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Diversification and Local Industry Development

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Introduction

This chapter discusses why local industry development is critical for diversification of the economy in resource-rich countries. If we analyze statistical information for the past 20 years, it can be concluded that natural resource mining products comprise two-thirds of the export structure of Kazakhstan and have done for the past 20 years. At the same time, two-thirds of imports comprise goods with high added value—machinery, equipment, and products of the chemical industry (Committee on Statistics of the Republic of Kazakhstan, n/d). The imports are machinery equipment needed for extracting and refining natural resources and products and chemical products, which could potentially be

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produced in Kazakhstan from these natural resources using this equipment. This shows that Kazakhstan exports mostly raw materials and imports high technological products, and the economy of the country is not able to process raw materials into final products. This means that despite numerous attempts to diversify the economy, Kazakhstan has still not been able to get away from natural resource dependency.

How then can the economy of Kazakhstan be balanced in order to produce high-technological equipment? A tool for creating a more diversified economy would be an effective policy to support national business and the development of cooperation in the oil and gas (O&G) sector, coupled with the focused efforts of the mining companies themselves in this matter. The rapid development of the O&G industry could become a driving force for growth, creating a multiplier effect on other sectors of the economy.

This research makes several contributions to the literature. First, we review government policy on supporting the development of national industry in the O&G industry. Second, we analyze the approaches of the largest O&G operators in developing local industry and in supporting Kazakhstani producers. Finally, we attempt to make recommendations to improve the effectiveness of government policies.

Based on the analysis of the reports of companies on purchased goods, works and services (GWS) accumulated in the System for Receiving Reports of Subsoil Users of the Ministry of Energy of the Republic of Kazakhstan, we identify the share of local products and services in procurement of the major O&G consortiums operating in Kazakhstan. In order to analyze the procurement structure and determine products for potential production in Kazakhstan, we identify the ten most frequently procured goods, works and services produced in Kazakhstan and the ten items most frequently imported by largest O&G operators.

According to our hypothesis, due to the technical complexity of the development of the O&G deposits, as well as the complexity of the industry's value chain, a significant amount of the goods needed by operators are GWS of high technology, and such goods are imported. We also assume that the GWS which are most frequently purchased from local suppliers are low-tech GWS. To test these hypotheses, we analyzed the reports of the three largest operators provided to the state authorities on purchased GWS. We assume that such "gaps" exist in terms of supporting and developing R&D and innovation.

Development of the Indigenous Firms in the Energy Sector

Kazzazi and Nouri (2012) argue that while local content (LC) is a common phenomenon and a universally accepted term for the O&G industry, there is still very little research on this topic in academic literature. The authors of this article concluded that the most significant variable for the development of LC in the O&G sector is government policy. In addition, there are some other important policies, which are the policies of municipal authorities, the policies of O&G companies to support local suppliers, the potential and skills of the companies themselves, as well as the policies for R&D of local companies. These policies are important since the local industry can develop only if the matrix of all these policies is in place (Nygaard, 2010, 2012; Heim, 2019).

The key empirical study on lower economic growth in resource-dependent economies (the phenomenon which has been called *resource course*) was undertaken by Sachs and Warner (1995), who analyzed data from 95 countries from 1970 to 1990 and found that countries with a high share of raw materials in exports showed slower GDP growth than countries that did not have an extensive stock of raw materials. Based on this research, Auty (2002) discovered that it is countries with a high share of hydrocarbons in exports that show the slowest GDP growth. Bulte, Damania and Deacon (2005) used an empirical method to prove a negative relationship between the country's raw material reserves and the development level of the state apparatus or "good institutions", which in turn affects the indicators of its human development.

Chang (2002) in his study used numerous historical examples to prove that the application of protective measures for local producers for the cultivation of promising industries is expedient and empirically confirmed. Al-Kasim (2006), in his extensive work, tells the story of the formation of the Norwegian oil industry from the discovery of the Ekofisk field to the present day. The author pays particular attention to clarifying the features of the Norwegian government's policy regarding the management of its natural resources. Barroso and Macedo (2009) reviewed government policies to regulate LC in Brazil. Okuneva (2016) in her research article lists the main causes of the economic and political crisis in Brazil

including corruption scandals surrounding the Petrobras National Company. The research projects mentioned here justify the viewpoint that regulation in the O&G dependent economies is necessary to support diversification.

The issue of the need to diversify the economy and support domestic industry through the protection of the domestic producers and LC policies is also considered by Kazakhstani researchers. Thus, Madiyarova (1999), analyzing the foreign economic policy of various countries, indicated that the export policy of developing countries should be complex. It should provide for customs protection, for financial and fiscal stimulation, as well as for the creation of other conditions to support competitiveness.

Other research on the influence of the O&G industry on the economy concluded that Kazakhstan follows the *resource course* scenario due to the clear raw material orientation of the economy and the complete dependence on world oil price volatility (Gymranova, 2016). Therefore, Temirbekova and Temirbek (2014) suggested that the policy of local industry development is a matter of national economic security since with the creation of new industries and new jobs there is an increase in competencies and ultimately the well-being of the population. However, the authors noted that the most developed countries have moved away from strict regulation of the O&G industry and adhere to a policy of increasing the investment attractiveness of the manufacturing sector, the development of technology and the introduction of innovations. As a next step, Idrisov (2015) proposed that the development of the manufacturing industry through technology and innovation will bring Kazakhstan human capital to a different level of quality. Amangeldy and Esengalieva (2017) also connected the future of Kazakhstan with the development of O&G engineering cluster in the West Kazakhstan region. Karenov (2017) in his work on the specifics of the industrial and innovative potential of Kazakhstan called for expanding policy to develop the knowledge-based model of the economy based on human capital. Overall, Kazakhstani researchers agree on the fact that adjustments in policy toward support of R&D and innovations are necessary. The aim of this chapter is to give suggestions on design of future policy.

Data collection for the study was part of this work. Regulatory acts of Kazakhstan and other resource-driven economies, including the experience of countries that have overcome their dependence on the energy sector (UK and Norway), were studied closely. Specialized literature and research articles as well as government business support programs were reviewed. The list of laws studied included, for example, the Code of the Republic of Kazakhstan *On Subsoil*, Law of the Republic of Kazakhstan On Subsoil and Subsoil Use (expired), Law of the Republic of Kazakhstan *On Oil* (expired), Law *On introducing amendments and additions to some legislative acts of the Republic of Kazakhstan on issues of Kazakhstan content*, the Unified methodology for calculating LC by the organizations when purchasing GWS, as well as the Rules for the acquisition of GWS by subsoil users and their contractors.

The primary data were collected from the compilations of the Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan and analytical data from the Ministries of National Economy and Energy, the Information and Analytical Center of Oil and Gas, and the Union of Oil Service Companies of Kazakhstan. Moreover, the present research used documents stored in the Central State Archive of the Republic of Kazakhstan (correspondence between state bodies, minutes, and abstracts of government meetings).

To calculate the LC in the O&G sector of Kazakhstan as well as to identify the GWS which are purchased with the highest frequency by *Tengizchevroil*, *Karachaganak Petroleum Operating* and *North Caspian Operating Company*, we used the data of subsoil users' reports for the last quarter of 2017 (annual report on purchased GWS) accumulated in the System for Receiving Reports of Subsoil Users of the Ministry of Energy of the Republic of Kazakhstan. These reports are submitted in electronic form to the competent authority body—the Ministry of Energy—on a quarterly basis in accordance with the Law on Subsoil and Subsoil Use. The report for the fourth quarter presents data on the results of the reporting year. The accuracy of the data is carefully checked by the competent authority. Access to the electronic system is allowed for authorized users only.

Local Procurement in the Energy Sector of Kazakhstan

According to the Ministry of Energy of the Republic of Kazakhstan, the total volume of purchases of mining companies in the energy sector in 2017 amounted to 4.9 trillion tenges (in terms of the weighted average exchange rate of the tenges of the National Bank of the Republic of Kazakhstan it amounts to US $15.1 billion); these huge figures indicate the potential of the Kazakhstani market. If domestic companies bid more tenders placed by subsoil users, this would have a powerful impact on the development of Kazakhstan's business.

Table 8.1 shows the main indicators of LC in the procurement of subsoil users of the energy sector. At present, the average share of local companies in procurement is 43.13%.

Considering the material and service segmentation of purchases, there is a significant imbalance in the specific gravity of each segment. So, in the period of 2017, the procurement of the Kazakhstan service sector (work and services) accounted for 93% of all purchases or 1971.6 billion tenges, while the purchases of the Kazakhstan manufacturing sector accounted for 7.17% or 152.3 billion tenges.

Purchases of GWS by the three largest subsoil users, namely *TCO*, *KPO* and *NCOC*, account for a large share of the total volume of procurement of the entire energy sector (the share of three companies in 2017 amounted to 68% or 3331.3 billion tenges). The indices of LC of these companies are significantly lower than industry-average indicators

Table 8.1 Share of LC in GWS procurement of subsoil users in 2017, thousand tenges and % of total

	Total	Goods	Works	Services
Total purchased	4,924,931,532	616,837,994	2,409,832,182	1,898,261,356
Local	**2,123,903,133**	**152,301,091**	**1,001,059,051**	**970,542,991**
Import	2,801,028,398	464,536,903	1,408,773,131	927,718,364
Share of local of total purchased, %	**43.13**	**24.69**	**41.54**	**51.13**

Source: Authors' own processed data based on data from the Ministry of Energy of Kazakhstan

Table 8.2 Purchase of GWS by three subsoil users, TCO, KPO and NCOC, in 2017, thousand tenges

	Total	Goods	Works	Services
Total purchased	3,331,310,997	189,133,400	1,869,927,557	1,272,250,039
Local	**1,022,387,844**	**15,972,487**	**583,090,540**	**423,324,815**
Import	2,308,923,153	173,160,913	1,286,837,016	848,925,223
Share of local	**30.69**	**8.45**	**31.18**	**33.27**

Source: Authors' own processed data based on data from the Ministry of Energy of Kazakhstan

(see Table 8.2) and this is primarily associated with technological complexity and high content of hydrogen sulfide and other corrosive materials from the developing deposits.

So, if the industry average indicator of the LC in goods is 24.69%, then the three "pillars" of the O&G market have 8.45% of the LC between them. The industry average indicator in the works is 41.54% and in the services is 51.13%, while the operators of the development of Kashagan, Tengiz and Karachaganak have 31.18% and 33.27%, respectively. These significant differences can be explained in several objective ways.

An analysis by the authors showed that low-tech products predominate in the procurement of goods from local suppliers. Among the works and services procured from Kazakhstani manufacturers, auxiliary services also occupy a significant place; they are the services in the field of hiring personnel and dealing with transport, construction services and catering.

The data on the top ten most frequently imported goods of each of the three largest operators for total imports for 2015–2017 were studied. These goods potential can be produced in Kazakhstan, to meet the demand from the three largest O&G operators in 2015–2017.

The top ten most frequently imported items of expenditure for the *TCO* accounted for 36.2% of the company's total imports of goods for 2015–2017 (see Table 8.3).

The top ten most frequently imported items of expenditure of *NCOC* accounted for 96.3% of the company's total imports of goods for 2015–2017 (see Table 8.4).

In order to eliminate distortion of the analysis results under the influence of equipment replacement in 2015–2016 at the Kashagan field, a

Table 8.3 Top ten most frequently imported goods by TCO in 2015–2017, Bln tenges

Type of goods/statistical code	2015	2016	2017
Drilling pipes, 24.20.11.321B	12.1	5.7	4.5
Fittings, 25.62.10.310A	4.4	7.7	4.6
Diesel fuel, 19.20.26.500A	3.9	6.6	4.4
Casing, 24.20.11.322B	4.3	2.6	6.0
Professional clothes, 14.12.30	2.2	4.3	4.7
Air conditioning equipment, 28.25.12	8.3	1.3	1.6
Throttle, 28.14.13.750A	0.9	6.4	3.8
Parts of electric motors and generators, 27.11.61	1.6	6.2	2.9
Tools, 25.73.60	3.6	4.1	2.9
Pipes, different diameters, 24.20	4.1	4.3	2.0

Source: Authors' own processed data based on data from the Ministry of Energy of Kazakhstan

Table 8.4 Top ten most frequently imported goods by NCOC in 2015–2017, Bln tenges

Type of goods/statistical code	2015	2016	2017
Pipes, 28.99.20.900A	–	54.2	–
Pipes, 22.21.29.400A	39.0	–	–
Pipes, 26.30.30.300A	31.5	–	–
Pipes, 33.20.70.000A	29.8	–	–
Pipes, 24.51.11.500A	24.5	1.0	–
Pipes, 22.19.73.400A	20.7	–	–
Gas compressors, 28.13.27.300A	–	2.0	1.3
Gas compressors, 28.12.12.350A	2.8	–	–
Gate valve, 28.14.13.300A	–	–	2.5
Flow meter, 26.51.52.350A	–	–	1.5

Source: Authors' own processed data based on data from the Ministry of Energy of Kazakhstan

more detailed analysis of the company's imports for 2017 was carried out. The ten most frequently imported goods were identified, representing 88% of the total *NCOC* import of goods in 2017 (see Table 8.5).

The analysis revealed that the top ten most frequently imported items of expenditure of *KPO* accounted for 66.4% of the company's total imports of goods for 2015–2017 (see Table 8.6).

Table 8.5 Top ten most frequently imported goods by NCOC in 2017, Bln tenges

Type of goods/statistical code	2017
Stop valves (28″ and 18″ pipe valves), 28.14.13.300A	2482.4
Electronic flow meters, 26.51.52.350A	1545.7
Gas compressors and flash evaporation compressors, 28.13.27.300A	1278.0
Licensed software, 26.11.30.500A/26.11.30.990 B	310.6
Oil transformers 10/0, 27.11.41.550B	166.5
Industrial uniform, 14.12.11.390A	162.4
Fittings for 28″ and 18″ pipe valves, 22.19.30.700A	80.8
Assembled filters from any material, 26.70.21.900A	58.5
Self-regulating heating cable, 27.51.29.000A	58.0
Hydraulic oils, 19.20.29.520A	54.0

Table 8.6 Top ten most frequently imported goods by KPO in 2015–2017, Bln tenges

Type of goods/statistical code	2015	2016	2017
Parts for pumps and compressors (spare parts for pumps and compressors), 28.13.3	6.0	10.0	1.4
Other industrial products (supply of expansion kits, spare parts for generator, for servers, for storage hardware, UPS, spare parts of various materials), 32.99	5.4	5.5	3.9
Taps and valves (supply of ball valves, nipple/throttle valves), 28.14	1.7	6.8	5.6
Fittings for pipes, small tubes, hoses, sleeves made of plastic (supply of pipes and bends), 22.21.29.700A	5.2	7.0	0.0
Casing, tubing and drill pipes for drilling oil and gas wells (supply of tubing and drill pipes), 24.20.11.320A	2.8	6.5	1.7
Gas turbine parts (supply of spare parts for gas turbine), 28.11.33	1.4	4.8	1.6
Distribution valves, slide gates, ball valves and other (supply of ball valve), 28.14.13	1.3	3.4	0.0
Oil and gas well drilling services (supply of wellhead equipment and fountain fittings, drill bits), 09.10.11.000A	1.4	1.8	1.3
Gaskets and seals similar of sheet metal in combination with other materials (supply of rushing rings, rings for mechanical sealing), 28.29.23	0.8	1.9	0.8
Other construction services (supply of chemical reagents), 43.99.90.000A	3.3	0.1	0.0

Source: Authors' own processed data based on data from the Ministry of Energy of Kazakhstan

Based on the analysis of the most imported articles of goods of *KPO*, *TCO*, and *NCOC*, the following categories of goods were identified:

1. Taps, valves, and their spare parts (average annual import of three operators in the amount of US $34.1 million):
   (a) ball, nipple/throttle valves;
   (b) supply of spare parts for valves.
2. Compressors and spare parts (US $21.4 million, while the calculation did not take into account the import of *NCOC* in 2015–2016 to exclude the effect of increased demand due to the replacement of equipment):
   (a) compressors of gas of instant evaporation (rotor);
   (b) spare parts for compressors, pumps.
3. Parts of electric motors and generators (US $19.8 million):
   (a) parts of electric motors and generators, in particular spare parts for a gas turbine generator;
   (b) electrical components—wires/cables.
4. Equipment for air conditioning (US $15.3 million)
5. Work clothes, including personal protective equipment (US $12.5 million):
   (a) industrial winter uniforms (jackets, gloves);
   (b) industrial summer uniforms (overalls, safety shoes).

It is necessary to understand that due to the fact that the main areas of the purchases of the energy sector of Kazakhstan fall on the "three pillars" of the O&G sector, operators of the development of the Kashagan, Tengiz, and Karachaganak fields, the greatest result in increasing the LC in the industry can be achieved by working with three operators directly and motivating them, in turn, to attract local suppliers to tenders.

Steps Taken by Three Major O&G Consortiums Toward Local Industry Development

Future Expansion Project of TengizChevrOil (TCO)

As part of TCO's Future Growth Project (FGP), there is a plan to build a new oil refining plant with a capacity of 12 million tons per year and crude gas re-injection facilities with a capacity of 9.4 billion m^3/year. This will involve constructing a new well production system and pressure boosting facilities, as well as infrastructure and support facilities. The cost is estimated at US $36.8 billion, and the commissioning of FGP facilities is scheduled for July 2022. This year, the project started the active phase of implementation. The projected Kazakh content in the implementation of FGP is 32% (or about US $11.8 billion).

According to the Ministry of Energy of the Republic of Kazakhstan, *TCO* has established a requirement for all major construction contracts for a minimum LC of 50%. *TCO* practices the mechanism of "long-term contracts", that is conclusion of contracts for a period of more than one year that provides the manufacturer with a stable order flow and allows planning the business several years in advance. Organization of a partnership with a Kazakhstan company is one of the main conditions for concluding a long-term contract with a foreign supplier for FGP. In August of this year, *TCO* announced the interim results of its work at FGP. Thus, since the beginning of the project the actual purchase amount from Kazakhstani companies amounted to US $4.5 billion (or 31%).

North Caspian Operating Company (NCOC)

NCOC is the operator of the first major offshore O&G development project in Kazakhstan, and its Local Content Development Policy focuses on training local companies and facilitating international certification according to international standards in the field of management, goods and services. It also provides financial support for its certification according to the requirements of the American Society of Mechanical Engineers and the American Petroleum Institute.

NCOC provides specialized vocational training for local company employees. The company focuses on training related to:

- electronic systems and their assembly;
- work in confined spaces;
- industrial safety rules.

In addition, as part of the Kashagan field development project, a number of joint ventures have already been created between Kazakhstan and foreign companies that operate successfully in Kazakhstan.

Karachaganak Petroleum Operating (KPO)

Karachaganak Expansion Project (KEP) is one of the largest most promising O&G projects which will be managed by the international consortium *Karachaganak Petroleum Operating (KPO)*. The goal of the project is to increase the volume of recoverable liquid hydrocarbons through the installation of additional gas treatment facilities, gas re-injection facilities and the removal of production restrictions.

At the end of 2015, *KPO* updated the Local Content Policy and developed a two-year Local Content Development Program that supports the implementation of state programs for the industrialization and development of mechanical engineering, as well as assisting in the creation of an oilfield cluster around the Karachaganak project, contributing to the development of the economy of the West Kazakhstan region and the Republic of Kazakhstan.

As part of the *KPO* corporate program for the development of LC, the following measures have been identified to support local suppliers:

- tenders with local suppliers or tenders only among joint ventures;
- holding of early tenders;
- assisting in the establishment of joint ventures with local suppliers and ensuring technology transfer;
- extension of existing contracts in exchange for the development of production/localization of goods and materials;
- procurement from a single source (on a non-competitive basis) for local goods and materials.

In order to develop LC, the practice of "early tenders" has been introduced in Karachaganak, which means that companies that receive a contract with *KPO* in advance undertake to establish the production of necessary products in Kazakhstan. After the launch of production, this company already has a sales market guaranteed. As part of this process, there is already a pilot bid for the supply from local companies, including supply of drill bits from *ZhigerMunayService LLP*, supply of caustic soda from *JSC Caustic* and supply of barite from *Karazhal Operating Ltd*. The process of placing a pilot bid for cement at *JSC Shymkent Cement* was resumed, and a long-term contract was signed with *Edil-Oral Ltd* for repair and rewind of explosion-proof electric motors.

In order to facilitate the development of Kazakhstani suppliers, subject to the availability of a sufficient number of local suppliers, *KPO* accepted tender from Kazakhstani suppliers. By the end of 2018, *KPO* initiated 85 Kazakhstan tenders for a total of US $264 million, and 53 such contracts were concluded for a total of US $104 million (the remaining tenders are at the stage of realization).

At the same time the company began implementing a number of large-scale projects. For each of the projects, *KPO* has developed and agreed strategies and a plan for the development of local companies, as well as determined targets for the level of LC.

While developing this plan and strategy, *KPO* realized that to carry out large volumes of design and construction works within the framework of projects, Kazakhstan companies do not possess enough of their own technical, human and financial resources, as well as not having access to new technologies. Thus, in accordance with the approved Strategies and Plan for LC of projects, *KPO* introduced mandatory requirements for foreign companies to create joint ventures and consortia with the participation of Kazakhstan partners in order to maximize the involvement of local producers and oilfield service companies to perform more sophisticated and complex works.

The company also continues to develop the potential of WKO machine-building plants by facilitating training and certification according to international standards ASME and API (for the manufacture of vessels under pressure). Two WKO machine-building enterprises from WKO, *Aksaigazservice JSC* and *Zenit Ural Plant JSC* successfully passed a

preliminary assessment of an independent audit company for subsequent preparation for certification according to ASME standards. This will allow local companies to improve the quality of their products to win more tenders in the future.

All of the above measures over the past few years have allowed *KPO* to increase the share of LC in *KPO* purchases from 47.5% in 2014 to 54.1% in 2017.[1]

Public-Private Initiatives

In addition to individual initiatives, large O&G operators are taking joint actions in the field of LC development. On September 25, 2012, three major O&G consortiums, *NCOC*, *KPO* and *TCO*, and *JSC National Company KazMunayGas* signed a declaration ("Aktau Declaration on Joint Actions for the Development of the Kazakhstan Oil Service Industry") that contains the following key initiatives:

- unification and simplification of the registration/prequalification procedure of Kazakhstani companies;
- development of a common database of suppliers "Alash";
- harmonization of procurement processes;
- joint planning of future procurements;
- definition of goods and services for the localization of production.

All major operators are working on a synergy of efforts to develop Kazakhstani production, one of the mechanisms of which is holding joint forums aimed at familiarizing market participants with the demand for goods that are subject to localization and at explaining technical requirements and standards. The major operators also work with specialized associations and chambers of commerce, with the aim of attracting leading foreign companies to create joint production of new equipment and materials with the Kazakhstan party and in Kazakhstan. This not only allows the creation of new jobs but also facilitates the transfer of

[1] KPO report on sustainable development in 2017

technologies and the development of new production capabilities in Kazakhstan. Furthermore, it enables local companies to expand their markets by entering international markets in the future.

Conclusions and Implications

International O&G companies (IOCs) make a significant contribution to local industry development by:

1. Planning for procurement from local manufacturers

   Consortiums cooperate with the regions to study the capabilities of local oilfield services and engineering companies. They hold early tenders, place pilot orders and conclude long-term contracts.
2. Creating a base of local suppliers

   As part of the Aktau Declaration between NCOC, KPO, TCO and KMG, a common database of *Alash* suppliers was developed and launched in February 2016. Project operators use *Alash* permanently as one of the sources of information to search for potential suppliers when conducting market research. However, *Alash* is not used as a tool for prequalification and qualification of companies, due to the fact that each operator has its own processes and procedures for conducting prequalification. Unification of industry standards could be a potential solution.
3. Developing R&D and introducing new technologies in domestic production

   According to the standard contract model of subsoil use, there are provisions on supporting R&D in Kazakhstan allocating 1% for R&D from the annual budget of subsoil users. However, no significant technological breakthroughs in the oil and gas industry of Kazakhstan have so far been noted. This means that the further development of R&D and the introduction of new technologies in the domestic production are necessary for Kazakhstan.
4. Indirect financial support for business

   Consortiums help to attract foreign investment in the WKO, as well as provide training to Kazakhstani companies according to inter-

national standards. They reimburse part of the cost for local companies through cooperation with the EBRD. Kazakhstani Bank of Development (KBD) could also contribute to this activity.

5. Partnerships between international and local suppliers

   Partnerships between international and local suppliers are also being facilitated and established by all three operators. This type of cooperation needs to be further promoted by the policymakers through public-private projects.

To conclude, the LC in the O&G industry in 2017 was 43%, a good result. However, when considering the material and service segmentation of purchases, we established a significant imbalance in the specific gravity of each segment. In 2017, procurement of the Kazakhstan service sector (work and services) accounted for 93% of all purchases, while purchases of the Kazakhstan manufacturing sector accounted for 7.2%. It should be noted that this indicator only partially reflects the actual volume of Kazakhstani purchased goods and does not take into account Kazakhstani goods purchased through work contracts (e.g., construction works or drilling works), where subsoil user contractors purchased Kazakhstan's construction or chemical products independently, and such goods in subsoil users' reports on LC are indicated as the "work" category. It should also be noted that not all manufacturers are able or willing to receive CT-KZ certificates on time and this has negative impact on the statistics on LC in goods.

This fact reveals the service orientation of the business environment of Kazakhstan, and leads to the problem of low volumes of procurement of local goods by subsoil users of the O&G sector. A low LC indicator for goods indicates the absence or shortage of necessary machine-building production capacities in the country. Taps, valves and their spare parts, compressors and their spare parts, parts of electric motors and generators and air conditioning equipment are all in long-term demand from O&G operators—all these commodity items are currently fully imported, which confirms our hypothesis in Introduction that the main share of goods purchased by O&G companies is imported. International experience of leading countries shows that investing in promising technologies and production leads to the development of the domestic industry, which

in turn leads to an increase in the share of LC in goods, but such a process may take some time to obtain results.

If we examine the dynamics of the structure of goods, works and services purchased from local manufacturers in more detail, it becomes obvious that Kazakhstani enterprises for 27 years of independence have not begun to produce high-technology equipment and high-tech products or to provide services that require special knowledge and competencies.

At the same time, historical reporting on local content does not yet reflect the work being carried out by O&G operators to purchase technologically more complex equipment and materials, for example, *KPO* already uses a number of high-tech products (pressure vessels, drill bits, modular substations, metal structures) that are available on the market, and these products have not yet been reflected in subsoil user reporting.

The analysis of the reports of the three largest operators showed that low-tech products predominate in the purchase of goods from local suppliers, for example fuel, lubricants, timber, cables/wires, nitrogen and personal protective equipment. Among the works and services procured from Kazakhstani manufacturers, a significant share of auxiliary services can be identified; these are the services in the field of hiring personnel, transport, construction services and catering. However, it should be noted that in 2017 a notable degree of work, namely design and engineering, to the amount of 123.8 billion tenges, was carried out by the Kazakhstan company *KPJV LLP*—a joint venture between the *Kazakhstan Institute of Oil and Gas*, *Kazgiproneftetrans JSC* and foreign companies *Worley Parsons* and *Fluor*. Thus, the introduced hypothesis was only partially confirmed, since there is progress toward inclusion of local partners in a work and service project which requires significant knowledge and, therefore, provides transfer of knowledge from a foreign partner to a local one, as well as high profit margins for local companies.

The state, as a regulator of the subsoil use sphere, has set strict limits regarding LC, but these strict "rules of the game" do not apply to the main purchasers of the industry—operators of the Tengiz, Kashagan and Karachaganak deposits, which accounted for 68% of all purchased goods, works and services in the industry at the end of 2017. The reason is agreements with shareholders of the operators with special provisions

concluded more than 20 years ago. As the analysis reveals, the LC indicators of the three largest operators are significantly lower than the industry average, due to a number of factors.

First of all, there is a lack of obligations for LC in production-sharing agreements (PSAs). However, it should be noted that all operators work on the principle of good faith in the development of LC demonstrating commitment toward local industry development. In view of the terms of the PSA, which guarantee the stability of their provisions in case of any changes in legislation, the government is not in a position to amend the PSAs in order to meet the requirements of new legislation.

The second contributing factor is compliance with international standards. Taking into account the high content of hydrogen sulfide (5–15%), high pressure of extracted O&G (up to 700 bars), corrosive environment, as well as large subsoil users, standards require all manufacturers/suppliers to comply with international standards and certification of international institutions. However, Kazakhstan manufacturers have little financial interest in modernization or in training their own personnel to comply with international standards. Few Kazakhstani suppliers have a sufficient level of technology, knowledge, and competencies to meet these standards. An additional factor hindering the production of domestic goods, according to the requirements of large oil and gas companies, is the lack of specialized independent laboratories that can certify Kazakhstani goods according to international standards. Due to this fact, Kazakhstan companies cannot provide necessary certificates.

Another factor which needs to be considered is the price factor. The provisions of the agreements for the Kashagan and Tengiz projects provide for exemption from customs duties and VAT on the import of goods, while VAT is applied to the purchase of domestic products. As a result, there is a situation when it is more profitable to purchase imported products without paying fees and VAT than purchasing from a Kazakhstan manufacturer, who has VAT included in the cost of components and raw materials for the production of such products.

The next factor which has an important impact is affiliation. Foreign investors try to purchase products from their subsidiaries, global and/or proven suppliers in the market, which can provide a competitive price and delivery time, due to the well-developed system of sub-suppliers.

Due to the closed procedures of procurement by large subsoil users *TCO*, *KPO*, and *NCOC*, each operator has its own tender procedures, and procurement is performed in accordance with this. In order to take part in *TCO* and *NCOC* tenders, suppliers have to pass a rather complicated prequalification process; however, this does not guarantee them participation in the operator's tenders.

Finally, contractors and subcontractors of *TCO*, *KPO*, and *NCOC* do not comply with the norms of Article 77 of the Law of the Republic of Kazakhstan "On Subsoil and Subsoil Use" that stipulates the obligation of subsoil user contractors to comply with the procedure for acquiring goods, works and services approved by the government. Thus, contractors of the three operators and their subcontractors make purchases at their discretion.

The factors discussed above need to be taken into consideration by the policymakers when planning the scope of work on the development of LC with *TCO*, *KPO* and *NCOC* companies, since these are the operators who will increase the oil production in the coming years and who have planned for investments in the construction and modernization of existing capacities. Due to the late stage of development and significant depletion of reserves in other fields, a decrease in the level of hydrocarbon production is observed. Already, *TCO*, *KPO* and *NCOC* are implementing a number of measures and mechanisms designed to ensure the placement of their orders with Kazakhstani suppliers. For example, these are mechanisms of early tenders and long-term contracts. These also include tenders only among Kazakhstani suppliers and assistance in finding foreign partners to create a joint venture. At the local level, support in enhancing the competencies of local businesses, in passing certification in accordance with international standards, is required.

Policy implications in this research include the following. Firstly, it is the development of R&D in the O&G industry and, secondly, the transfer of technology and knowledge. According to the Global Competitiveness Index of the World Economic Forum for 2018, Kazakhstan took 87th place among 137 countries, indicated by the *Innovation indicator* (with a total score of 32.1 out of 100), 94th place according to the *R&D expenses indicator* (0.2% from GDP). These facts demonstrate the underinvestment in R&D capabilities in Kazakhstan (see Ambalov & Heim, 2020,

this volume). This is the "growth point" that can help Kazakhstan to radically change the structure of non-primary production and the economic development model.

According to the Global Competitiveness Report of the World Economic Forum for 2017–2018, in terms of the indicator "Direct foreign investment and technology transfer", the indicator that shows how much foreign investment brings new technology to the country, Kazakhstan was in 93rd place among 137 countries (4.0 points from 7). The indicator "Use of the latest technologies at the company level" is also interesting: Norway is in 7th place (5.8 points out of 7); Kazakhstan is only 81st (4.3 points out of 7). As we can see, despite the significant volumes of direct foreign investments made in the economy of Kazakhstan, their volumes do not correlate with the transfer of technologies to Kazakhstan, and domestic companies are significantly behind the companies in developed countries of the world in terms of technological equipment. The transfer of knowledge and technology is still insufficient for building high technological industrial capacity.

At the company level, the development of R&D and the introduction of new technologies in domestic production, meaning the involvement of the local business in this process, are lagging behind. If measures are taken to support science-intensive areas, as well as increasing competitiveness, along with working to raise competence and growth of the local industry with a focus on the O&G industry, R&D and innovations can become a driving force of related industries, for example, steel, chemical or other manufacturing industries.

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