrial development in the region considering available international experience and local specialization	Industrial development should become a driver of socioeconomic development in the region	Diversification of industry in the region, including high-tech, new industries (electronics, machinery)
<b>Indicators</b>	<ul style="list-style-type: none"> <li>Volume of industrial production in Batken, Talas, Naryn, Issyk-Kul (without Kumtor) and Osh above 8% of industrial production in the country</li> <li>Increase the share of innovation technologies in industrial production of Chui, Djalal-Abad and Bishkek</li> <li>Increase in the share of high and medium tech MVA</li> </ul>		
<b>Risks</b>	<ul style="list-style-type: none"> <li>Political and regulatory risks in the region</li> <li>Administrative risks connected with the low level of coordination and weak institutional basis in the region</li> <li>Technological risks connected with low level of education and innovation basis for introduction of new technologies</li> <li>Financial risks connected with weak investment attractiveness of the region, low level of financial support from the national government and low efficiency of financial and credit infrastructure in the region</li> </ul>		

PRIORITY	GOALS, INDICATORS AND RISKS		
<b>6. SOCIAL DEVELOPMENT</b>			
	Short term	Medium term	Long term
<b>Goals</b>	<ul style="list-style-type: none"> <li>Development of efficient basis for education which corresponds to the needs of industry</li> <li>Creation of new employment opportunities in the region, including young people and women</li> </ul>	Development of research and technical potentials	Implementation of IT in industrial development through special education programmes
<b>Indicators</b>	<ul style="list-style-type: none"> <li>Number of teachers for engineering-related subjects</li> <li>Number of students</li> <li>Number of experts with special education</li> </ul>		
<b>Risks</b>	Improper education for the needs of industry		

PRIORITY	GOALS, INDICATORS AND RISKS		
<b>7. ENVIRONMENT</b>			
	Short term	Medium term	Long term
<b>Goals</b>	Creation of institutional and regulatory basis to stimulate investment in green economy	Decrease in volumes of industrial waste and pressure from industry on the environment	Development of circle economy
<b>Indicators</b>	<ul style="list-style-type: none"> <li>Volumes of investment in ecologically clean products</li> <li>Percentage of green MVA</li> <li>Percentage of recycling enterprises</li> </ul>		

PRIORITY	GOALS, INDICATORS AND RISKS		
<b>8. INFRASTRUCTURE NECESSARY FOR INDUSTRIAL DEVELOPMENT</b>			
	Short term	Medium term	Long term
<b>Energy</b>	Ensure energy security and sufficient volume of energy for industrial development	Implement measures of energy measures	Increase the share of RES in energy mix
<b>Transport</b>	Reconstruct transport corridors in accordance with the concept of regional development	Improve quality of transportation opportunities for industrial development in the region	Diversify transport opportunities, also for exports
<b>IT</b>	Assess feasibility of international practices	Implement IT connected with measures of cybersecurity	

PRIORITY	GOALS, INDICATORS AND RISKS		
<b>9. PRIORITY SECTORS</b>			
	Short term	Medium term	Long term
<b>Mining</b>	Continue work on existing locations with the introduction of EIA measures	Diversify existing locations (geographically)	Diversify existing locations (new products)
<b>Food processing</b>	Introduction of clusters and cooperatives as well as support for regional specialization	Increase in volume of exports and modernization of enterprises	Introduce international safety standards in entire value chain
<b>Textiles</b>	Increase of product quality and meeting international standards through modernization and e-commerce	Cooperation and clusters based on regional principles, diversification of markets and logistics opportunities	Complex development of entire value chain
<b>Construction</b>	Increase quality of products through application of modern technologies	Stimulate internal demand for construction products through realization of affordable housing programmes	
<b>Tourism</b>	Development of industrial enterprises to satisfy tourism needs	Increase in the construction volume of tourism objects	

CHAPTER 2:

# Governance



The short-term goal for improving the governance framework to facilitate industrial development is to create conditions for the realization of the objectives and measures of the strategic programmes as well as to create mechanisms of coordination between state institutions. It also includes an increase of responsibility and capacities of local government.

The medium-term goal is to optimize the supervisory and authorizing functions of the state as well as to reduce the number of administrative procedures and increase their transparency through the implementation of e-governance reforms.

The long-term goal is to change state policy from short-term planning and an ad-hoc approach to long-term planning and capacity building as well as an increase in the level of trust between business, civil society and the government.

Governance barriers in Kyrgyzstan include a dearth of strategic and long-term visions (UNIDO, 2018). According to the Chamber of Commerce and Industry of the Kyrgyz Republic, the lack of transparency and unstable legal framework, including breaches of contractual obligations, are the main reasons for low volumes of foreign investment. A joint study on the business climate in the Kyrgyz Republic conducted by the World Bank and EBRD in 2013 concluded that corruption out of 16 systemic issues was the second biggest obstacle to doing business in the country. The International Finance Corporation (IFC)'s project "Improvement of the Investment Climate" found that 20 per cent of foreign investors admitted to making unofficial payments and that political instability remains among the top risks for Kyrgyzstan despite minor improvements since 2010. The International Law Development Organization identified the unstable political environment and distrust in the country's justice system as the main barriers to investment. At the end of 2017, some political disputes broke out between Kyrgyzstan and Kazakhstan. As a result, Kazakhstan strengthened its border with Kyrgyzstan and unilaterally restricted trade with its neighbour. Because of these measures, many Kyrgyz exporters, specifically those engaged in trading perishable agricultural products, suffered considerable losses. The World Bank's survey results highlighted a low level of trust in Kyrgyzstan's justice system by the domestic business community; firms avoid settling commercial disputes via the country's judicial system.

The Ministry of Economy, together with other stakeholders, is responsible for the implementation of necessary conditions for industrial development, including conditions for investment, macro-economic conditions and government frameworks. Such

a variety of stakeholders demonstrates the need to establish an intergovernmental mechanism or to build on the existing mechanism, such as the State Committee for Industry, Energy and Subsoil Use, to coordinate the efforts of different stakeholders and to create synergies in their efforts. The validation of the industrial development strategy will depend on efforts of different stakeholders as well as on coordinated activities among them. Figure 1 below presents the entities that contribute to the formulation and validation of the strategy for industrial development.

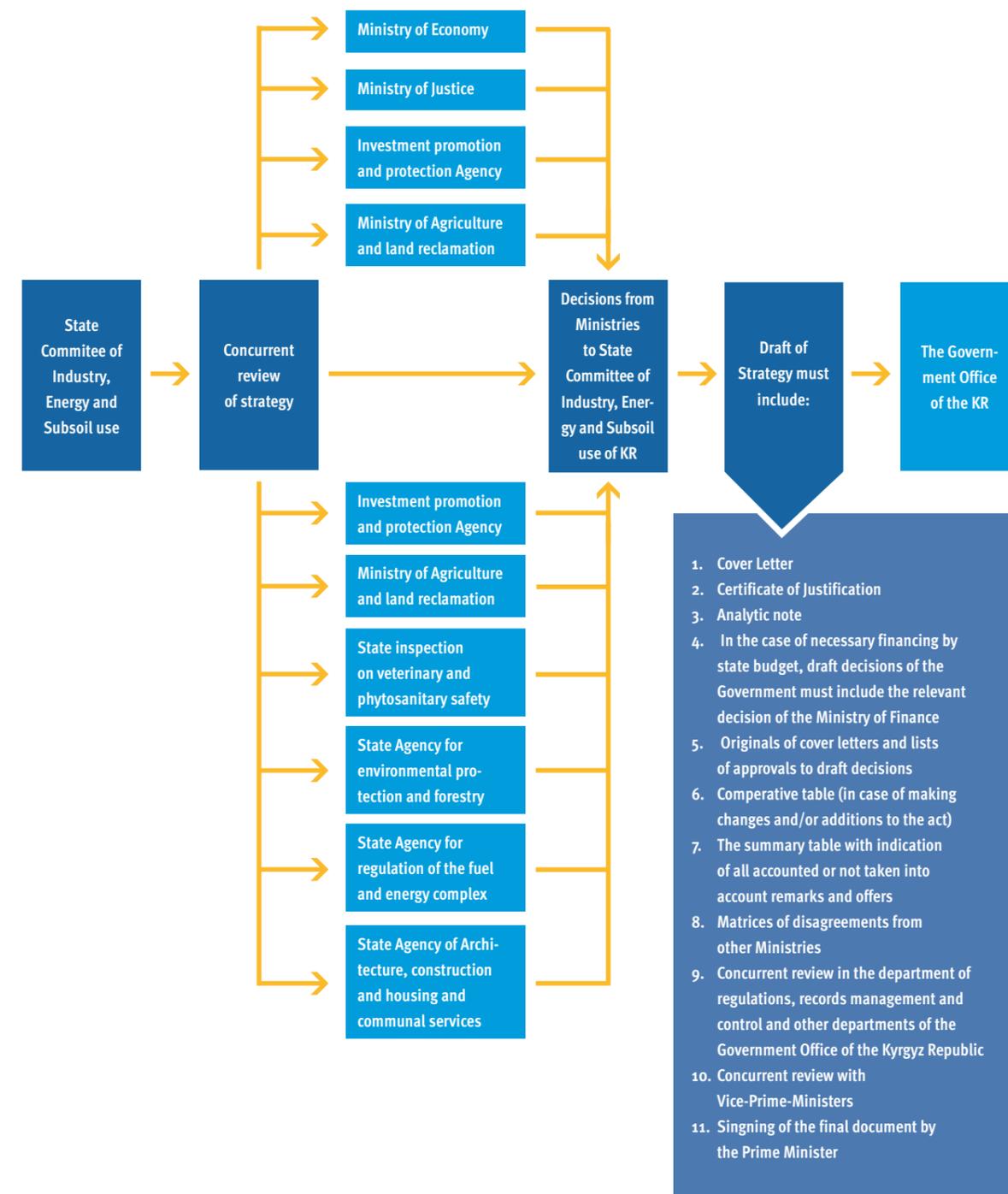
Figure 1 →

The preparation of this report was conducted during the first stage of the process in cooperation with the State Committee of Industry, Energy and Subsoil Use of the Kyrgyz Republic. The process will furthermore involve the validation of the recommendations by different ministries, which is conducted by the State Committee of Industry, Energy and Subsoil Use of the Kyrgyz Republic and the subsequent preparation of the final draft of the strategy. While the figure above illustrates the validation process of the strategy, it does not show the process of implementation. The recommendation here is to address three possible challenges for the implementation of the industrial development strategy, namely:

- need for coordination with other existing strategy documents,
- need for horizontal integration of measures to implement recommendations, which should create synergies among different ministries, including the need to establish a coordinating body to take the lead in the process and to ensure implementation of the recommendations,
- need for vertical integration of measures to implement the recommendations, which will require coordinated action between the national and local governments. This in turn will require the provision of sufficient resources to the local governments to implement the strategy's recommendations and facilitate their involvement in decision-making processes. This will allow the government to benefit from knowledge about the local conditions as well as the region's concrete needs. It will also increase the legitimacy of decision-making processes and the feasibility of the recommendations.

To address these issues, the implementation of the industrial development strategy should be combined with governance reforms. Several reform measures are also foreseen in the National Programme of the Government of the Kyrgyz Republic "Unity, trust and creation". In addition, a better vertical and horizontal integration of the activities of different stakeholders involved in the implementation of the industrial development strategy will allow a shift away from the ad-hoc governance practice that currently exists in Kyrgyzstan to an approach that involves long-term planning and capacity building.

Figure 1: Validation process for the strategy of industrial development. (Source: UNIDO, IIASA and State Committee for Industry, Energy and Subsoil Use, 2018)



Implementation of the industrial development strategy should be based on the principle of transparency of public services, which entails accessibility to information for all through an internal portal. This principle will require the implementation of governance reforms based on new information technologies. This can also include a new system of data collection, processing and storage following the concept of “transparent data”. This system should be based on the digitalization of documentation, including all legal and normative documents. The short-term goal is to assess the existing administrative procedures and to identify areas that have potentials for digital procedures. Following the successful implementation of the initial measures, a roadmap for the digitalization of existing administrative procedures should be developed. In the long term, the digitalization of administrative procedures will allow a reduction of the number of bureaucratic procedures as well as their costs. It will also allow increased transparency of administrative procedures.

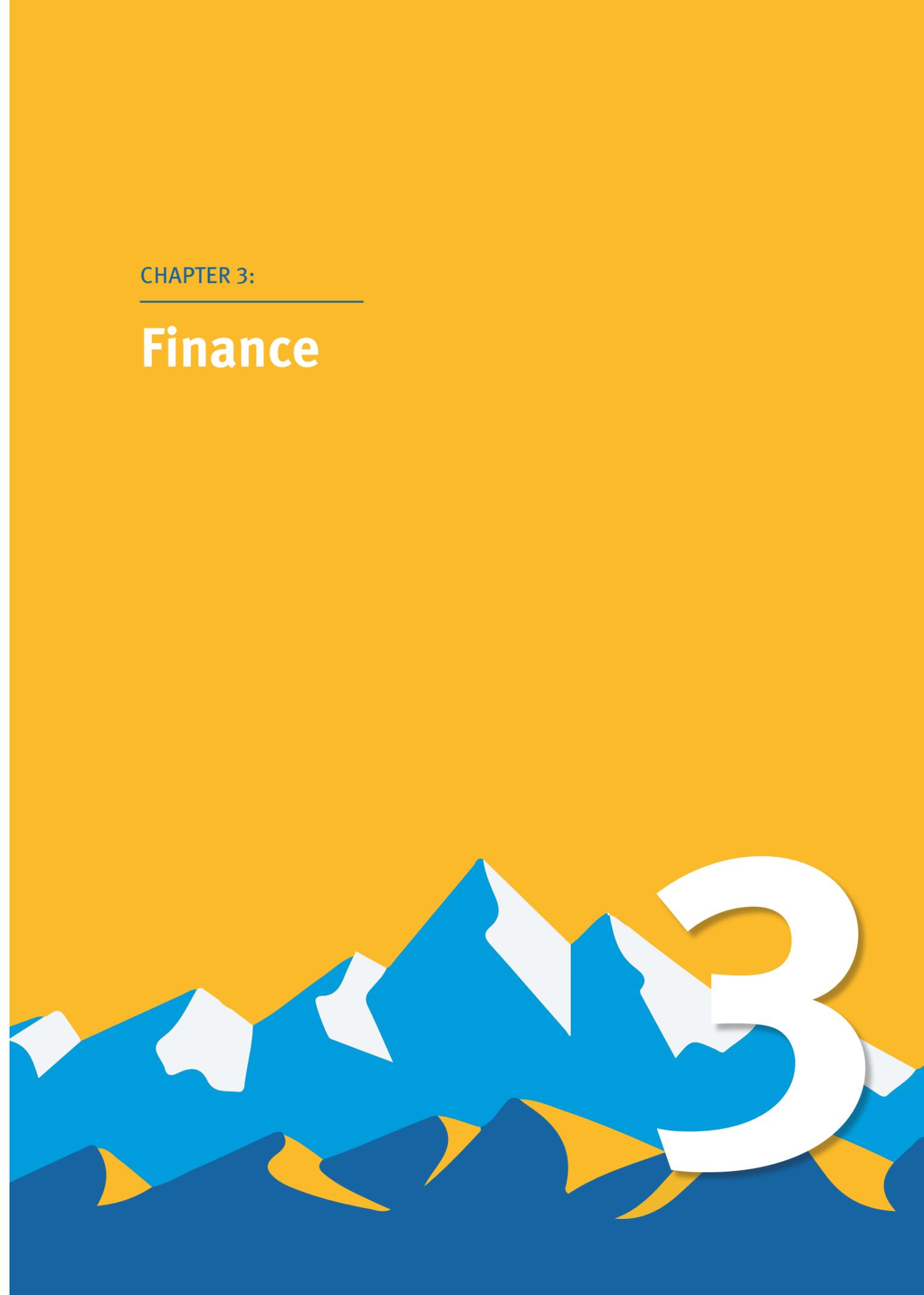
The horizontal integration of activities of different ministries involved in the implementation of the industrial development strategy should be aligned to the systematization of governance functions, which can include clarification of activities of state institutions and the development of new legislation on state functions. The National Strategy for Sustainable Development for the period 2013-2017 already called for a review of responsibilities and powers of the main governance institutions and the need to map the responsibilities of different institutions for the realiza-

tion of sectoral strategies. The goal of institution mapping is also justified by the need to develop an efficient mechanism of coordination between institutions at different levels of governance as well as at the national level for different tasks. Such institution mapping can inform goal-setting for sectoral policies and identify institutions responsible for meeting the goals. It will also allow for the development of indicators to evaluate the efficiency of the implementation of these measures.

Vertical integration, including the planning at regional level and interests of the regions in Kyrgyzstan, should be based on the principles of participatory governance, decentralization of decision-making processes and increased cooperation between different branches of power. It should include the further development of the institutional framework of participatory governance as well as the development of mechanisms of coordination of major legal initiatives, developed at the national governance level with institutions at the local governance level. The increased level of responsibility at the local governance level must be accompanied by adequate resources made available at the local level. Participatory governance should include cooperation between representatives and institutes of the national governance system but also with international organizations. Mechanisms of participatory governance will not only allow the coordination of actions of different stakeholders and the involvement of local and regional expertise and knowledge, but will also increase transparency in decision-making processes and the level of trust in all branches of power.

## CHAPTER 3:

# Finance



The **short-term** goal is to improve the conditions of access to financing for industrial enterprises.

The **long-term** is to improve the ranking of Kyrgyzstan's credit rating and to decrease dependency on external financial sources, taken with state guarantees, and to develop a share market and insurance instruments.

Public financing in Kyrgyzstan includes credits from international financial organizations and foreign states, which are mainly provided under the guarantee of the Government of the Kyrgyz Republic. The country has also attracted significant amounts of grants from international and bilateral donors. Funds are also available from financial credit institutions, which primarily lend to enterprises through commercial banks, non-commercial financial institutions, various state funds and agencies. The budget credits from the Ministry of Finance allocated through the State Agency on Management of Budget Credits are another source of financing.

The largest share of public financing goes to energy enterprises (83 per cent), 11 of which received a total of USD 1.49 billion. The share received by other industries is much lower. Transport and telecommunications, for instance, received 6.2 per cent, with 36 enterprises receiving USD 89 million. The banking industry received 4 per cent and the construction industry 2.4 per cent.

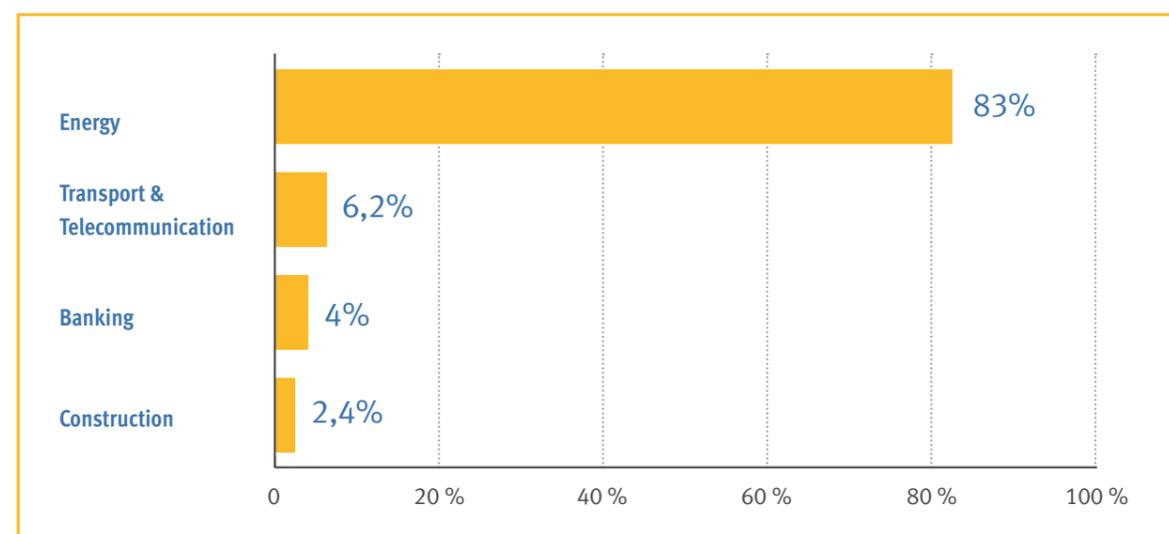
If Kyrgyzstan continues to rely on donor financing instead of stimulating investment, the country will face the following risks:

possible withdrawal of donor support, which would add to the government's borrowing costs; large financing needs due to fiscal deficits combined with a substantial deterioration in debt structure and economically destabilizing political and social tensions.

The Russian-Kyrgyz Development Fund, created in 2014, provides direct loans and loans through financial credit institutions with the goal of supporting Kyrgyzstan's integration into the EAEU. The credit period is up to 15 years with the lowest possible interest rate at 4 per cent per year. By 2018, the fund had approved 33 direct financing investment projects in various sectors of the economy and in different regions of Kyrgyzstan, including agriculture, textiles, processing, construction, electricity, communication and IT as well as mining, metallurgy, transport, logistics, trade and public health. The fund also provides financing to small and medium enterprises through commercial banks and the micro-finance sector. By 2018, the fund had approved 789 projects.

The development of the banking and credit system, as well as the internal market capacity, is extremely important for industrial development. Financial institutions, including commercial banks and non-commercial institutions, are the main source of credit for various sectors of the economy. Average interest rates from commercial banks declined over the last decade from 22 per cent in 2012 to 15 per cent in 2018. Starting from 2013, the Government of the Kyrgyz Republic began subsidizing interest rates for projects in the agricultural sector. However, further efforts are necessary to develop financial instruments that could help reduce interest rates for investment and increase the period of repayment.

**Figure 2:** Shares of public financing to economic sectors  
(Source: National Statistical Committee of the Kyrgyz Republic, 2018)



## CHAPTER 4:

# Investment

The **short-term** goal is to decrease existing risks for investors.

The **long-term** goal is to increase the rank of Kyrgyzstan in the ease of doing business rating.

Another long-term goal is to decrease the share of the informal economy and to increase the rank of Kyrgyzstan in the Index of Global Competitiveness.

Improving the investment environment and the creation of attractive conditions for investment in general, and for foreign direct investment (FDI) in particular, is a priority for Kyrgyzstan because investment inflows are especially important for its industrial development – they are often connected with the transfer of more advanced technologies and know-how and best management practices. Investment can also stimulate market development and provide opportunities to establish new businesses or enter new foreign markets. Currently, the largest share of investment is received by the extraction and mining industries, followed by processing of raw materials. By contrast, the share of investment targeting manufacturing remains low. Moreover, Kyrgyzstan’s international investment position has deteriorated markedly to -79 per cent of GDP, pointing to increased reliance on debt financing. From a regional perspective, the largest share of investment is concentrated in two regions only, namely Bishkek City (USD 4 billion or 43 per cent) and Chui region (USD 2 billion or 21 per cent). The main investors are Canada, China, Russia and Kazakhstan.

The major drivers, according to the survey conducted by IIASA in 2018, for any potential investors to invest in Kyrgyzstan’s economy are political stability, assured investment security, absolute respect for property rights and a high level of rule of law. The following instruments to support investment were identified during interviews with stakeholders: private public partnerships, free economic zones, high-technology parks, industrial parks and special economic zones.

In roundtable workshops conducted in four regions of Kyrgyzstan, the following drivers for private investment were identified:

- **Drivers in governance and the legislative framework** include simplification and streamlining of administrative rules and procedures (such as registration of property, licensing, number of controlling procedures) as well as development and enforcement of legislation on the protection of rights of private investors, including the predictability of state policy, the reduction of political risks, further development of legislation on land property and rights, assessment of necessary time for land registration and facilitation of transformation of land for industrial purposes. Assessment of existing procedures for granting rights on mining and rent of land, including assessment of necessary time for all authorization procedures;
- **Financial and economic drivers** include the creation of investment packages and facilitation of business associations as well as of financing on attractive conditions, namely at lower interest rates and longer repayment periods, including the availability of credit in national currency with low interest rates and long repayment periods. Other economic drivers include the introduction of the system of state orders, procurement and tenders for products of local enterprises.

The following barriers for investment in industrial activities were identified during interviews and surveys conducted by IIASA in 2018:

- political barriers (political instability, dependency of goods exports on the political decisions of neighbouring countries) are the most important barrier,
- customs’ barriers, administrative barriers (investors expect the operation of the enterprises they invest in will not be at risk or their returns affected by bureaucratic procedures or state interference),
- sectoral barriers (incl. fragmented production chains), fiscal barriers, technological barriers, market barriers (rather small internal market, lack of affordable long credits).

## CHAPTER 5:

# Export potential

**The medium-term goal is to increase the competitiveness of Kyrgyz products in external markets, including the adaptation of Kyrgyz exports to the requirements of external markets, such as the EAEU, EU and China.**

**The long-term goal is to increase the volume of Kyrgyz exports and to diversify exports in terms of production and markets. This also includes the establishment of high-tech and competitive industry as well as a transfer from raw materials exports to innovative industrial products.**

The major Kyrgyz goods being exported are live animals, non-food raw materials, industrial goods and machinery as well as transport equipment. Exported commodities include gold, vegetables, clothing and accessories, fruits, metal scrap, milk and dairy products, cotton yarn, glass, cigarettes and cigars, incandescent lamps, rolled metal, coal, alternating current engines, cement, tobacco, crude oil, cotton fabric and skins of cattle. The major basic commodities being exported are gold, vegetables and clothing. Kyrgyzstan exports most of its goods to Russia, China, Kazakhstan, Turkey and Uzbekistan. However, Kyrgyzstan's export volumes are very volatile and the country is currently experiencing a trade balance deficit. Three ongoing economic integration processes influence Kyrgyzstan's economy: the Eurasian Economic Union, cooperation with the EU and the Silk Road Economic Belt (SREB) Initiative of China.

The **Eurasian Economic Union (EAEU)**, which was established in 2015, is a customs union with common customs tariffs for trade with third countries and no customs tariffs within the union. Kyrgyzstan is currently in the transition phase and is expected to fully adopt the EAEU tariff policy by 2020. After joining the EAEU, the volume of Kyrgyz exports, especially in light and food industries, to Kazakhstan and Russia increased, but its overall volume of exports decreased, mainly due to the drop in re-exports of Chinese goods due to their non-compliance with EAEU standards. In the long term, the requirements of EAEU integration will impel Kyrgyzstan to export Kyrgyz goods rather than to re-export. Trade between Kyrgyzstan and the EAEU is currently growing faster than trade with other non-EAEU countries. In 2016, exports to the EAEU mainly rose in mineral water, food products, raw materials and chemicals. In 2017, growth was primarily registered in textiles, textile products and shoes, as well as in food products and raw materials. It is important to note that these sectors defined the country's economic growth in 2016-2017 (EEC, 2018b).

In the near future, Kyrgyzstan will benefit from deeper economic integration with the EAEU due to a number of common markets that will be established by 2025, such as a common electricity market

(2019), a common market for excisable goods (alcohol and tobacco products) (2020), a common market for oil and oil products (2025), a common market for gas (2025), a common market for transport services (2025) and a common financial market (2025).

The establishment of the Russian-Kyrgyz development fund in 2014 is an important component in helping Kyrgyzstan adapt to the EAEU's membership requirements. In 2015-2016, the fund financed 767 projects with a total budget of USD 248 million. The fund supports both large businesses and SMEs through loans with substantially reduced interest rates (4-7 per cent per annum). The Eurasian Development Bank as well as the Eurasian Fund for Stabilization and Development support the modernization of Kyrgyz infrastructure and provide funds for investment.

According to the main guidelines for industrial cooperation within the EAEU, the priority industries for Kyrgyzstan within the scope of EAEU integration are the production of construction materials, machines and equipment for the mining industry as well as the energy sector and light industry. The benefits of EAEU membership will be generated by a combination of five effects: substitution of imports from third countries; an increase in exports to third countries; an increase of exports to EAEU markets; multiplier effects and an increase in demand for intermediate products (Supreme Eurasian Council, 2017).

The **European Union (EU)** is one of the main donors of the Republic of Kyrgyzstan. EU bilateral assistance to Kyrgyzstan amounted to EUR 174 million through grants under the Development Cooperation Instrument. Assistance is primarily directed towards integrated rural development, education and support for the rule of law. In 2016, the EU granted Kyrgyzstan an extended status under the Generalized System of Preferences (GSP+), which means zero customs duty for over 6,200 EU tariff lines for Kyrgyz exports to the EU market. This status does not, however, simplify the procedures for obtaining certificates for technical regulations. Two barriers currently prevent Kyrgyzstan from benefitting from this status: lack of compliance of Kyrgyz goods with EU standards and geographical remoteness, including the absence of efficient transport corridors.

**Figure 3 →**

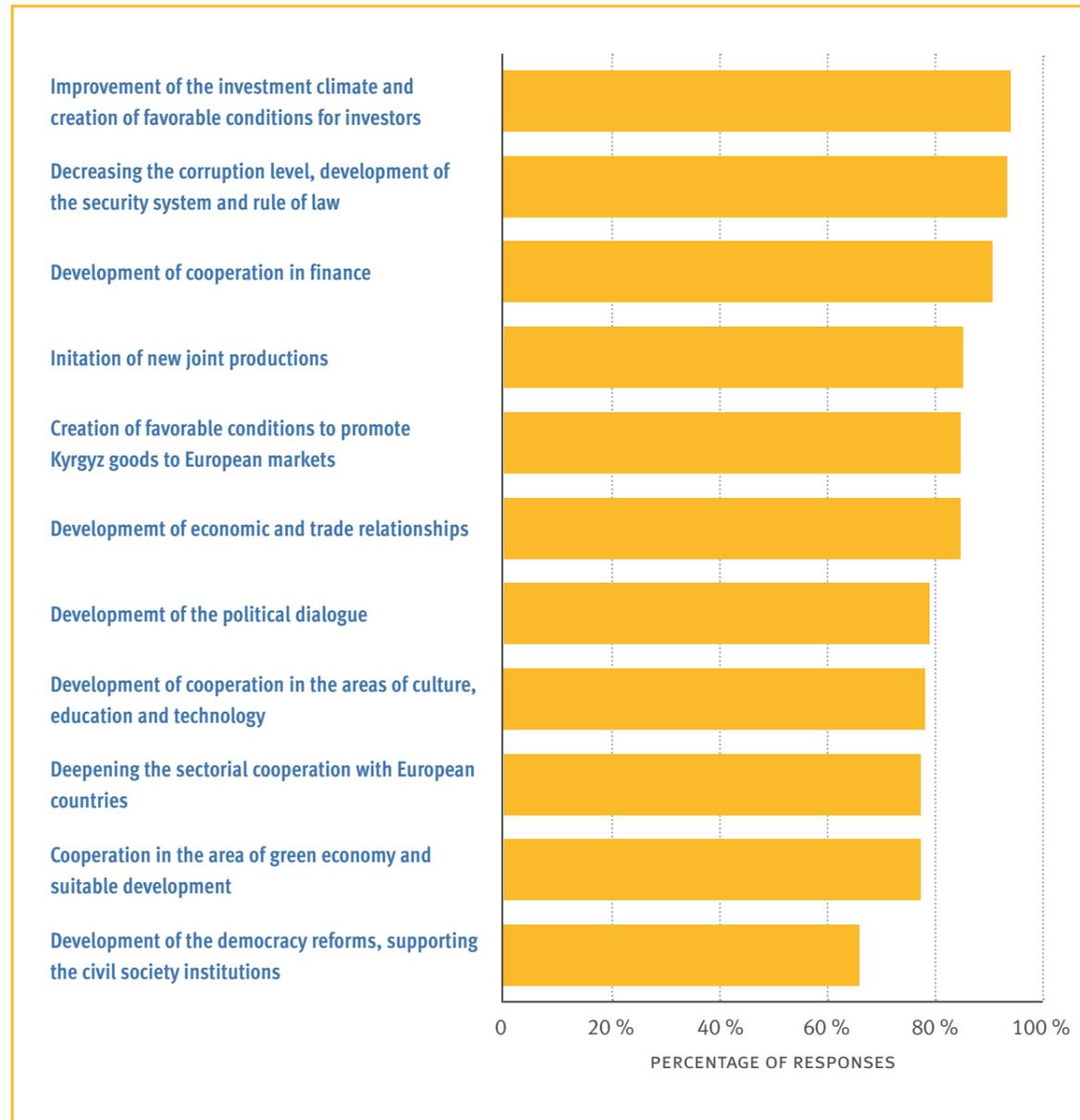
The **Silk Road Economic Belt (SREB) Initiative of China** is supported by the Chinese government, which intends to allocate USD 50 billion for its implementation to facilitate the delivery of cargo and passengers between China and Europe. The Silk Road Investment Fund was established in December 2014 with the primary aim of supporting infrastructure projects and the sale of Chinese products. It is expected that the initiative will also facilitate joint

Kyrgyz-Chinese development projects such as the transport corridor "Europe-Asia". In addition, to this initiative, China is also directly investing in projects in Kyrgyzstan, such as assistance for the reconstruction of the Bishkek-Torugart and Osh-Erkeshtam roads as well as for small enterprises in the processing industry.

**Figure 4 →**

The following medium- and long-term goals were developed based on the potential for exports the three integration and engagement processes offer and the existing barriers for the export of Kyrgyz goods and services. The medium-term goal is to increase the competitive advantage of Kyrgyz goods on foreign markets, including their adaptation to the requirements of EAEU, EU and Chinese markets. The long-term goal is to increase the volume of Kyrgyz exports as well as their diversification in terms of goods and markets based on the establishment of high-technology industries and on shifting from extraction industries to more innovative industries.

**Figure 3:** Potential benefits for Kyrgyzstan from closer engagement with the EU  
(Source: IIASA 2018)



**Figure 4:** Potential benefits for Kyrgyzstan from closer engagement with China  
(Source: IIASA 2018)

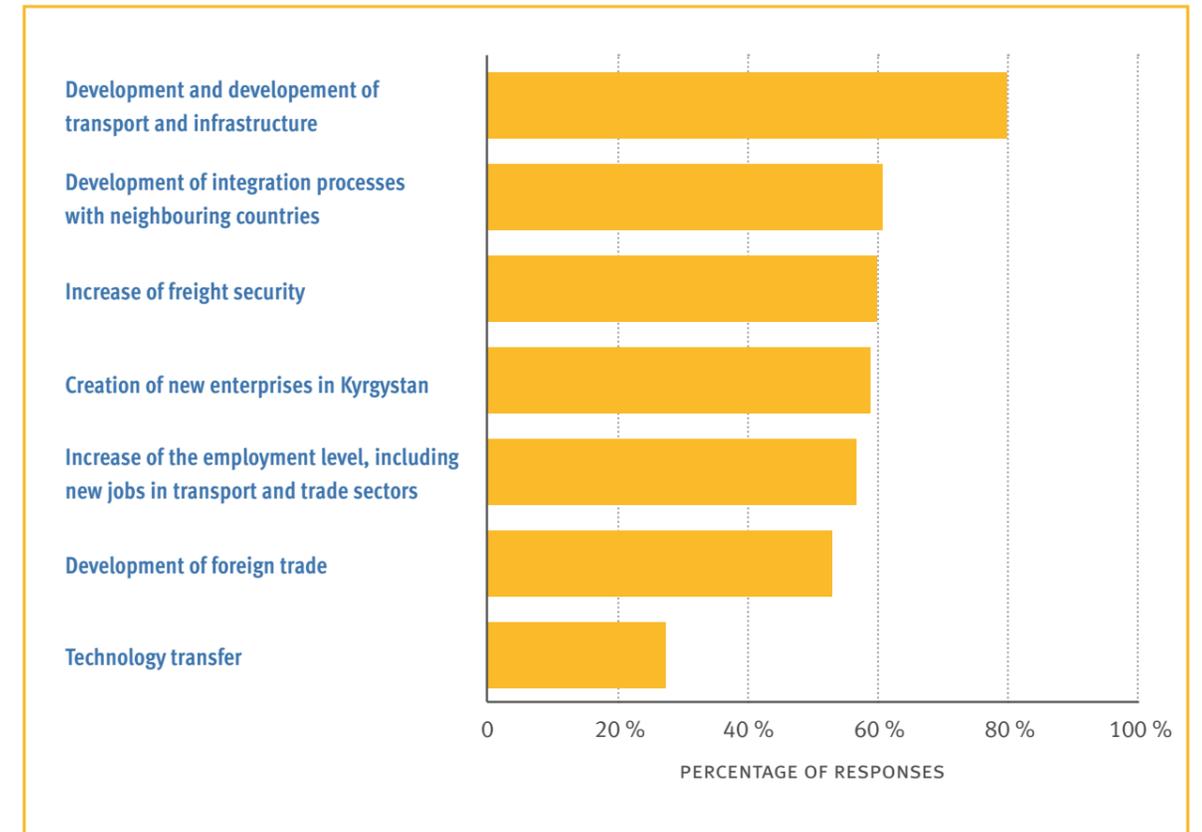




Image 2: Dordoi Bazaar, Bishkek

Oliver Foerster / Shutterstock.com

CHAPTER 6:

# Regional development

# 6

The **short-term** goal is to contribute to industrial development in different regions, taking account of the experience and specialization of each region.

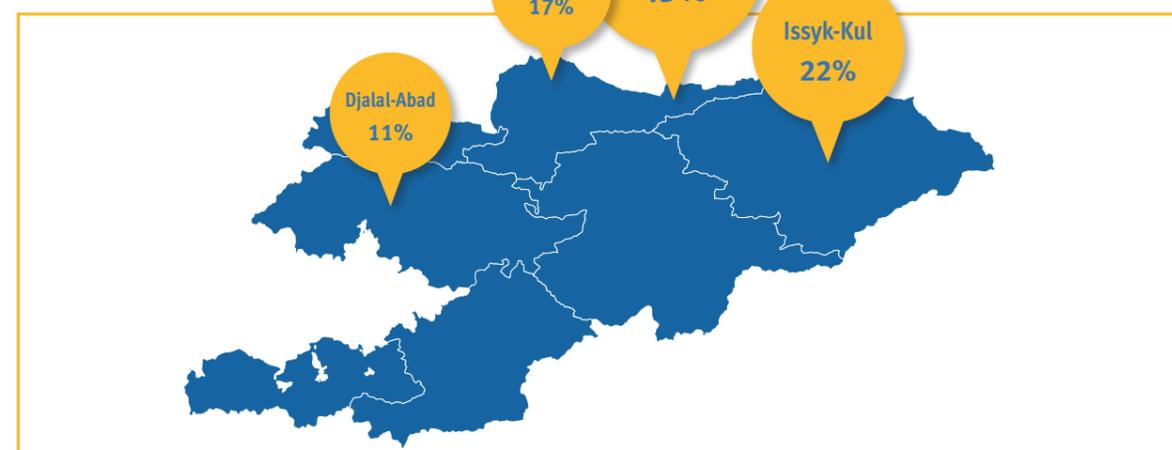
The **medium-term** goal is to turn industry into a driver of socioeconomic development in the regions.

The **long-term** goal is to diversify industry in the different regions, including the introduction of new industries and/or high-tech industries such as electronics and machinery.

The industrial development in the regions is mainly framed by the Concept of Regional Policy of the Kyrgyz Republic, 2018-2022, as approved by the President of Kyrgyzstan in 2017, the Plan for Realization of Measures developed within the Concept and the Decree of the President of the Kyrgyz Republic on the realization of the Concept of Regional Policy for the period 2018-2022. The primary objective of the regional policy is to foster the regions' socioeconomic development and to increase the well-being and quality of life of the population through targeted support for a number of selected regions. Additional goals are the creation of drivers for human development and an efficient economy.

The Concept of Regional Policy identifies 20 "points of growth", which are pilot cities or towns on the basis of which further socio-economic development should be created. The points of growth should become "locomotives of development" for the entire region. However, only few concrete plans exist at present for the development of points of growth. Considering the limitation of the available budget, resources will be allocated in several phases and include measures for 5-6 cities for each phase. The Concept of Regional Policy indicates that the cities of Bishkek and Osh are the most prospective ones and special programmes should be developed for them.

Figure 5: Industrial development (Source: National Statistical Committee of the Kyrgyz Republic, 2018)



The current state of industrial development in the regions is characterized by imbalance, i.e. some regions are far more developed than others. Regions with the most advanced industry are the Chui region (41 per cent), followed by the Issyk-Kul region (24 per cent), Bishkek City (17 per cent) and the Jalal – Abad region. These regions have a leading position in industrial development, with major large-scale industrial enterprises located in these regions.

The dynamics of industrial production reveal that those regions with a high share of industrial production registered a positive development while regions with a low share of industrial production had a negative or stagnating development. Such developments indicate a tendency towards polarization of industrial development and an increase in the gap between the regions.

Figure 6 →

The Concept of Regional Development as well as other existing government plans foresee that industry in general and manufacturing, in particular, should be oriented towards the utilizing locally available resources and agricultural products. In the long term, the specialization of each region should be based on its historical specialization, the availability of local natural resources, geographic conditions and availability of industrial infrastructure.

The recommendation, therefore, is to determine priorities for industrial development in all regions and to develop action plans for a strategy of industrial development in accordance with these priorities.

Table 4 →

Figure 6: Potential benefits for Kyrgyzstan from integration with China (Source: National Statistical Committee of the Kyrgyz Republic, 2018)

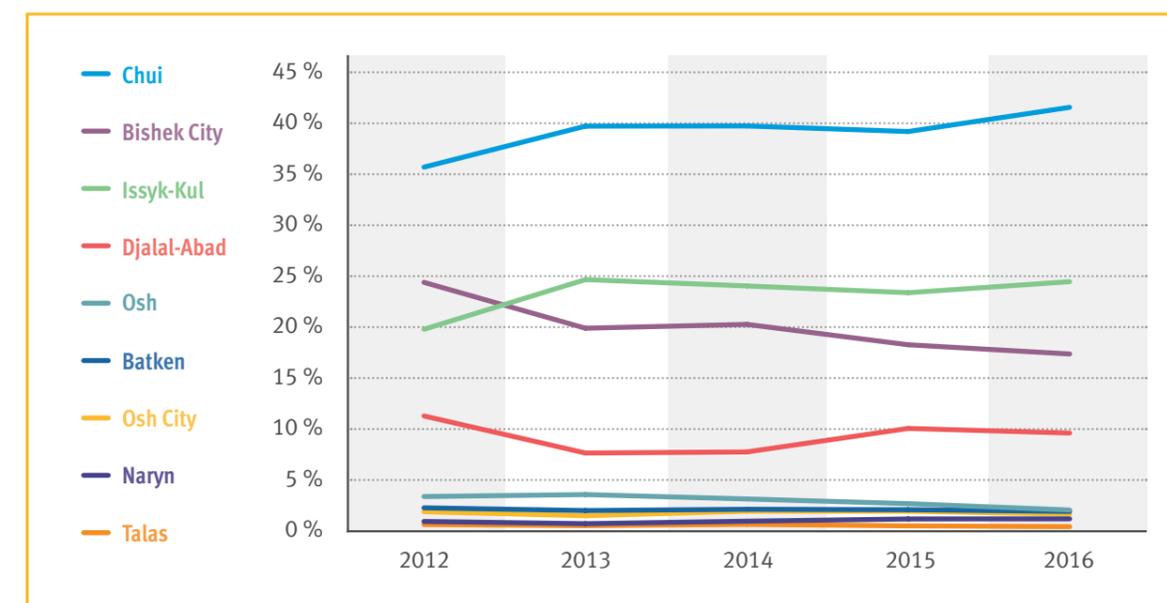


Table 3: Potentials for industrial development

Bishkek	Introduction of innovative industrial methods as well as information and communication technologies, creation of capacities for export industries, deployment of clusters for small enterprises
Chui region	Recovery of manufacturing industry, introduction of innovative enterprises with an export orientation and enterprises of the mining industry
Osh region	Extension of the capacities of the food processing industry (fruits and vegetables, meat and milk) and creation of regional logistics centres, expansion of the capacities of construction materials, development of the mining industry for further exploration of coal reserves
Issyk-Kul region	Expansion of the capacities of the food processing industry, including fruits and vegetables, fishery products and potatoes, meat and milk, development of the textile industry, reconstruction of existing idle industrial enterprises and establishment of mining enterprises for the exploration of tin and tungsten reserves
Jalal-Abad region	Further deployment of hydropower capacities, development of mining industries, creation of centres for processing of petroleum products and metallurgy of rare earth materials, creation of new industrial enterprises for food processing (fruits and vegetables, meat and milk)
Batken region	Modernization based on new technical equipment of existing enterprises, establishment of new enterprises in food processing (meat, fruits and vegetables), creation of clusters in the mining industry on the basis of existing enterprises
Naryn region	Deployment of capacities for food processing industry, development of the mining industry (coal) and of energy generation capacities
Talas region	Expansion of capacities for the food processing industry, recovery of the textile and consumer goods industries and exploration of gold reserves

During the workshops conducted in the regions in the summer of 2018, the following barriers and problems for the further development of industry were identified:

- a) absence of state support for start-ups,
- b) small volumes of production from small and medium enterprises,
- c) difficulties for industrial production and low export potential,
- d) absence or low availability of necessary resources for industrial development infrastructure, such as electricity,
- e) low level of support and engagement from municipal and national policymakers,
- f) conflicts over land use, such as lack of available municipal land for further industrial development, alternative usage of this land or land that is private property, lack of legal possibilities to transform agricultural land for industrial development purposes,
- g) unsustainable development of the mining industry and conflicts at the local level.

It is recommended to launch a pilot programme in three or four major regions instead of simultaneously developing all 20 'points of growth'. Three to four priority points of growth should be selected based on careful analyses of the potential for industrial development in these areas. The analyses should be based on evaluations of ongoing initiatives, stakeholder engagement and participatory governance. These pilots would provide findings based on which recommendations could be made on how to scale up the initiative to other regions. The pilots could leverage on ongoing initiatives such as Smart City. Based on the findings from the pilots, strategies focusing on the points of growth could be finalized, which are currently missing. Additional analyses of the regions' specialization should be carried out with a special focus on connections to regional markets and opportunities to tap into regional integration processes at the national level.

The implementation of pilot programmes should create drivers of socioeconomic development in the regions. This will require an orientation of industrial development in the short term towards utilization of locally available resources and production factors. In the long term, the industrial development of each region should be based on their historical specialization, the availability of natural resources and geographic conditions.

The implementation of pilot programmes should be supplemented with a revitalization of idle enterprises and support for industrial start-ups and enterprises with export potential.

1) **The revitalization of idle industrial enterprises** should be considered. It should be based on business plans with a

detailed analysis of the region's existing problems and potentials. The business plans should also include a system to monitor the profitability of enterprises, possibilities for their modernization and the planning of donor support. This can be followed by an implementation of the necessary measures to attract private investment to modernize inoperative industrial enterprises, combined with technology and knowledge transfer and an introduction of measures for diversification of production in accordance with demand on domestic and international markets. The revitalization of idle enterprises can furthermore be combined with identification of measures and tariffs that are compatible with the regulations of EAEU markets and ascertain how import taxes for equipment needed to modernize these enterprises can be reduced. This would allow a decrease in the costs of equipment necessary to modernize these enterprises.

2) **Support for industrial start-ups** in the region, in the region, which can include educational and awareness-raising support for different stakeholder groups such as youth, women or entrepreneurs. Such support should be based on increased availability of capital, which may include financial support from regional funds (such as the Fund of Development of the Issyk-Kul region with financial means from Kumtor) and the availability of credits with attractive conditions.

3) **Support for enterprises with exports potentials**, which requires a further increase in the potential of regional development programmes (such as "Financing of agriculture", "Development of exports", etc.) and the creation of regional centres for business development, including integrated marketing approaches for the realization of production and the creation of Kyrgyz trademarks. The feasibility of the creation of clusters in different industrial sectors and of special industrial zones based on the available infrastructure, including logistics centres and certification laboratories to increase the potential of exports should be discussed. Measures should be taken against illegal imports of products from neighbouring countries, which influence the potential of domestic products on the market. The measures should also include more detailed border control and enforcement of unified standards for import customs codes.

The implementation of the three abovementioned measures should be combined with the development of infrastructure in the regions, which is necessary for industrial development, as well as with the further development of regulations and their enforcement to protect the environment and to ensure participatory governance and the involvement of local stakeholders in decision-making processes.

## CHAPTER 7:

# Social development

**The short-term** goal is to further develop medium and high education, including vocational training, and to adapt the education system with the needs of industrial development from a short-, medium- and long-term perspective. Another goal is to create new jobs, to increase the employment of women and youth and to reduce labour migration abroad.

**The medium-term** goal is to develop scientific and research potentials in the area of industrial development, including contributions to the introduction of IT in industry and the training of IT specialists.

**The long-term** goal is to broaden the level of education and develop specialized professional universities based on the needs of industry.

Kyrgyzstan has a high rate of education enrolment with 98 per cent of the population completing primary and 92 per cent completing secondary education. The quality of education is, however, low at all levels. The wages are lower than the average for low middle-income countries, but the advantage of low labour costs is eroded by low labour productivity. Managerial and technological practices and skills are also often insufficient. Labour productivity in manufacturing is lower than in services and has deteriorated considerably during the last decade. Employment opportunities for women and youth are limited and the unemployment rate among these groups is high. A significant part of the population is employed in the informal sector without social protection.

Education can be a key instrument for combating poverty and improving the health and well-being of the population, and educational institutions can be driving forces in the building of knowledge societies and in the transition to knowledge economies. Kyrgyzstan's current education system and its educational institutions must be developed and improved. The government must increase investment in public education. Internet connectivity and social media are major catalysts for change, transforming learning and skills development. E-learning and modern university networks are one option to alleviate the situation, a scheme that promises to transfer teaching abilities to under-served areas at an affordable cost.

The improvement of the education system should include the establishment of a steering committee and secretariat that can carry out a needs analysis and reform the curricula. This steering committee should consist of various stakeholders, including a substantial number of representatives from the industrial and public sectors who understand the local and regional needs.

They should elaborate relevant development plans and increase the country's competitiveness in the global market. Education policy must also take account of the economy's inherent weakness and economic slowdowns, geopolitical conflicts and global health issues, which all pose a major concern as do injustice, poverty, economic growth, transparency, project management, governance, open data, sustainable processes, rationality, democracy and equity to advance a new generation of managers and leaders. Education and research should be used to promote attitudes and lifestyles that are necessary to realign societal development and to find solutions to the region's economic, social and environmental challenges. Programmes to promote expertise in environmental management, sustainable economic development and other related fields must be introduced. Technology platforms should be adapted to the local and regional needs and cost-efficient technological development based on large-scale blended learning in various formats should be supported. Trainers at different levels need to be educated so they can efficiently develop and utilize these platforms.

The involvement of the government (at all levels), foundations and industry in the improvement of education should be included to support research at universities, education and training, policy formation and information exchange on environmentally sustainable development. There is a need to develop high-quality large-scale programmes and courses at various levels, including vocational training and for different target groups. Competencies in management, decision-making and risk analysis need to be expanded. The government should encourage universities to engage in education, research, policy formation and information exchange on society, the environment and development. Universities should expand their collaboration with non-governmental organizations and establish partnerships with primary and secondary schools to further develop their capabilities. The government should introduce measures to globalize and internationalize institutions of higher education to attract talented students and future entrepreneurs and employees and develop strategic collaborations with partners.

Industry can create drivers for socioeconomic development in the regions, considering, in particular, the requirements for involvement of the local labour force and utilization of local resources. Investments in industrial development should also contribute to the socioeconomic development of communities with an established industrial infrastructure. Hence, when considering new industrial activities, especially in the mining industry, it is crucial to first carry out a social impact assessment (SIA). Such assessments can also contribute to a reduction of social tensions. SIAs evaluate the potentially positive and negative effects associated

with industrial activities with the aim of informing all stakeholders involved as well as to amplify potentially positive impacts. SIAs' underlying purpose is to elaborate Social Management Plans, which identify firms' commitment to communities and shared social benefits.

Currently, the Law "on subsoil" regulates firms' acquisition of consent from the local population in the form of a "social license" to carry out extraction activities. In the absence of a social license, mining firms have suffered negative consequences including delays in their work plans, obstructions to the implementation of further plans to launch projects, vandalism, difficulties hiring a skilled workforce and even shutdowns of their business. Thus, obtaining a social license is important not only to reduce the risk of social conflicts, public disapproval and deterioration of the firm's reputation, but also to contain financial losses. Obtaining a social license is inevitable for firms operating within the jurisdiction of a democratic society; public support is necessary for political purposes. Although a social license can be approved and awarded by the state (for example, the government or the general public), local communities play a key role in the implementation

of mining and extraction activities due to their proximity to the area of work and consequently because of, the high impact on their livelihoods. The concept of social licenses strengthens the role of communities and other stakeholders in the implementation of mining activities.

To obtain a "social license", the mining firm must enter into an agreement with the local community which determines the components of the "social package". A social package is an agreement between a subsoil user and the executive body on the extent of assistance for the region's socioeconomic development. The social package is based on a socioeconomic development programme elaborated by the local community. The law requires an agreement to be concluded between the extraction company and the government of the relevant administrative-territorial unit. However, the obligation to provide a social package only exists for subsoil activities that are at the exploration stage or in planning. Social packages include investment schemes for the socioeconomic development of local communities, primarily for education, the creation of job opportunities and infrastructure.

Image 3: International University of Kyrgyzstan, Bishkek



Elena Odareeva / Shutterstock.com



Image 4: Kirov reservoir dam., Valley Talas

CHAPTER 8:

# Environment

# 8

**The short-term** goal is to create an institutional and legislative foundation for the development of a green economy. **The medium-term** goal is to decrease the amount of industrial waste and to establish a waste management system and to implement other measures to reduce the environmental burden. **The long-term** goal is to further develop the system of secondary use of materials and of the circular economy.

Industrial activities already have an impact on water resources, soil and air. In recent years, industrial pollution has increased by 21 per cent. The amount of industrial waste and by-products is increasing. Moreover, waste management measures are nearly non-existent. The mining industry, in particular, which is frequently located in fragile mountainous ecosystems, significantly influences the environment. Waste reduction should include a decrease in the amount of waste produced, the processing of waste and secondary use of materials. The government plans to implement measures to shut down and clean up radioactive waste, which was disposed on the territory of Kyrgyzstan during the previous century, and remove waste from the metallurgic and mining industries.

Conducting social impact assessments (SIAs) and environmental impact assessments (EIAs), as they are already being used in several countries today, can help guarantee environmentally and socially responsible investments. Internationally, SIAs are defined as a study that seeks to understand the changes an activity or policy can effect in the social sphere as well as the potential negative and positive impacts associated with these changes, as well as the process of managing any social issues associated with the intervention. This includes all of the intervention's effects at the social level (lifestyle, work, recreation, relationships between people and organization of life) and at the cultural level (values, beliefs and norms that influence people's perception of themselves and of their community). The objective of SIAs is to inform government actors, companies, social actors and communities about the sociocultural effects a policy or activity will have in a specific context, to prevent or mitigate its adverse social aspects and amplify potential positive impacts. As the social aspects of economic development have received more attention by social and political actors, the SIA has been adopted by different international agencies and national governments, promoting its theoretical and practical advancement.

To facilitate sustainable industrial development in Kyrgyzstan, it is important for investments to not only contribute to economic

growth but also to meet environmental and social sustainability criteria. Participatory governance, which includes close interaction and continuous consultations on environmental sustainability and resource efficiency with stakeholders at the national, regional and local levels, can contribute to socially and environmentally responsible investments. Measures of participatory governance, such as EIAs and SIAs, can reduce the potential development of social tensions and protests against planned and existing infrastructure projects. Special agreements with investors are another effective instrument to ensure socially and environmentally responsible investments. Such standardized agreements should not only provide possibilities for the implementation of environmental protection measures but also provide certainty to investors.

Green growth requires regulatory reforms to incorporate incentives for investments in and the adoption of more environmentally friendly, renewable energy technologies and energy efficiency measures. The principles and conditions for a green economy should be implemented in all planning and implementation stages of decisions, activities and when monitoring the implementation of industrial projects. The principles of the green economy should also be included in public tendering procedures to avoid procurement of energy-intensive technologies. It is furthermore planned to increase measures of control and energy audits to guarantee that products and goods fulfil the requirements of energy efficiency and ecological security. When speaking about the green economy and energy demand, it is also important to mention plans for the electrification of transport or so-called e-mobility. According to the National Report on Environment of 2011-2014, over 87 per cent of all air polluting substances can be linked to the transportation system. Air pollution is increasing. In 2016, petrol and diesel consumption, which is the biggest contributor to pollution from transport, was 1.7 times higher than in 2010. The Issyk-Kul region recorded the highest amount of air pollutants (95 per cent) from the industrial sector.

E-mobility could be addressed within the scope of the Partnership for Action on Green Economy (PAGE) programme. For the purpose of practical implementation, the following measures could be introduced: exemption from tax on electric vehicles, introducing measures to develop a network of charging stations and to simplify the process of land allocation for the construction of charging stations. Measures that are recommended based on international collaboration initiatives such as PAGE include modelling the transition process towards a green economy and further utilization of these results to formulate green economy policies, oriented towards job creation in green industries.

## CHAPTER 9:

# Infrastructure

According to data from the World Economic Forum's Global Competitiveness Report 2017-2018, Kyrgyzstan ranks 112 out of 137 in the Quality of Overall Infrastructure ranking, 122 out of 137 in the Road Quality ranking and 102 out of 137 in the Quality of Electricity Supply ranking. Roads are extensively used in Kyrgyzstan, however, the country's railroad network remains underdeveloped and there is no railroad connecting the southern with the northern regions of the country. Another major obstacle in terms of infrastructure development is connection of businesses to the electricity grid, rolling blackouts and growing indebtedness of energy companies.

It is therefore crucial to build and expand Kyrgyzstan's regional infrastructure, which is necessary for industrial development, such as roads, telecommunications and reliable supply of power. Recommendations on transport capacities include further construction of railroads as well as a decrease in tariffs for rail transport. Recommendations have also been made to increase the use of renewable energy sources, especially small hydropower stations, and to introduce additional energy efficiency measures to guarantee reliable electricity supply for industrial enterprises. The increase of electricity generation capacities based on renewable energy sources should be accompanied by an expansion of electricity transmission and distribution grids, including an upgrading of existing capacities and the construction of new ones.

## Energy

**The short-term goal is to provide energy security and develop an energy infrastructure necessary for industrial development.**

**The medium-term goal is to improve the energy sector's efficiency through an optimization of the tariff system, implementation of energy efficiency measures and energy sector governance.**

**The long-term goal is to increase the volume of energy generation from non-renewable and renewable energy sources.**

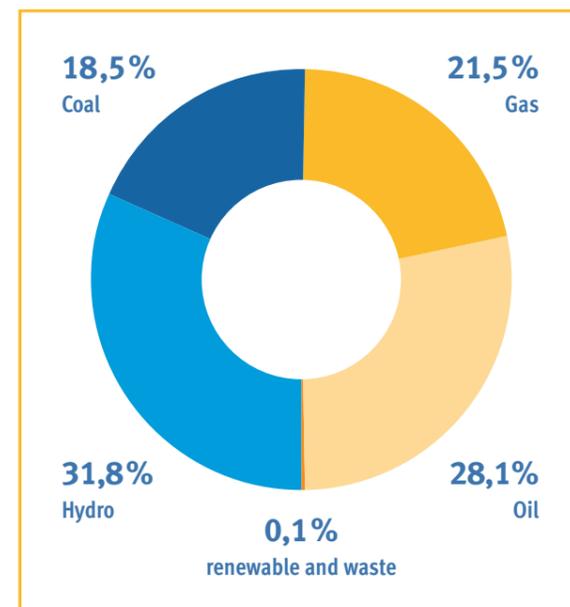
Industrial development needs a reliable and stable supply of energy. The development of further energy generation and transmission capacities is needed to guarantee reliable energy supply today and in the future. It is also necessary to implement measures that will reduce energy loss during transmission.

The government has several options to increase energy generation. For one, it plans to increase the exploration of coal reserves

in Kara-Keche, Besh-Burkhan, Zhergalan, Solukta and Tash-Kumir and to boost the oil reserves from 85,000 tons in 2015 to 110,000 tons by 2030. It is also plans to increase imports of natural gas from 379,5 million cubic meters in 2015 to 759,2 million cubic meters in 2030.

It also has plans to deploy low carbon generation technologies, such as solar, hydro, wind, biomass and others. Hydropower energy generation (mainly large-scale hydro) already accounts for 90 per cent of Kyrgyzstan's generation capacity. The further development of hydropower generation, especially small hydropower projects, is among the priorities of the Kyrgyz government, considering the role hydropower plays in the national energy mix. Kyrgyzstan has significant potential to implement renewable energy sources (RES). According to estimations of the State Committee of Industry Energy and Subsoil Use, the potential of hydropower is 5-8 billion kWh per year, of wind it is 44.6 million kWh per year, of solar 490 million kWh per year and of biomass 1.3 billion tons per year. Today, the share of energy generation (excluding large-scale hydro) is less than 1 per cent of the country's entire electricity mix.

**Figure 7: Primary energy shares**  
(Source: International energy agency)



One hundred small hydropower stations could potentially be built, as small hydro is considered the most attractive RES for the country. Small hydropower stations could play a particularly important role for the development of rural areas and cities, where they can become decentralized sources of electricity gen-

eration and where the construction of high voltage transmission electricity lines is economically not viable. The utilization of the small hydropower potential could imply an increase in the generation capacities of existing small hydropower stations as well as the construction of new ones and the renovation of existing power stations.

Kyrgyzstan's potential for solar generation is also significant, with over 250 days of sun per year and high direct and indirect solar irradiation. According to the State Committee for Industry, Energy and Subsoil, solar power could provide 90 per cent of all inhabitants with hot water and 50 per cent of their heating demand year round. The potential of wind electricity generation is also given, as the annual average wind speed is 12 meters per second, which would allow the generation of 2 billion kWh of electricity per year.

The use of RES in Kyrgyzstan is currently obstructed by the absence of strategic programmes for the introduction of new electricity generation capacities, namely the lack of a plan for the construction of new hydro and heating power stations as well as the lack of qualified staff. Another barrier is the absence of short- and middle-term tariff policies, which could stimulate the development of RES. The currently existing legislation on RES establishes a special tariff for a period of eight years, which is still not sufficient to increase the economic profitability of RES. The entire tariff structure is not transparent and quite complicated. The tax exceptions that are only provided for newly constructed RES power plants are considered to be unfair by several actors on the energy market.

The implementation of energy efficiency measures is among the top priorities of the Kyrgyz government because energy consumption is rising. For instance, electricity consumption per capita increased by more than 30 per cent during the period 2010 to 2015. The residential sector is the largest consumer of energy, followed by transport and industry. Energy efficiency measures are also crucial for industrial development as it reduces energy use by the industrial and other sectors, thus indirectly making additional energy being available for further industrial development. According to different estimations, the implementation of energy efficiency measures could contribute to a 40 per cent to 46 per cent reduction of overall energy demand and 11 per cent of energy demand in industry.

Implementation of energy efficiency measures is among top priorities of the Kyrgyz government because consumption of energy is growing. For instance, electricity consumption per capita increased by more than 30% during the period 2010-2015. Residential sector is the largest consumer of energy, followed

by transport and industry. Energy efficiency measures are also crucially important for industrial development as it allows reduction of usage of energy by the industrial sector and other sectors, thus, indirectly it makes additional energy being available for further industrial development. According to different estimations, implementation of energy efficiency measures can contribute to 40%-46% reduction of the overall energy demand and of 11% of energy demand in industry.

## Transportation

**The short-term goal is to reconstruct transport routes that are needed to realize the Concept of Regional Development and to reduce the cost of transport by developing the railroads.**

**The medium-term goal is to improve transport corridors which are needed for the industrial development of the regions and to evaluate the possibilities for electrification and gasification of transport.**

**The long-term goal is to create and diversify transport infrastructure for industrial development and the export of industrial goods as well as the creation of further drivers to attract investment in transport infrastructure.**

Industrial development increases the importance of the transportation system and requirements for its extension. Demands are being made to diversify the currently existing transport possibilities, as 95 per cent to 97 per cent of cargo and passenger transportation is realized via automobile transport. The lack of sea routes and the underdevelopment of the railway sector prevent full-fledged economic activity. In this regard, the improvement of transport can only be achieved in road transport. The development of transport infrastructure within the scope of industrialization strategies must be viewed from the perspective of logistics for the development of industry. Sector-specific state programmes need to be developed together with an action plan for the sectors indicating the specific responsibilities of the involved ministry or department.

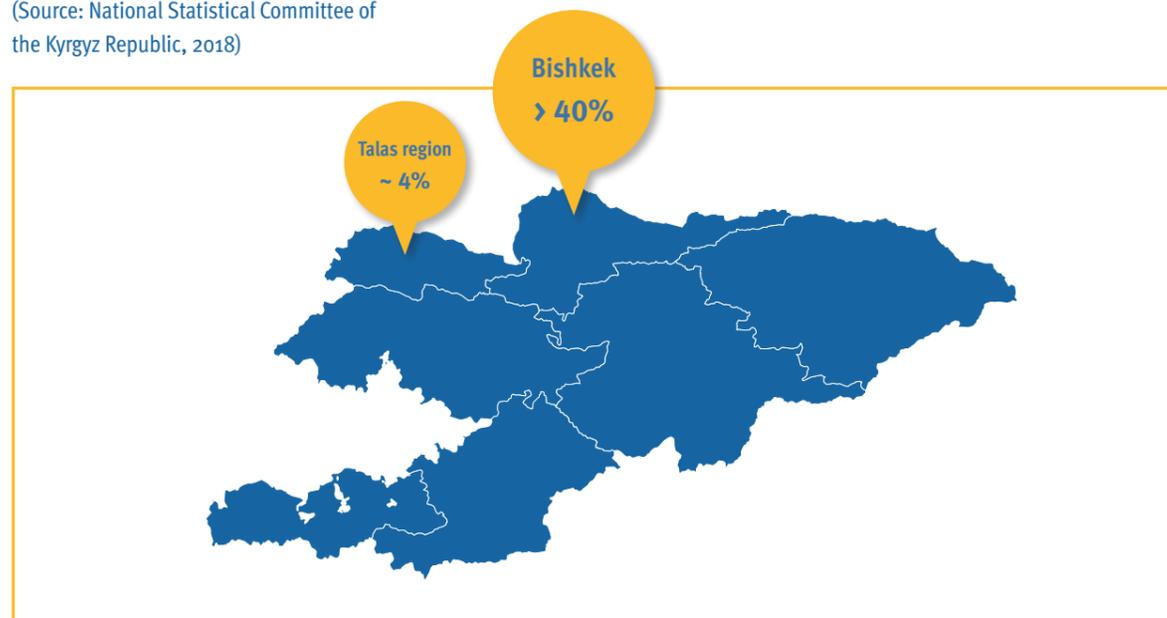
Construction of additional road infrastructure is one of the government's strategic projects. New transport infrastructure is necessary for industrial development but also to stimulate the development of the points of growth. One strategically important infrastructure project is the North-South road with an overall extension of 433 km. This road will connect Russia, Kazakhstan, Kyrgyzstan and Tajikistan.

## Information and telecommunication technologies

**The short-term** goal is to investigate the potential of technology transfer of advanced telecommunication technologies and implementation of these technologies in industry. **The long-term** goal is to implement digital technologies in industry, taking account of the requirements of cyber security.

The use of information and telecommunication technologies (ITT) in Kyrgyzstan is growing. The highest usage is in Bishkek (over 40 per cent of all ITT use) while the lowest usage is in the Talas region (around 4 per cent). The deployment of digital technologies in Kyrgyzstan involves several objectives. One of them is to create a digital infrastructure including cloud technologies, digital platforms, centres for data processing and others). The deployment of digital technologies will be combined with the implementation of cyber security measures. It will also involve the processing of statistical data and the implementation of international regulatory norms according to international best practices and standards. It will furthermore include measures to increase human potential and the necessary capacities for the digital technology industries.

**Figure 8:** IT usage regionwide  
(Source: National Statistical Committee of the Kyrgyz Republic, 2018)



## CHAPTER 10:

# Priority sectors

## Mining industry

**The short-term** goal is to continue the mining of existing reserves with further implementation of measures to protect environment.

**The medium-term** goal is to broaden mining with new reserves and to assess the capacities of local governments for the licensing of mining activities.

**The long-term** term goal is to diversify mining in terms of new reserves and new raw materials and further implementation of international best practices, including social and environmental impact assessments.

The number of employees and enterprises in the mining industry is growing as is the share of the mining industry in the country's overall industrial production. Gold extraction represents the largest share, which is dominated by large-scale enterprises. In addition to gold, Kyrgyzstan also extracts coal, mercury and tin and processes antimony, iron, rare metals and non-ferrous ores. Coal mining is an important industry; although coal extraction has been continually decreasing, the government plans to increase coal mining in the future. In recent years, the volume of oil and gas extraction in Kyrgyzstan has decreased, mainly because their extraction has become increasingly difficult and requires new technologies and methods. The existing reserves have been extracted for the past 70 years; around 70 per cent of the reserves are being extracted, but the remainder is in areas where extraction is difficult.

The development of the mining industry is influenced by ongoing protests against further extraction activities in the affected communities. To ensure the lowest possible environmental impact and a fair distribution of costs and benefits of infrastructure projects among local communities, namely providing drivers for socioeconomic development and the improvement of quality of life in the affected communities, it is recommended to implement EIAs and SIAs as well as social packages. Local communities insist that the social packages being offered by mining firms include the provision of priority conditions for local inhabitants and job creation, in addition to measures to increase the level of vocational training and the necessary expertise at the local level, the provision of good working conditions, including an increase in wages and other forms of compensation such as making available the necessary equipment and promoting socioeconomic development in the region, including targeted support of socially disadvantaged groups, financing of infrastructure projects and other measures to improve the living conditions and well-being of local communities.

Legislation regulating the size of social packages, compensation and development measures is absent. This leads to conflicts and misunderstandings on both sides. A clear and transparent regulation on this issue could contribute to a reduction of social conflicts and costly delays in the realization of projects. It would also benefit companies during the planning stage and decrease uncertainty about the overall amount of financing.

## Textile

**The medium-term** goal is to increase the quality of products combined with the enforcement of international requirements and standards as well as the implementation of possibilities for electronic trade. Another goal is attracting investors with established channels for the sale of goods. The export potential can be increased by introducing cooperatives and clusters based on the regional principle as well as through the implementation of new technologies, diversification of the markets and logistics. **The long-term** goal is to contribute to complex development of the industry by creating a value chain from raw materials to production and distribution.

The volume of textile production grew steadily from 2005 to 2012, peaking in 2012 but then declining. The main reasons for the drop in production are risk perceptions connected with the integration processes and expectations of increasing competition. Furthermore, the main importers of Kyrgyz goods, such as Russia and Kazakhstan, have introduced more rigid requirements for and certification of Kyrgyz textile products.

The majority of enterprises in the industry rely on credits from commercial banks and their own capital. The main problem of the textile industry is 'off the books' payments of wages due to high social security contributions and non-transparency of the payment system in this industry, the lack of available financing due to high interest rates on credits and short repayment periods, low volumes of private investments in this industry, low levels of qualification of staff and high levels of labour fluctuations and a lack of capacities for the implementation of international quality standards.

The modernization of the textile industry requires training of employees and of a new generation of managers. Additional implementation of logistical centres is necessary to move the trade of textiles as private goods being transported by migrants to a more organized system of export. The introduction of new technologies

and financial support is needed to help textile enterprises modernize in order to be able to improve the quality of their products and their competitiveness in the export markets.

## Food processing

**The short-term** goal is to increase the volume of production of single producers by introducing a system of cooperatives taking account of the regions' specialization and economic reality.

**The medium-term** goal is to increase the industry's export potential and improve the quality of products by modernizing the production process.

**The long-term** goal is to implement international safety and quality standards of food products throughout the entire value chain.

The volumes of the food processing industry increased continually between 2005 and 2017. At the same time, the number of workers employed in the industry decreased by 28 per cent during the same period. The production of grains, potatoes, vegetables and fruits increased continuously from 1991 to 2016. By contrast, the production of cotton, tobacco, grapes and wool decreased. The production of meat and milk as well as sugar, mineral water, non-alcoholic drinks and beer increased continuously as well. The production of bread, tobacco and alcoholic drinks (excluding beer) declined.

The dynamics of the volume of exports indicate major changes over the period 2012 to 2017 due to the influence of such factors as price for agricultural products, crops yield and use for agriculture, changes in demand in the markets of neighbouring countries, especially Russia and Kazakhstan, and tariffs and other trade barriers for agricultural production.

The regions have specialized in certain types of agricultural production. For instance, Issyk-Kul is specialized in growing potatoes, apples and currants. Talas is specialized in growing beans. Osh, Djalal-Abad and Batken are specialized in growing vegetables, melons and olives. Chui specializes in growing sugar beets and olives. Kyrgyzstan's agricultural goods, including honey, beans, dried fruits, etc., are mainly produced for the local market and are also sold on the Russian and Kazakhstan markets.

A small share of agricultural products is exported to other countries, but this is not based on any scheme but is largely attributable to the efforts of the producers themselves. Over 90 per

cent of all products are produced by owners of small land plots, therefore, the industry is characterized by small volumes of agricultural goods from each enterprise. This is not conducive to the usage of modern technologies for agricultural production.

## Construction materials

**The medium-term** goal is to increase the volume of production by introducing modern technologies as well as by promoting internal demand for construction materials through the implementation of programmes for the construction of new housing and social infrastructure.

The dynamics of the industry in the period 2012-2016 indicates a slight decrease of the construction industry's share in the overall share of industry in the economy. Cement and glass production are the largest contributors. The decline in the years after 2016 is explained by the financial crisis, which affected certain countries in the EAEU region. The year 2017 marked a return to growth fuelled at least to some extent by rising investments in construction and increased availability of financing.

The firms producing construction materials are spread very unevenly across the regions, with the Batken region having the highest share. The main feature of the construction materials industry is that all existing enterprises belong to the private sector. Any necessary technical equipment, modernization and other production and financial issues are dealt with by private entrepreneurs. The industry's main problem is that it currently produces primarily for the domestic market. The size of this market does not, for example, allow cement factories to work to their fullest potential.

## Tourism

The medium-term goal is to create and develop industrial enterprises that contribute to tourism infrastructure and facilitate the development of related industries, such as jewellery and national souvenirs.

Tourism plays an important role for national GDP, and the tourism industry grew considerably during the period 2012 to 2016, as did the volume of investments in this industry. To support the development of the tourism industry, several private service providers established cooperatives. The following factors are drivers of the

tourism industry, which currently are not at all or not fully developed in Kyrgyzstan: availability of direct air connections, fast acquisition of visas, fast and secure transport from the airport or border to tourist areas, easy and well-developed procedure for registering tourists, availability of public toilets as well as the quality of services in tourist areas. The tourist industry plays an important role for other industries as it leads to construction of new hotels, pensions, etc. thus contributing to the growth of the construction industry. It also contributes to the food processing industry and to firms producing national souvenirs. The potential of the tourism industry lies in the southern shore of the Issyk-Kul Lake as well as in the east of Issyk-Kul where skiing resorts could be constructed.

Image 5: Kyrgyz souvenirs



Cholpan / shutterstock.com

## CHAPTER 11:

# Plausible future scenarios of industrial development

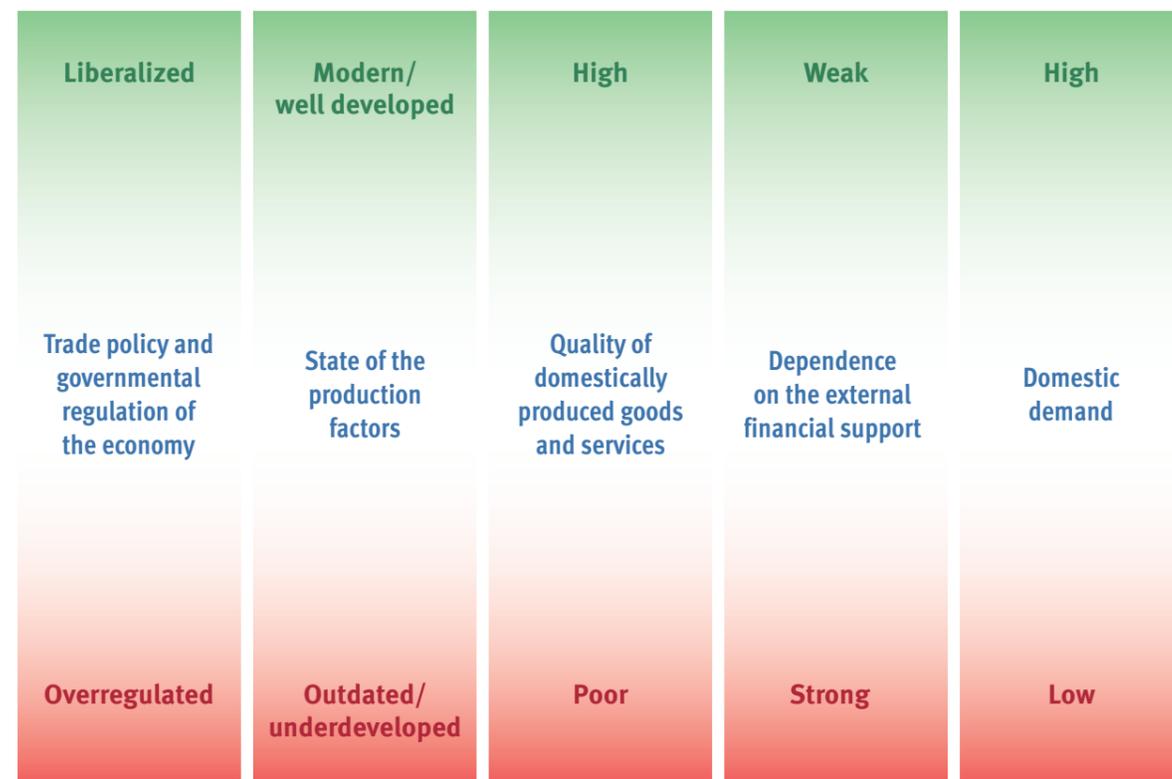
Plausible future scenarios of industrial development in Kyrgyzstan were developed using scenario planning methods, which are useful for strategic planning in both the private and the public sector in case of a highly uncertain decision-making environment and multiple (often, opposite) possible future scenarios. The scenario planning method has been applied in foresight studies focusing on the Central Asian region by several other studies (Shaimerzgenov et al., 2017; WEF, 2014). In this report, scenario planning was used to construct six plausible scenarios of Kyrgyzstan's economic and industrial development. The methodology was adopted from (Krys et al., 2013).

Based on expert surveys, normative documents and selected studies, 75 PESTEL (Political, Economic, Societal, Technological, Environmental and Legal) development factors were identified in total according to the PESTEL analysis approach (Oxford College of

Marketing, 2018). Kyrgyz experts ranked these factors in terms of their importance for Kyrgyzstan's industrial development. They also estimated the uncertainty of these factors up to 2023 and 2040. Some variables were discarded as not important and the rest were clustered into 15 groups according to causal relations and complementarities (Strelkovski et al., 2018).

Most of these aggregated variables are uncertain by their nature and also depend on other uncertain factors. IIASA experts analysed their interconnections in a systematic way and identified five aggregated factors (out of 15) as major drivers of industrial development in Kyrgyzstan (Figure 9). This result is validated by the (Shaimerzgenov et al., 2017) study, which identifies the most important drivers of Central Asia's development until 2027. For each of the five major drivers, IIASA experts identified possible extreme (opposite) values (Figure 10).

**Figure 9:** Critical drivers of Kyrgyzstan's industrial development and their polar values (Source: IIASA 2018)



**Figure 10:** The most influential group of factors for the industrial development of Kyrgyzstan. An arrow denotes a significant impact of at least one of the factors in the source group on at least one of the factors in the destination group. (Source: IIASA 2018)



Six out of 32 possible combinations of the major drivers' polarities were chosen by IIASA experts as the most plausible over the considered time periods, thus representing the scenario dimensions.

Using the augmented scenario matrix approach and the plausible combinations of critical drivers derived from the analysis, IIASA experts produced six possible scenarios for Kyrgyz industrial development:

- “Modern yurt” (1A)
- “Khagan’s fortress” (1B)
- “Assembly shop” (2)
- “Sand castle” (3)
- “Falling tower” (4A)
- “Abandoned palace” (4B).

Each scenario is described by a narrative. The scenarios are neither unconditionally negative nor unconditionally positive. The materialization of each scenario depends both on external forces and on the decisions of local stakeholders and the population. Scenarios 1A, 1B and 2 imply a high level of industrial development, while Scenarios 3, 4A and 4B suggest a relatively low level of industrial development. The current state of the 15 groups of factors in each scenario is depicted in Table 4.

### Scenario 1A: Modern yurt



Kyrgyzstan is characterized by rapid economic growth and extensive liberalization of its economy and trade. The quality of domestically produced goods and services ensures their competitiveness on regional and global markets; Kyrgyz industry is embedded in international supply and value chains facilitated by the trade and transport infrastructure that has been built. Production is export-oriented, with multiplier effects serving the country to improve other sectors' performance as well as the population's welfare, which stimulates domestic demand. Kyrgyzstan has overcome its dependence on external financial support and has become a high-income country.

The country's political elite have undergone a transformative change. A new generation of reformers and technocrats educated within the framework of New Keynesian Economics has come into power. This resonates with major global trends, where geopolitics across the globe has turned into geo-economics. A com-

plexity of various forms of economic integration and cooperation between countries co-exist, driven primarily by economic cycles. Kyrgyzstan is an active member of the EAEU, as well as of a number of other arrangements with various levels of commitments, ensuring win-win cooperation opportunities.

EAEU membership has triggered a growth in exports to EAEU member countries as well as to third countries due to enhanced trade cooperation between the EAEU and a number of its key trade partners. Tariffs have been reduced and a gradual convergence of EAEU standards and the standards of its major trade partners is evident.

The political, business and intellectual elite collaborate, driven by the goal to support Kyrgyzstan's prosperity and to integrate the country into the global economy. The rule of law is widely practiced in Kyrgyzstan, the informal sector has been substantially reduced and the level of corruption has significantly decreased due to affirmative actions of the government and the change in mentality of the new generation of stakeholders.

Kyrgyzstan as part of the Central Asia region has become a “Eurasian gate” for China, which has taken a leading position in the global economic hierarchy, and other Asian countries (e.g. India, Pakistan) have become important economic powers. The transport-logistical infrastructure plays a key role; it has been developed with the assistance of Kyrgyzstan's partners, notably China, Russia and the EU. Consequently, new supply chains emerged, and overall trade in Eurasia has substantially increased, most notably between the EU and other major Asian economies. The connectivity in the region has been increasing and Kyrgyzstan is able to benefit from its position as a transit country, becoming a major hub supporting the trade flows between Europe and Asia.

Massive investments from development partners have contributed to the transfer of technologies and of modern international practices in Kyrgyzstan; most of its capital is foreign-owned; transnational corporations have established their branches here. The technological gap between Kyrgyzstan and developed countries has been reduced significantly. Foreign investments are targeted, inter alia, at the development of innovative and green technologies, including renewable power sources (i.e. HPSs, solar and wind power). Kyrgyz energy is exported to neighbouring countries and to South Asia.

The national economy is heavily diversified, and the traditional reliance on raw materials has gradually declined. The country

**Table 4:** Important groups of factors shaping the industrial development of Kyrgyzstan and their developments in different → scenarios. Groups of factors in bold are identified as the major drivers, i.e. scenario dimensions

Level of industrialization	High			Low		
	1A Modern yurt	1B Khagan's fortress	2 Assembly shop	3 Sand castle	4A Falling tower	4B Abandoned palace
Cooperation with the Central Asian countries	actively developing	moderately developing	Stagnating	border tensions	stagnating	stagnating
Dependence on the external financial support	<b>no dependence</b>	<b>weak</b>	<b>strong</b>	<b>strong</b>	<b>strong</b>	<b>strong</b>
Domestic demand	<b>high</b>	<b>high</b>	<b>low</b>	<b>low</b>	<b>low</b>	<b>low</b>
Integration with the EAEU	active member regulations convergence	EAEU expansion integration deepening	administrative barriers	administrative barriers	EAEU provides support	EAEU provides support
Educational attainment and quality	increasing	increasing	remains unchanged	remains unchanged	remains unchanged	remains unchanged
Emergent technologies' proliferation	increasing	slightly increasing	slightly increasing	slightly increasing	remains unchanged	remains unchanged
Quality of domestically produced goods and services	<b>high</b>	<b>high</b>	<b>high</b>	<b>low</b>	<b>low</b>	<b>low</b>
Labor force supply	improving	improving	slightly improving	remains unchanged	remains unchanged	remains unchanged
Quality of institutions and governance	improving	slightly improving	remains unchanged	remains unchanged	remains unchanged	remains unchanged
Trade policy and government regulation of the economy	<b>liberalization</b>	<b>advanced autocracy</b>	<b>overregulation</b>	<b>overregulation</b>	<b>liberalization</b>	<b>overregulation</b>
State of the natural resource base	decreasing in importance	decreasing in importance; nationalization	good climatic conditions, water, and arable land availability	climate change impact, water shortages	severe climatic change, natural disasters	severe climatic change, natural disasters
State of the production factors	<b>developed</b>	<b>developed</b>	<b>developed</b>	<b>developed</b>	<b>under-developed</b>	<b>under-developed</b>
State of the rule of law	increasing	slightly increasing (corruption risks persist)	slightly increasing	slightly increasing	decreasing	remains unchanged
Social tension level	low	Low	elevated	moderate	elevated	moderate
Economic and political situation in major partner countries	China dominates India and Pakistan develop geopolitics turns into geo-economics	China develops SREB initiative	Japan and China import technologies and open plants in Kyrgyzstan	Competition for influence in Central Asia China develops SREB initiative	Political instability in neighbouring countries	External forces try to exploit Kyrgyz natural resources geopolitics dominates geo-economics

is strongly embedded in regional and global value and supply chains. Cooperation with other Central Asian countries has been enhanced, in particular, in terms of joint infrastructure projects and in the field of energy. As the country produces more goods and services with higher value-added, more jobs have been created, and labour migration has been reduced; remittances are no longer a noticeable source of income for the country. Importantly, the government focuses on the essential role of human capital and has developed the education system to produce skilled professionals in the fields relevant for the economy. The “dual” education system, in which students can acquire practical hands-on skills while studying, has been introduced. It produces professionals that meet the increased demand for skilled labour in major economic sectors.

Economic growth, in turn, supports the country’s political stability, improves the welfare of the population and helps reduce poverty. Domestic consumption is increasing and a broad middle class has started to emerge. The liberal economic policy stimulates a rapid development of SMEs in the light industry, services and tourism industry. The political-economic regime can be defined as liberal regional integrationalism.

### Scenario 1B: Khagan’s fortress



Kyrgyzstan is characterized by growth under a strongly centralized power model. The quality of domestically produced goods and services is ensured by rigid government control in the spirit of “advanced autocracy”. The Kyrgyz economy has reached a decent level of self-sufficiency; commodities that are not produced domestically are imported mainly from the EAEU and Central Asian neighbours. Kyrgyzstan has overcome its dependence on external financial support and has become a high-income country.

The country has continued to follow the model of strong centralized power. The ruling elite appreciate the importance of industrial development as a basis for economic growth. In its attempts to enhance growth, the government has refrained from experimenting with the political and economic modernization and prefers to rely on traditional economic development models, in which growth is ensured on the basis of natural resource exploitation and to then proceed to higher value-added activities.

Political stability has increased the country’s investment attractiveness, but corruption remains. Since major economic agents are mainly clustered in the same region, they are familiar with these practices and can integrate into this system.

Kyrgyzstan follows a pragmatic approach, engaging in regional cooperation schemes as it sees fit for its strategic goals. These include the CIS, SCO as well as China’s SREB initiative. Its membership in the EAEU plays a crucial role; the EAEU itself has expanded and now includes other Central Asian countries (Uzbekistan, Tajikistan) and other Asian countries (e.g., Viet Nam). The EAEU has also deepened its integration and has essentially become the “Eurasian Union”, mimicking the EU model; it has also adopted a common currency, the “Eurasian”.

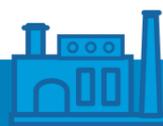
The Kyrgyz economy has reached a respectable level of self-sufficiency; commodities, which are not produced domestically, are imported mainly from the EAEU and Central Asian neighbours.

The role of the state in the national economy is essential. The Kumtor gold mine has been nationalized, which substantially increased its contribution to the state budget; moreover, the light and food processing industries contribute substantially to the economy, supplying their products both to the domestic and to EAEU and other partners’ markets. However, the overregulation of the market and the absence of free competition may lead to unequal growth.

The government conducts a dedicated social policy in which it redistributes state revenues to society in support of the public sector, reduces inequality and eliminates poverty. Such a policy reinforces the formation of the middle-income working class which generates a basis for domestic demand. This policy also enhances social cohesion and reduces incentives for emigration.

Environmental quality is not at the top of the government’s agenda; the green economy is not a priority. The climate change effects are moderate. Local communities and environmentalist NGOs are consulted, but do not have much influence.

### Scenario 2: Assembly shop



Kyrgyzstan has become an assembly shop/raw materials appendage for wealthier countries. International investors (mainly from China) have invested in several sectors, including gold mining, the automobile industry and food processing. The production base has been modernized and the quality of domestically produced goods and services is high. Investors brought their workers, technologies and inputs, and the Kyrgyz economy could therefore not benefit from multiplier effects. The economy remains overregulated. The inequality among the population is increasing; overall national welfare remains low. Domestic

demand is low and the dependence on external financial support continues to be crucial.

The government is stable; it continues to believe in the importance of a strongly centralized power structure for the country’s prosperity. Kyrgyzstan has not, however, been able to take advantage of its membership in the EAEU as Kyrgyz goods remain disadvantaged due to non-tariff (administrative) barriers. The ruling elite have been able to attract foreign investors, primarily from China and other Asian countries. Several contracts to reactivate idle industrial plants, including manufacturing machinery and equipment, and to establish new ones have been concluded with the assistance of foreign donors.

Rapidly developing South-East Asian countries are looking for cheap assembly lines and are ready to invest in Kyrgyzstan’s manufacturing sector. New technologies are imported from Japan and the Republic of Korea. Vocational training programmes for the local population are underdeveloped, and Kyrgyz workers mostly occupy low-skill jobs. Workers at plants receive low wages, while high-skilled labour is imported from abroad. In the gold mining and production industry, concession agreements have been concluded with foreign investors. Reciprocally, the government was able to negotiate deals with international donors for long-term loans at low interest rates, which it uses mainly for social purposes and to develop its transport and trade infrastructure. Some of the plants are owned by local entrepreneurs. The state’s budget is small and has a significant deficit. Taxes and various duties are rising as the government attempts to increase the state budget. However, this leads to lower revenues, as a large share of SMEs remains in the informal economy.

Coal mining, coal-based energy generation, oil refinery and hydro-power electricity have been boosted by foreign investments. Kyrgyzstan exports energy and electricity to its neighbours. This development has increased the level of air pollution in cities, which negatively affects public health and causes economic losses.

Decent climatic conditions and water availability favour agricultural activities. There are several large agro-holdings and small, mainly family-owned, farms. Agro-holdings use modern foreign irrigation technologies and production lines; they produce selected food products that are exported to the EAEU and other regional markets. As production is largely automated, they do not require much labour. The rural population is mainly employed in small farms; they use simple technologies to grow crops and cultivate livestock that is used to produce food for domestic consumption. Because small producers cannot ensure competitive efficiency, cheaper products are imported from the EAEU in many cases.

Income inequality, low social guarantees and prevalent regulatory and administrative barriers dampen the social mood, and many people choose to emigrate.

### Scenario 3: Sand castle



Global superpowers are competing for influence over the Central Asia region as it connects Asia and Europe, plays a role in global security and has some important natural resources, which are becoming scarce in the face of the ever-growing global population.

Foreign donors heavily invest in the country, but it is not able to take advantage of the investments. The economy remains overregulated. The production base has been modernized, but in the absence of skilled managers and an overall national development strategy, the quality of domestically produced goods and services remains poor. Oligarchs and high-level politicians personally benefit from foreign aid; inequality is extremely high, most of the population live in poverty. Domestic demand is low and dependence on external financial support continues to be crucial.

The country enjoys political stability and governments are able to at least serve one full term in office. External borrowing is essential for this level of stability; the government negotiates loans from external donors, e.g. from the Russian-Kyrgyz Development Fund and the IMF. Public debt has reached 150 per cent of annual GDP.

China is interested in improving Kyrgyzstan’s transport infrastructure to use it as part of its SREB initiative and is ready to invest in it. However, transport corridors do not become development corridors. At the same time, despite common markets, EAEU member states apply protectionist policies and subsidize their producers; Kazakhstan continues to impose non-tariff barriers for Kyrgyz agricultural products. These limit the possibilities of Kyrgyzstan to take advantage of EAEU membership. Border tensions with neighbouring Central Asian countries (e.g. over shared water resources) do not allow an expansion of markets in these directions.

Major investments and foreign aid have helped modernize manufacturing and develop energy generation, notably green energy using hydropower. Kyrgyzstan exports electricity to the EAEU. Corruption and inefficient institutions are barriers for the development of SMEs and the improvement of quality standards in manufacturing.

Climate change has caused significant water shortages, and even recently imported modern technologies do not allow for an increase in agricultural production. Energy generation by HPSs is also unstable, and enterprises face electricity shortages.

These developments increase the level of unemployment. A significant share of the population remains below the poverty level. Due to the lack of quality vocational training and unattractive domestic workplaces, emigration continues. Remittances are an existential source of income. Domestic demand remains low and the export potential of produced goods is hampered by their insufficient quality and by competition on the open EAEU market.

### SCENARIO 4A: *Falling tower*



Massive liberalization reforms have not resulted in sustainable economic growth; the economy is reliant on natural resource extraction and is essentially stagnating. The production base has aged, and the quality of domestically produced goods and services is low. The population is poor, domestic demand and consumption is low. International donors continue to provide substantial financial support, which saves the country from bankruptcy.

The ruling elite are convinced that liberalization is a key to growth, yet they have not been able to establish an institutional system and conduct other reforms to enter global and regional supply and value chains, and to thus benefit from openness. Governments replace each other every year, the race for power continues and undermines trust in the state.

Neighbouring countries also suffer from political instability, poor governance and stagnating economy. Illegal economic operations, crime and illegal migration are widespread in the region. The shadow and informal economy rate has reached as much as 50 per cent. Kyrgyzstan is experiencing massive brain drain, losing its human capital. The country also suffers from the natural resource curse; the population lives on rents from the extraction of resources, notably gold, but state revenues are low.

The government views the establishment of SMEs in the services and tourism sector as a viable alternative to industrial development as these sectors have a higher return on investments. However, the lack of entrepreneurial culture prevents such developments. Due to the plethora of various risks and uncertainties, few entrepreneurs are ready to commit to long-term investments, e.g. in the agricultural or manufacturing sector.

Infrastructure and the production base have aged and have not been modernized. Produced goods are of low quality and do not comply with international standards; they are primarily sold domestically or to neighbouring countries bypassing customs controls. Farmers use simple technologies to grow crops; extensive agricultural use has led to the degradation of soil and water. Petty commodities and small firm sizes prevent utilizing the advantages of economies of scale.

Climate change is severe, increased droughts, floods and heat-waves further deteriorate public and private capital, and lead to migration. People are poor and often protest against the current government in power. Minimal living standards are maintained due to international aid and remittances. All attempts to attract transnational corporations and international investors to the country have failed; the country ranks very low in terms of credit risks and business opportunities.

### SCENARIO 4B: *Abandoned palace*



The strongly centralized power has not been able to adapt to modern conditions and trends. Due to a massive global financial crisis, the financial resources in the world have shrunk and international donors are not willing to invest in a country with an outdated political system. The economy is reliant on natural resource extraction and is essentially stagnating. The production base has aged and the quality of domestically produced goods and services is low. The population is poor, domestic demand and consumption is low. The EAEU provides some support; together with a large flow of remittances, it helps the population from falling into extreme poverty.

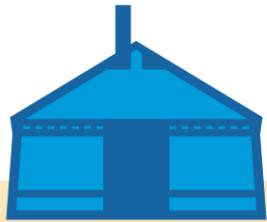
The political system has stabilized; the bureaucratic system is bloated, business and other spheres of life are regulated by numerous, often ambivalent rules and laws. The presence of the government in the economy is dominant, it owns or co-owns major resources and enterprises. In the absence of competition and transparency, the quality of governance is poor. Overregulation hampers efficiency and threatens international investments.

Geopolitics dominate geo-economics in the region. External forces, like China, Russia and the USA use political and societal instability in their interests and try to conclude agreements to use the country's natural resources, which is not in Kyrgyzstan's best interest. The government is not able to negotiate joint infrastructure projects and beneficial trade agreements with neighbouring Central Asian countries.

Kyrgyzstan suffers from the natural resource curse; the population lives on rents from the extraction of resources, notably gold. All attempts to revive industry remain declarative as outdated methods continue to be used. State revenues are used to maintain the large bureaucratic system, leaving few resources for use for investment in the modernization of infrastructure and the production base. Consequently, they have aged; produced goods are of low quality and do not comply with international standards; they are primarily sold domestically or to regional markets. The failure to implement the necessary transformations through the joint efforts of stakeholders at all levels prevents a decrease of the country's economic fragility and adds to its exposure to external shocks.

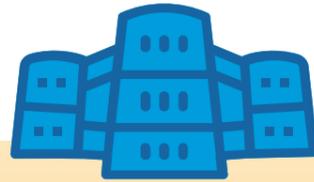
Climate change is severe; increased droughts, floods and heat-waves further deteriorate public and private capital, and lead to emigration. People are poor; minimal living standards are maintained due to aid from the EAEU and remittances.

## SCENARIOS SUMMARY



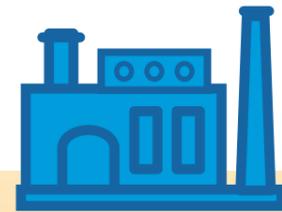
### 1A Modern yurt

Kyrgyzstan enjoys rapid economic growth and extensive liberalization of the economy and trade. The quality of domestically produced goods and services ensures their competitiveness on regional and global markets; Kyrgyz industry is embedded in global supply and value chains facilitated by the trade and transport infrastructure that has been built. Production is export-oriented with multiplier effects benefitting the country to improve other sectors' performance, as well as the welfare of the population, which has stimulated domestic demand. Kyrgyzstan has overcome its dependence on external financial support and has become a high-income country.



### 1B Khagan's fortress

Kyrgyzstan enjoys growth under a strongly centralized power model. The quality of domestically produced goods and services is ensured by rigid government control in the spirit of "advanced autocracy". The Kyrgyz economy has reached a decent level of self-sufficiency; the commodities which are not produced domestically are imported mainly from the EAEU and Central Asian neighbours. Kyrgyzstan has overcome its dependence on external financial support and has become a high-income country.



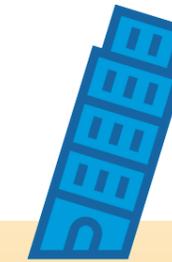
### 2 Assembly shop

Kyrgyzstan has become an assembly shop/raw materials appendage for wealthier countries. International investors (mainly from China) have invested in several sectors, including gold mining, the automobile industry, and food processing. The production base has been modernized, and the quality of domestically produced goods and services is high. Investors have brought their workers, technologies and inputs, so the Kyrgyz economy does not benefit from multiplier effects. The economy remains overregulated. Inequality among the population is increasing; overall national welfare remains low. Domestic demand is low, and dependence on external financial support continues to be essential.



### 3 Sand castle

Global superpowers compete for the influence over the Central Asian region as it connects Asia and Europe overland, plays a role in the global security, and has some important natural resources, which are becoming scarce in the face of the ever-growing global population. Foreign donors heavily invest in the country, but it is not able to take advantage of it. The economy remains overregulated. Production base has been modernized, but in the absence of skilled managers and an overall national development strategy, the quality of domestically produced goods and services remains poor. Oligarchs and high-level politicians personally benefit from foreign aid; inequality is extreme, most of the population is in poverty. The domestic demand is low, and the dependence on external financial support continues to be existential.



### 4A Falling tower

Massive liberalization reforms have not delivered sustainable economic growth; the economy is reliant on natural resource extraction and is essentially stagnating. The production base has aged, and the quality of domestically produced goods and services is low. The population is poor, domestic demand and consumption is low. International donors continue to provide substantial financial support, which saves the country from bankruptcy.



### 4B Abandoned palace

A strongly centralized power has not been able to adapt to modern conditions and trends. Due to a massive global financial crisis, financial resources in the world have shrunk, and international donors are not willing to invest in a country with an outdated political system. The economy is reliant on natural resource extraction and is essentially stagnating. The production base has aged, and the quality of domestically produced goods and services is low. The population is poor, domestic demand and consumption is low. The EAEU provides some support; together with a large flow of remittances, it helps the population from falling into extreme poverty.

The above-mentioned scenarios are future options, which serve as illustration purposes only, as the actual development is likely to combine features of the different scenarios. The scenario narratives were developed to highlight the key uncertainties and to help understand the major challenges for industrial development in Kyrgyzstan over the next years.

Kyrgyzstan is currently at a crossroads as new opportunities and threats emerge from external trends, notably from the geopolitical ambitions of global superpowers. Whether geopolitics will be replaced by geo-economics will shape the structure of Eurasian trade and investment. Political and economic relations within the US-EU-Russia-China complex will have immediate implications for Kyrgyzstan. The situation in the region, including the political regimes in other Central Asian countries, as well as the EAEU's development will play an important role in defining trade opportunities. Globalization versus inter-regionalism will determine trade and investment opportunities. Rising connectivity across the Eurasian continent presents a major opportunity; cooperation with all regional partners is key for win-win solutions.

Emerging technologies, such as the Internet of Things, 3D printing and crypto-currencies, pose another challenge and will define the amount of physical goods traded across the continent. Massive automation also poses a challenge. Many low and medium skilled jobs will disappear, and global labour demand will shift towards high-skilled jobs. The significance of human capital development will continue to increase.

Climate change constitutes a major challenge. Strategic investments have to be robust in the face of uncertainty and adaptation policy should be designed and implemented, including securing

appropriate funds. The global trend towards a low-carbon or even fossil fuel free economy creates an opportunity for Kyrgyzstan to develop green energy options, such as small-scale hydropower, solar or wind industries.

Socioeconomic development should be considered as well. The aging of the population can be expected if the country enters the rapid development trajectory; the burden for the social security system will increase. Timely and effective recognition and the mitigation of threats is crucial for successful economic growth.

Effective institutions and modern infrastructure are prerequisites for successful reindustrialization. New ruling elites will come into power and their values and beliefs will be key for determining the pathway the country will take; in simplified terms, the major dichotomy will be between extensive liberalization/service orientation and protectionism/reliance on traditional economic sectors.

Sustainable economic growth and the reinvigoration of the industrial sector is possible under various external trends and internal arrangements. The task is not to select one single suitable development model, but to synchronize the political and economic development paths. Resilience and adaptability of the economy are important goals. The development of production most likely requires cooperation with development partners; the key challenge is to enhance the multiplier effects and not only to achieve export-led economic growth, but also to develop domestic markets. Remittances are likely to remain an important source of income for families, at least during the transition period; the development of the banking system is essential to ensure transfers are cheap and safe; collaborating with the Kyrgyz diaspora abroad can help preserve the connection of migrants with their home.

## CHAPTER 12:

# Conclusions

# 12

Kyrgyzstan has a small and open economy and is rich in mineral resources, gold mining being the dominant source of income, but its oil and natural gas reserves are negligible. The importance of re-exporting products of Chinese origin as a relevant source of income is expected to decline in the near future. Other industries are stagnating, with the exception of some non-metallic products as well as food products, including beverages and tobacco products. The country has a large inflow of remittances and receives financial aid and loans from international donors. Tax evasion has led to budget deficits.

Kyrgyzstan's industrial structure is not diversified, largely reliant on sectors including agriculture, natural resources and some manufacturing industries, the latter being low-technology firms, characterized by low levels of innovation and engaged in comparatively low value-added activities like textiles. Many firms still use outdated and inefficient production technologies, and limited access to external funds strongly decelerates the shift to more efficient, productive and expansive leading-edge production technologies. The advantage of low labour costs is eroded by low labour productivity. The managerial and technological practices and skills are also often insufficient.

The development of small and medium-sized enterprises has been limited and very little has been invested in the manufacturing sector due to various reasons, but to a large extent due to an unfavourable investment climate, high interest rates and volatile exchange rates. The latter is the effect of political volatility and corruption.

Kyrgyzstan currently lacks the necessary legal and institutional framework and policies to accelerate industrial growth and has a very weak business-enabling infrastructure due to a lack of inter-ministerial/ inter-agency coordination, insufficient financial structures, limited quality of education and access to skilled workers and managers as well as a poor infrastructure. Despite high enrolment rates in primary, secondary and tertiary education, the quality of education at all levels is low, which also affects management structures and competencies. In recent years, however, manufacturing has witnessed some modest revitalization.

Abundant water resources allow for low-cost irrigation of agricultural land, but water quality has deteriorated due to chemical and organic pollution. Climate change is predicted to have serious effects in decreasing the country's water levels and threatening its industrial potential due to a large dependence on hydropower. Furthermore, water administration is characterized by an inefficient management structure.

**The main challenges for Kyrgyzstan, in short, are:**

- It has an unfavourable investment climate due to regional instability, high interest rates and volatile exchange rates and other factors.
- The highly volatile and undiversified sources of income make the economy vulnerable to external shocks.
- The industrial sector is stagnating and the levels of both technology and innovation are extremely low, particularly in the manufacturing sector.
- Despite high enrolment rates, the quality of education at all levels is low, which affects management structures and competencies.
- The unemployment rate among youth is high, with a markedly higher rate of unemployment of women.
- The quality of education and access to skilled workers and managers is limited.
- There is a lack of necessary legal and institutional frameworks and policies to accelerate industrial growth and the business-enabling infrastructure is very weak.
- Tax evasion leads to budget deficits and the corruption rate is high.
- The deteriorating quality of water and land resources is linked to problems of accountability and capacity, and government decision-makers in charge of natural resource management contribute to environmental deterioration through poor management decisions.

The country possesses some beneficial features. The distribution of income is remarkably fairly across society. Democratic development has been progressing over the years. Several reforms have taken place over the last years to improve the work of governance institutions. However, these reforms did not address the methods of the institutions' work or the existing mechanisms of cooperation between local, regional and national governance levels. They have neither improved the cooperation between different ministries and other decision-making entities, and communication between national and local institutions remains weak. Several strategies initiated in 2000s were only partly successful and there have been difficulties in setting and keeping policy priorities. There is also a lack of technical expertise as well as a lack of influence on decision-making processes by the relevant groups. Furthermore, the decision-making processes have been characterized by short-term perspectives and ad-hoc practices.

The Development Programme of the Kyrgyz Republic "Unity, Trust, Creation" for 2018-2022 was issued in April 2018. The Programme focuses on several issues, the reform of goods markets in the main economic sectors constituting an important part of

the development programme. The notion is that the energy sector could substantially benefit from investments and could subsequently become a driver of growth. To stimulate the development of entrepreneurial initiatives, the government aims to pursue a liberal fiscal policy in the next five years, to simplify taxation and the customs regime and to work towards a properly developed mechanism to protect investments.

Furthermore, a number of regional and sector-specific policies have recently been adopted in Kyrgyzstan, for instance:

The main objective of the *Concept of Regional Policy of the Kyrgyz Republic for 2018-2022* is to ensure accelerated socioeconomic development of the regions and includes support initiatives. The document suggests shifting from a sectorial development focus to an integrated model of regional development based on the identity, particularities and specialization of each region. An important step will be the transition from the dispersion of investments via strategically selected national projects to plan and implement a number of regional clusters. The Concept of Development of the Fuel and Energy Complex in the Republic of Kyrgyzstan until 2030 aims to underpin the social and economic development of the country and its regions based on reliable energy supply to consumers. The Concept focuses on improving energy efficiency, reducing the technogenic impact on the environment, resolving social issues and strengthening international cooperation and financial recovery of the industrial sector.

In conclusion, the government's development efforts are commendable, but Kyrgyzstan still faces severe economic and development challenges in virtually all sectors of the economy. The major challenges for Kyrgyzstan lie more on implementation rather than on policy. Kyrgyzstan has extensive opportunities to transform into a more efficiently industrialized economy. Kyrgyzstan needs to produce higher value commodities to eventually achieve industrial diversification of the manufacturing sector, which should stimulate long-term economic growth, while continuing its commendable work in preserving democratic structures and institutions.

## ACTIONS

### Priority 1: Governance



#### TASKS:

- Improve the legislative and regulatory framework in the field of industrial policy and industrial development;
- Create conditions for the implementation of e-government and the digitalization of public services related to industry, including the provision of documents for registration of legal entities in electronic form, the creation of a single electronic database of notarial documents and the introduction of the Single Window principle, as well as to facilitate the implementation of the Tunduk electronic interagency programme;
- Strengthen the role of government bodies responsible for industrial policy, including the strengthening of their institutional and human capacity;
- Improve the coordination of foreign trade-oriented institutions, using the methods of economic diplomacy to promote the interests of Kyrgyzstan;
- Create conditions for the continuity of strategic documents in the field of industry on the basis of an assessment of the results of previous documents;
- Create a regulatory framework to enhance the role of local authorities in industrial development while introducing industry development tools at the local level for local authorities;
- Study the international experience of managing integrated industrial development programmes and analyse the possibilities of adaptation and implementation of this experience in Kyrgyzstan.

### Priority 2: Finance

#### Priority 2A: Access to finance



#### TASKS:

- Consider the possibility of using monetary instruments to support industry, including through maintenance of a balanced monetary policy based on a study of existing international practices;
- Reduce interest rates and increase the time for repayment of loans through the use of monetary and fiscal instruments, increase the amount of funds raised from international financial markets to the banking sector without government guarantees;
- Consider mechanisms to reduce country risks to attract investment in the banking sector;
- Consider the possibility of increasing the issuance of commercial loans for industry (of the total of issued commercial loans);
- Increase the volume of consumer loans for domestic products;
- Increase household savings in commercial banks directed towards the industrial sector;
- Consider opportunities to expand leasing services to the industrial sector;
- Consider the possibility of diversifying donor funds, covering other sectors in addition to energy and transport with a view to developing industry;
- Consider the possibility of introducing corporate governance in the system of placement of budget loans and external borrowings received under the guarantee of the Government of the Kyrgyz Republic;
- Study the mechanisms for encouraging the use of migrant funds to finance industrial enterprises.

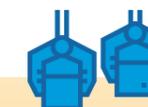
### Priority 2B: Investment



#### TASKS:

- Study the effectiveness of existing free economic zones and their potential reform and consider the possibility of creating special economic zones and industrial parks;
- Reduce the procedural and administrative burden on investors through the implementation of the Single Window system, which allows investors to receive a full range of consulting, legal and administrative services through a single state body;
- Simplify the process to obtain licensing documents and permits for investors;
- Strengthen support for investors, in particular small investors, on the basis of improving government guarantees for the return of investments, both internally and externally;
- Implement a system of investment packages (investment lots), including the provision of available land plots ready for construction to investors, with infrastructure supplied and with the necessary permits for conducting activities;
- Facilitate the procedures for initiating and participating in public-private partnership projects as well as to consider the possibility of introducing a system of public-private partnership in the field of industry;
- Improve the effectiveness of the work of state and judicial bodies in handling complaints from investors;
- Introduce mechanisms to proactively attract investors to priority industries and at the regional level to attract well-known foreign companies to the country to do business;
- Facilitate the procedures for obtaining investment visas for internationally recognized investors and consider the possibility of granting citizenship to investors who invest significant amounts of financing;
- Consider the possibility of creating and strengthening science and technology parks, business incubators and mechanisms to attract investment in innovative industrial sectors and enhance the potential of high-tech parks.

### Priority 3: Increasing the country's industrial and export potential



#### TASKS:

- Develop draft laws on industry and industrial policy as well as five-year programmes for the development of priority sectors;
- Provide the necessary certification of products issued by domestic laboratories in accordance with international standards, support domestic laboratories to obtain international accreditation;
- Analyse new markets and potentials for expanding the export of domestic products and the possibility of cooperation with strategic partners to explore foreign markets, including the Chinese market;
- Create a mechanism to stimulate investment in export-oriented industries;
- Increase the use of the regime of free customs warehouses by domestic enterprises;
- Establish mechanisms to strengthen non-financial support for exporters, including information and communication support, including the creation of a joint information database for participants in foreign trade activities; strengthening the marketing of Kyrgyz products abroad through mass media and specialized events;
- Create conditions to attract foreign industrial companies to Kyrgyzstan through the creation of joint ventures and other forms of cooperation;
- Improve the efficiency of cross-border trade procedures; upgrading and updating checkpoints at state borders;
- Develop the logistics infrastructure to promote industrial products on foreign markets;
- Create mechanisms for export insurance;
- Consider opportunities to expand participation in the management and use of financial resources of the development institutions of the EEU (Russian-Kyrgyz Development Fund, Eurasian Development Bank, Eurasian Stabilization and Development Fund) to stimulate exports and support the development of sectors that—according to the current assessment—will receive maximum benefits from integration with the EEU (engineering, transport and communications, the production of petroleum products, chemical products, rubber, plastics, metallurgy);

- Continue active participation in decision-making processes in the EEU on the issues of expanding cooperation and integration, including the development of B2B dialogue;
- Examine the possibilities of cooperation with China and other Asian countries to expand exports, including the possibility of creating joint ventures, foreign trade industrial zones focused on exports to China and other Asian countries;
- Examine the development opportunities arising from cooperation with the European Union as well as other countries of the Organization for Economic Co-operation and Development, including cooperation in the field of investment and technology adoption;
- Explore opportunities to support the process of convergence of technical and SPS standards of the EEU and the European Union;
- Develop sectors that can benefit from the membership of Kyrgyzstan in GSP+;
- Restrict the import into the Kyrgyz Republic of counterfeit products and imported products that do not meet international quality standards;
- Develop a long-term strategy to improve the country's trade balance.

#### Priority 4: Regional Industrial Development



##### TASKS:

- Develop an industrial development action plan in each region based on regional specialization, available resources and regional conditions;
- Develop mechanisms to stimulate investment in the regions, increase the volume of budget loans in priority sectors and projects of the regions, consider the possibility of introducing changes in the state budget aimed at developing the supporting infrastructure of industry in the regions;
- Study and develop recommendations for the creation of an industrial base in the regions in the long term;
- Improve the regulatory framework for the use of public lands for industrial development;
- Stimulate the registration of enterprises at the place of activity in the regions;
- Create mechanisms for the development and support of small- and medium-sized businesses in the industrial sector;
- Establish conditions for the development of infrastructure in the regions, which is necessary for industrial development, by improving water supply, sewage, gas supply and energy supply and internal roads, facilitate procedures for obtaining access to water and sewage, removal of industrial waste, obtaining permits for the construction of industrial facilities;
- Explore the possibility of a simplified procedure for transforming land for industrial purposes;
- Integrate an industrial development action plan with state strategic documents on regional development and regional policy concepts;
- Promote the modernization of existing enterprises, the creation of new enterprises and to consider the possibilities of restoring idle enterprises;
- Develop innovative technologies in the Chui, Jalal-Abad regions and the City of Bishkek;
- Strengthen the educational and scientific-technical base in the regions;
- Create conditions for the revitalization of industry in the Naryn, Talas, Osh and Batken regions;
- Contribute to increasing the efficiency of industrial enterprises through the introduction of clustering approach, the development of inter-regional relations, the development of cross-border economies, integration in inter-country economic unions (EEU) and others;
- Study the experience of other countries in introducing models of integrated regional development, adaptation and use of best practices for the regions of Kyrgyzstan, taking into account the characteristics of each region.

#### Priority 5: Social Development



##### TASKS:

- Consider the possibility of creating science and technology parks on the basis of research institutes and educational institutions;
- Revise curricula in accordance with the requirements of industry: increase the number of hours of teaching mathematics, computer science and English in secondary schools, engineering subjects in higher educational institutions;
- Consider the possibility of creating clusters with a strong educational and scientific-technical base;
- Develop curricula aimed at the development of innovative industries;
- Implement measures to improve the skills of teachers according to the requirements of industry development;
- Study and implement international practices to attract highly qualified international specialists, as well as mechanisms for the return of highly skilled migrants;
- Explore the possibility of introducing new mechanisms to protect the rights of workers from unscrupulous employers, establishing a minimum wage threshold, taking into account the experience of foreign countries, ensuring favourable working conditions and the safety of workers.

#### Priority 6: Ecological Development



##### TASKS:

- Implement cross-validation of national strategic development plans in various sectors in terms of their expected environmental impact based on a coordinated approach;
- Reform a regulatory system to encourage green investment;
- Conduct an analysis of the effectiveness of the environmental impact assessment system as criteria to support any development project;
- Implement a system of environmental certification and the provision of benefits such as tax cuts to firms that adopt environmentally friendly technologies or green production methods;
- Introduce mechanisms to support and finance the production of environmentally friendly products, the use of environmentally sound technologies in production, the application for funds of internationally recognized environmental funds.

#### Priority 7: Infrastructure necessary for industrial development



##### TASKS, energy:

- Modernize energy production, transmission and distribution systems;
- Improve management efficiency and use of financial resources;
- Build new power lines and increase the capacity of existing power lines;
- Consider the possibility of deployment of smart grids;
- Conduct strategic planning for the distribution of power plants throughout the country to reduce transmission costs and ensure maximum reliability;
- Reduce the number of procedures, time and costs for industrial enterprises to connect to electricity grids;
- Create special funds to support renewable energy and energy efficiency projects;
- Create a mechanism to stimulate the purchase of energy-saving technologies in public procurement procedures.

**TASKS, transport infrastructure:**

- Modernize international and domestic roads of strategic importance;
- Build a transport corridor “Europe-Asia”;
- Work with neighbouring countries and within the framework of integration schemes to reduce the cost of transporting domestic goods through neighbouring countries and finding alternative ways to deliver goods to foreign markets.

**TASKS, information and telecommunications infrastructure:**

- Support domestic enterprises to expand e-commerce in the sale of goods and access to foreign markets;
- Carry out further automation of the provision of all major government, banking, tax and other services to domestic enterprises, minimize the participation of the human factor in the interaction between the state and the enterprise;
- Provide access to the Internet across the entire country.

**Priority sectors**



**TASKS, mining industry:**

- Create conditions and improve the legislative base to minimize the export of raw materials and resources abroad, especially in the form of ore, increase the volume of deep processing of ore and increase volumes of finished products in the country, including the creation of conditions for local companies to access raw materials;
- Based on existing international practices, standardize the requirements for social responsibility of subsoil users to the local community.

**TASKS, food industry:**

- Implement the use of international standards for food quality and safety;
- Improve the supply of agricultural raw materials for the food industry through the expansion of rural cooperatives, strengthen support for seed and breeding farms, expand agricultural production, introduce modern technologies in agricultural production;
- To increase efficiency in the field of food products through the improvement of state support and methods of financing the entire chain of food production;
- Support the creation of new processing enterprises that produce goods that meet international quality standards.

**TASKS, light industry:**

- Stimulate the creation of textile processing enterprises and use of domestic agricultural raw materials;
- Provide state support for the technopolises created to develop their infrastructure;
- Create conditions for product promotion, branding, labelling and e-commerce;
- Provide state support for manufacturers of national products from local raw materials (cotton, felt, wool, silk, etc.).

**TASKS, construction materials:**

- Promote the development of export potential for construction products;
- Promote the use of materials and components of domestic products from domestic raw materials.

**TASKS, tourism:**

- Explore opportunities to expand the range of tourism products;
- Increase the volume of construction of tourist facilities and infrastructure and to develop mechanisms for the use of domestic construction materials.

## REFERENCES

- Abdolvand, B., Mez, L., Winter, K., Mirsaedi-Gloßner, S., Schütt, B., Rost, K. T., & Bar, J. (2014). The dimension of water in Central Asia: security concerns and the long road of capacity building. *Environmental Earth Sciences*, 73(2), 897–912. <https://doi.org/10.1007/s12665-014-3579-9>
- ADB. (2013). *Kyrgyz Republic: Power Sector Rehabilitation Project*. Asian Development Bank.
- Autogid. (n.d.). Roads of Kyrgyzstan. Retrieved from [http://news.avtogid.kg/dorogi\\_kyrgyzstana/](http://news.avtogid.kg/dorogi_kyrgyzstana/)
- EEC. (2018). *The Kyrgyz Republic: Two years in the Eurasian Economic Union. First results*. Moscow: Eurasian Economic Commission.
- FAO. (2015). *FAO Country Programming Framework in Kyrgyz Republic 2015-2017*.
- GoK. (2008). *The National Energy Program for 2008-2010 and the strategy for the development of the fuel and energy complex until 2025*. Bishkek: Government of the Kyrgyz Republic.
- GoK. (2009a). *Agreement on new conditions for the Kumtor project*. Bishkek: Government of the Kyrgyz Republic.
- GoK. (2009b). *Second National Communication of the Kyrgyz Republic to the UN Framework Convention on Climate Change*. Bishkek: Government of the Kyrgyz Republic. Retrieved from [www.unfccc.int/resource/docs/natc/kyrnc2e.pdf](http://www.unfccc.int/resource/docs/natc/kyrnc2e.pdf)
- GoK. (2009c). *The concept of Sustainable development of the ecological and economic system "Issyk-Kul for the period until 2020"*. Bishkek: Government of the Kyrgyz Republic.
- IEA. (2015). *World Energy Outlook 2015*. International Energy Agency. Retrieved from <https://www.iea.org/publications/freepublications/publication/WEO2015.pdf>
- Jorde, K., & Terenteva, O. (2009). *Regional Reports on Renewable Energies. Country Analysis on Potentials and Markets in Central Asia*. Kyrgyzstan.
- Khan, A. S. (2014). *The SME Missing Middle Problem in Developing Countries and its Link to Lack of Financing: The Case of Bangladesh*. University of Ottawa. Retrieved from [https://ruor.uottawa.ca/bitstream/10393/31576/1/Khan\\_Azfar\\_2014\\_researchpaper.pdf](https://ruor.uottawa.ca/bitstream/10393/31576/1/Khan_Azfar_2014_researchpaper.pdf)
- Komendantova, N., Atakanov, N., Chekirbaev, U., Karabashov, N., Zheenaliev, Z., Rovenskaya, E., Strelkovskii, N., Sizov, S., Santiago, F. (2018). *Industrial Development of Kyrgyzstan: Regional Aspects*. IIASA Working paper. Laxenburg, Austria: WP-18-015
- Komendantova, N., Atakanov, N., Chekirbaev, U., Karabashov, N., Zheenaliev, Z., Rovenskaya, E., Strelkovskii, N., Sizov, S., Ekenberg, L., Santiago, F. (2018). *Industrial Development of Kyrgyzstan: Required Infrastructure and Priority Industrial Sectors*. IIASA Working paper. Laxenburg, Austria: WP-18-014
- Komendantova, N., Rovenskaya, E., Ekenberg, L., Strelkovskii, N., Sizov, S., Sedighi, E., Stepanova, A., Atakanov, N., Chekirbaev, U., Karabashov, N., Zheenaliev, Z. and Santiago, F. (2018). *Industrial Development of Kyrgyzstan: Recommendations*. IIASA Working paper. Laxenburg, Austria: WP-18-017
- Komendantova, N., Sizov, S., Chekirbaev, U., Rovenskaya, E., Strelkovskii, N., Karabashov, N., Atakanov, N., Zheenaliev, Z., Santiago, F. (2018). *Industrial Development of Kyrgyzstan: Investment and Financing*. IIASA Working paper. Laxenburg, Austria: WP-18-013
- Krys, C., Schwenker, B., & Wulf, T. (2013). *Scenario-based Strategic Planning*. Springer Gabler. <https://doi.org/10.1007/978-3-658-02875-6>
- Oxford College of Marketing. (2018). PESTEL analysis. Retrieved July 29, 2018, from <https://blog.oxfordcollegeofmarketing.com/2016/06/30/pestel-analysis/>
- Rovenskaya, E., Sedighi, E., Komendantova, N., Strelkovskii, N., Sizov, S., Karabashov, N., Atakanov, N., Chekirbaev, U., Zheenaliev, Z., Ekenberg, L., Santiago, F. (2018). *Industrial Development of Kyrgyzstan: Background*. IIASA Working paper. Laxenburg, Austria: WP-18-011
- Rovenskaya, E., Stepanova, A., Komendantova, N., Strelkovskii, N., Sizov, S., Karabashov, N., Atakanov, N., Chekirbaev, U., Zheenaliev, Z., Santiago, F. (2018). *Industrial Development of Kyrgyzstan: Trade Opportunities, Export Potential and the Role of Economic Integration Processes*. IIASA Working paper. Laxenburg, Austria: WP-18-012
- Schubert, R., Schellnhuber, H. J., Buchmann, N., Epiney, A., Griebhammer, R., Kulesa, M., ... Schmid, J. (2007). *Climate Change as a Security Risk*. German Advisory Council on Global Change (WBGU). Retrieved from [https://www.wbgu.de/fileadmin/user\\_upload/wbgu.de/templates/dateien/veroeffentlichungen/hauptgutachten/jg2007/wbgu\\_jg2007\\_engl.pdf](https://www.wbgu.de/fileadmin/user_upload/wbgu.de/templates/dateien/veroeffentlichungen/hauptgutachten/jg2007/wbgu_jg2007_engl.pdf)
- Shaimergerenov, T. ., Abisheva, M. A., & et al. (2017). *Central Asia 2027: The Changing Strategic Landscape. Possible scenarios for 10 years forward*. Astana: First President of Republic of Kazakhstan Library Publishing.
- Sorg, A., Huss, M., Rohrer, M., & Stoffel, M. (2014). The days of plenty might soon be over in glacierized Central Asian catchments. *Environmental Research Letters*, 9(10). <https://doi.org/10.1088/1748-9326/9/10/104018>
- Strelkovskii, N., Rovenskaya, E., Komendantova, N., Sizov, S., Atakanov, N., Chekirbaev, U., Karabashov, N., Zheenaliev, Z., Santiago, F. (2018). *Industrial Development of Kyrgyzstan: Plausible Futures*. IIASA Working paper. Laxenburg, Austria: WP-18-016
- Supreme Eurasian Council. (2017). *Report on Economic Spheres with the Highest Integration Potential in the Eurasian Economic Union and Measures to Utilize it*. Moscow.
- Trading Economics. (2018). Kyrgyzstan Government Debt to GDP | 2000-2018. Retrieved July 29, 2018, from <https://tradingeconomics.com/kyrgyzstan/government-debt-to-gdp>
- Ubaidullaev, M. B. (2015). Problems of ground resources in Kyrgyzstan, agro-food economy. *Territoriya Nauki*, (5), 94–100.
- UNCTAD. (2013). *National Services Policy Review of Kyrgyzstan*. New York and Geneva: United Nations. Retrieved from <http://unctad.org/en/Pages/DITC/TNCD/Trade-Negotiations-and-Commercial-Diplomacy.aspx>
- UNDP. (2016). Challenges and ways of development of the small hydropower in the Kyrgyz Republic. Retrieved July 29, 2018, from <http://www.kg.undp.org/content/kyrgyzstan/en/home/press-center/articles/2016/03/03/challenges-and-ways-of-development-of-the-small-hydropower-in-the-kyrgyz-republic.html>
- UNECE. (2015). *Regulatory and Procedural Barriers to Trade in Kyrgyzstan. Needs Assessment*. New York and Geneva. Retrieved from [https://www.unece.org/fileadmin/DAM/trade/Publications/ECE\\_TRADE\\_412E-Kyrgyzstan.pdf](https://www.unece.org/fileadmin/DAM/trade/Publications/ECE_TRADE_412E-Kyrgyzstan.pdf)
- UNECE. (2017). *Renewable Energy Status Report 2017*. Paris.
- UNIDO. (2018). *Diagnostic for the Programme for Country Partnership (PCP). The Kyrgyz Republic. Building a competitive manufacturing base for strong and inclusive growth*.
- WEF. (2014). *Scenarios for the South Caucasus and Central Asia*. World Economic Forum. Retrieved from <https://www.weforum.org/reports/scenarios-south-caucasus-and-central-asia>
- WEF. (2017a). *The Global Competitiveness Report 2017-2018*. World Economic Forum. Retrieved from <https://www.weforum.org/reports/the-global-competitiveness-report-2017-2018>
- WEF. (2017b). *The Global Competitiveness Report 2017–2018. Appendix 3. The Executive Opinion Survey: The Voice of the Business Community*. World Economic Forum.
- World Bank. (2017). *A resilient economy ... on a slow growth trajectory. With a special focus on: Kyrgyzstan's ailing energy sector*. Kyrgyz Republic Economic Update No. 5. Retrieved from <http://documents.worldbank.org/curated/en/710331496766602711/pdf/115684-WP-PUBLIC-add-series-SpringKGZBEUFinal.pdf>
- Zhupankhan, A., Tussupova, K., & Berndtsson, R. (2017). Could changing power relationships lead to better water sharing in Central Asia? *Water (Switzerland)*, 9(2). <https://doi.org/10.3390/w9020139>



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