

Republic of Kazakhstan

Country Economic Memorandum

**Getting Competitive, Staying Competitive:
The Challenge of Managing Kazakhstan's Oil Boom***

Background Paper No. 5:
**The Supplier Development in the Oil and Gas
Sector of Kazakhstan**

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Paul Domjan

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SUPPLIER DEVELOPMENT IN THE KAZAKH OIL AND GAS SECTOR

I. CONTEXT

Kazakhstan already has significant foreign direct investment (FDI) concentrated primarily in oil and gas and other natural resource extractive industries. Now the goal is to maximize the economic development benefits of that FDI. In the case of Kazakhstan, this means getting more than just tax revenues and direct employment benefits. There is a ceiling to the required payments oil companies are will to make for their license to operate, whether in the form of taxes, social programs, or uneconomical local content development. Thus, the government of Kazakhstan must decide how to balance these payments, but should expect that more pressure in one area will lead to less focus by oil companies on other areas. However, the benefit of the oil industry to Kazakhstan is not limited to these required payments. If local companies can become competitive with their international counterparts, they will win contracts on the basis of cost and quality. If there is a business case for sourcing content locally, Kazakhstan will benefit both from required payments and contracting to local companies over and above these payments.

This means ensuring that Kazakh workers, managers and enterprises have the skills and capability to provide high wage, high value added goods and services both to foreign investors and to such dynamic Kazakh firms as KazMunaiGaz. If Kazakh companies can supply high value added goods and services to global firms operating in Kazakhstan, there is no reason why they cannot also supply similar goods and services to firms operating in the greater Caspian area as well as throughout the world. In other words, Kazakhstan should strive to become a global supplier of knowledge-intensive value added goods and services to the global extractive industry—a specialization which can endure long after local oil and gas resources are depleted. Houston, for example, remains a center of the oil industry even though East Texas oil fields were depleted decades ago. This paper will explain how this can be done.¹

Backward linkages between multinational companies and local suppliers are increasingly recognized as one of the key channels for dissemination of benefits from FDI into a local economy. Backward linkages will be crucial in enabling Kazakh enterprises to participate in a wider range of activities in the energy supply chain, supplying both foreign investors and leading Kazakh companies, particularly KazMunaiGaz. Foreign direct investment in upstream oil and gas projects creates opportunities for local economic development, particularly through linkages that fill gaps in the energy value chain. By providing an environment that enables Kazakh firms to become competitive throughout the oil and gas value chain, and by helping Kazak firms to adopt business practices and technologies that can be applied outside of the oil and gas sector, linkages between oil and gas projects and local suppliers can be a major catalyst for local and

¹ The World Bank has done similar work on other parts of the world, most notably, *From Natural Resources to the Knowledge Economy*, which looks at these issues with regard to Latin America and the Caribbean.

national economic development.² They will also ensure that a larger portion of oil and gas spending goes to Kazakh firms, except that this will be achieved through market friendly mechanism rather than administrative means.

Not only is there a need to build linkages between international oil companies (IOCs),³ the national oil company (KazMunaiGaz—KMG), and local firms, but local firms also need to move up the value chain into higher value-added activities. As is the case to foster competitiveness of firms in any sector, this fundamentally requires:

- A friendly business environment in which local firms can be set up and operate under low administrative costs and red tape.
- Strong competition between local firms, and between local firms and similar foreign firms, to ensure that only the ‘fittest’ survive.
- Exit, as some local firms will naturally have to go bankrupt while others will grow and prosper and even conquer markets in neighboring countries

However, the focus of this paper is not on the above fundamental preconditions, but rather on the types of technical assistance that the authorities could provide to ensure that some firms will adopt the business and management practices without which they will be unable to apply effectively either the technology they currently possess or technology that they might acquire in the future. Today, many Kazakh firms lack the capability in terms of both technical and business processes to access IOC and KMG value chains, and selected technical assistance will give them the capacities that they need to build linkages. While technical assistance and building linkages with IOCs and KMG are not synonymous processes, they are mutually reinforcing, as greater capability enables firms to win oil company tenders, while the experience of working with oil companies enhances the capability of firms.

This note focuses on upstream oil and gas production because this is where there is the greatest investment and the greatest opportunity for supplier development. Supplier development would help Kazakh companies supply such upstream goods and services as:

- Pipe laying.
- Pipe and valve production.

² This paper focuses on means of developing backward linkages between multinational producers, in this case oil companies, and local firms. However, these backward linkages can also lead to forward linkages, in which a firm has begun to produce a product as a result of backward linkages begins to also supply that product to other sectors of the economy, in this case outside of the oil and gas sector. For example, an oil company that wants to construct a pipeline trains a local firm to do high-skilled precision x-ray welding, a backward linkage. After welding for the oil company, this firm goes on to provide x-ray welding for other sectors of the economy, say manufacturing, a forward linkage out of the oil and gas sector. This later interaction, where a backward linkage from the oil and gas sector brings a technology into the economy which can then be used outside of the oil and gas sector is one crucial way of ensuring that the economy remains diverse despite growth in the oil and gas sector. Through the backward linkage, the oil company has reduced the cost of precision welding to local companies in all sectors, which should make those sectors that utilize this technology more competitive.

³ ‘IOCs’ refers only to international oil companies, while ‘oil companies’ refers to both Kazakh and international oil companies. ‘Operator’ refers to the oil company or oil companies that operate the field. TengizChevrOil for example is operated by ChevronTexaco, although a number of other oil companies also own a share of the project.

- Heavy machinery.
- Offshore equipment.
- Downhole equipment.
- Oilfield services.
- Civil engineering and civil construction.
- Petroleum engineering research and development.
- Geological services.

Kazakhstan already has a workforce and a number of companies serving IOCs and KMG with competence in high value areas, like precision welding and reservoir modeling. High transport costs for equipment (and even human personnel) mean that oil companies have a strong incentive to procure many goods and services locally, if they could be produced economically—but most fundamentally up to world standards—by local firms. Local content development works best if local firms are internationally competitive (i.e., have a proven record of exports) and oil companies see a strong business case to procure from local firms independent of local content requirements.

II. OBSTACLES TO DOMESTIC SUPPLY INTO THE OIL AND GAS SECTOR IN KAZAKHSTAN

In Kazakhstan, as in many oil producing countries, there are five major obstacles blocking local firms from becoming suppliers to the oil and gas sector:

1. *Dominance of global over local chains.* International oil companies (IOCs) prefer to deal with their global suppliers for a number of well justified reasons (including the fact that they do not have the infrastructure to deal with small suppliers in many countries). For cost-savings reason, they are reluctant to break these supplier relationships in order to source locally in each country where they operate. Kazakh firms will need to offer sufficient value, in terms of local expertise and cost, if they want to have a chance of breaking into these supplier relationships. As explained below, forming ties with global suppliers is one way in which many Turkish firms have themselves become global suppliers. In Kazakhstan, for example, Enka, one of Turkey’s largest construction companies, has formed an alliance with Bechtel, a key global supplier to ChevronTexaco, to supply the TengizChevrOil project.
2. *Difficulty identifying where to enter the value chain.* IOCs often contract project management and award major service contracts to specialist firms like Parsons, Fleur, and Daniel (PFD), Schlumberger, and Halliburton whose reputation and capital will guarantee a sound product or service. These are normal practices for the oil and many other industries for which the reputation of a supplier (to provide quality goods and services in a timely manner and following strictest environmental and working standards) is of essence. The best option for local companies is usually to become a supplier to a supplier, not directly to an oil company. In the case of drilling fluids, for example, IOCs operating in Kazakhstan source the bulk of their drilling fluids from M-I Drilling Fluids, an international firm. As shown in Figure 1, Kazakh firms often try to access the upstream value chain by appealing directly to IOCs, while it would often be easier to access the value chain by going to PFD, Schlumberger, or M-I, as the case may be. For example, the Kazakh Institute for Chemical Sciences unsuccessfully bid to supply

TengizChevrOil (TCO) with corrosion inhibitors, despite the fact that the Kazakh corrosion inhibitor was cheaper than its international counterpart. The Institute would likely have been much more successful had it approached an international supplier of oil field chemicals, like M-I. GYPS, an Aktobe producer of barite, another oil field chemical, was able to enter the value chain by selling directly to M-I.

3. *Information gaps.* It is often difficult for many oil companies, both international and Kazakh, to identify and assess the suitability of Kazakh suppliers as these have very short track record (reputation) or equity to back up their offers. At the same time, it is also difficult for Kazakh suppliers to know about opportunities to supply goods and services to IOCs and KMG. This lack of information on both sides prevents suppliers from identifying projects for which they might bid and makes it both costly and difficult for oil companies to identify local contractors.
4. *Standards.* Standards of quality and safety are major concerns for oil companies. Accordingly, oil companies are often hesitant to source from a local firm that has not been granted international certification, like ISO, API, or ASME, regardless of the quality of the firm's work. Insurance requirements and concerns for the environmental integrity of the work, among others, motivate oil companies to source only from internationally certified suppliers.
5. *Safety and Environmental Concerns.* Local firms need to be able to accommodate IOC and KMG concerns about safety and working practices, including environmental working practices, as no operator can afford human or environmental accidents. TCO, for example, requires that all personnel, whether local or international, have three weeks of training in safety and business practices before entering the TCO site. This requires that local contractors working on the site maintain continuity of personnel, as all new personnel will be required to undergo this training to ensure that they meet TCO's standards for health, safety, and environmental protection on site.
6. *Difficulty finding highly skilled local labor.* Highly skilled labor often is not available locally, particularly engineering and management skills. This hurts local companies in two ways. On the one hand, they may have difficulty finding engineers in the country who are qualified in the technical disciplines needed to supply the oil and gas sector. On the other hands, it raises the price of skilled labor. When a particular skill is in short demand, workers with this skill will demand higher wages and are more likely to be poached by firms looking for the skill. In such a situation, training workers has a high cost to firms, as they may have difficulty retaining these workers. As such, scarcity of skilled local labor both imposes greater costs on local firms and provides an incentive for firms to train as few workers as possible.

III. A THREE-PRONGUED STRATEGY TO FOSTER COMPETITIVENESS OF SUPPLIERS TO THE OIL AND GAS INDUSTRY

As suggested earlier, a number of changes will need to be enacted to foster competitiveness of local suppliers to the oil and gas industry. This section leaves aside the general but important preconditions (e.g., ensuring competition, and improving the overall business environment for

firms in any industry) and focuses on three fundamental pillars to **promote** suppliers to the oil and gas industry:

- Training and skills for Kazakh workers irrespectively on whether they work for a supplier or an operator.
- Rules and regulations on local content imposed on operators.
- Best practice supplier development programs.

In all the three areas, cooperation between key stakeholders, particularly business and government, is crucial, as it is necessary to ensure that new program effectively benefit the local firms that they are intended to help without imposing unnecessary costs on oil companies. Moreover, engaging with businesses can help to identify many of the small measure that might be taken to help local firms. These three pillars are mutually reinforcing and any one, or even two, of them alone are not likely to be effective. Successful local firms need high caliber staff, a favorable business environment, and supplier development programs that enable them to achieve international certification. There are several key challenges in each of these pillars:

a. Training of a Kazakh cadre of specialists

Kazakhstan needs a cadre of local specialists to support the oil and gas industry. These specialists need both the business skills necessary to run local suppliers and interface successfully with oil companies and the technical skills to use and apply international oil and gas technologies. Training this cadre of specialist will require strong academic institutions in disciplines relating to oil and gas, strong connections between these academic institutions and business, and opportunities for Kazakh professionals to work with their international counterparts, both in Kazakhstan and abroad. It is beyond the scope of this paper to assess how much of this infrastructure is already in place, or is beginning to be put in place, and only needs fine-tuning.

Strong academic institutions in areas like petroleum engineering, geology, and business studies are crucial to train local professionals. Kazakhstan inherited strong institutions of basic science from the Soviet period. These disciplines remain strong, including those in sciences relating to oil and gas, like geology and chemistry. However, assessments made by the World Bank in other CIS countries suggest that this infrastructure lacks the fundamental links with industry. Also based on the World Bank experience in other republics, it is likely that Kazakh institutions lack experience with international equipment and standards, and that courses in petroleum sciences do not incorporate the latest international best practice. As such, training and education programs need to be developed in applied technical subjects, like petroleum engineering and petroleum geophysics, which incorporate the latest international processes, theory, and technology.

Working alone, however, academic institutions will fail to adequately address Kazakhstan's training needs. More and stronger linkages are needed between academia and the business community. Such linkages would enable universities to offer courses of study that produce candidates who meet the needs of oil companies and would help universities participate in the research and development processes of oil companies. Oil production in Kazakhstan, particularly offshore production, poses major technical challenges that will require new research and development to solve. Both Venezuela and Norway have derived benefits from their natural resource endowments by ensuring that a portion of the research and development needed to cope

with their unique geology was done locally. In Norway, new techniques for offshore gas extraction were developed, while Venezuela developed *oriemulsion*, a new technology for exploiting its heavy crude reserves. Kazakhstan could do similarly for the shallow water offshore drilling technology needed in the North Caspian. Kazakh academic institutions can play a role here by doing the research necessary to solve these problems and training the engineers who will apply that research.

Academia, however, is only one part of the training picture. It is also important that Kazakh professionals have the opportunity to work alongside international specialists both in Kazakhstan and abroad, learning from them as they work. Kazakhs can benefit hugely from the international work and training experiences available to employees of international oil companies. Foreign direct investment by international oil companies opens a wide range of international on the job training opportunities to Kazakh professionals that will enable them to learn international best practice and then apply it in Kazakhstan.

Norway has been particularly successful in such training programs. Norway has a policy of promoting centers of excellence in offshore technology and has encouraged oil companies to collaborate in R&D projects with Norwegian firms. Norway has recognized that a highly skilled workforce in petroleum sciences is a crucial prerequisite for growth of local firms in the oil and gas sector.

b. Rules and Regulations regarding local content

Kazakhstan needs to ensure that its rules and regulations for the oil and gas industry facilitate local content growth. Incentives to international companies to invest in Kazakhstan must not disadvantage local companies nor go beyond industry standards for operators. Rather, rules and regulations should be designed to provide incentives so that oil companies will look for local suppliers as part of their operational work rather than as an add-on administrative requirement. In order to do this, local content requirements should be stable and predictable throughout the lifetime of each project. Stable and predictable rules and regulations encourage oil companies to invest time, effort, and money in developing new processes to encourage local content. Today, Kazakhstan's rules and regulations:

- Provide disincentives for IOCs and KMG to use local firms in many areas.
- Are excessively administrative in nature, and create significant room for bargaining and disagreements in interpretation between companies and regulators.
- Are unstable—this is a corollary of the above point, as there is significant room for interpretation.
- Lack transparency—Local companies do not know about the potential opportunities, particularly local content requirements, that a given PSA has provided to them, and must resort to government administration to find out. When local companies do bid for contracts, opaque decision making processes at oil companies hinder their ability to learn from failed bids.

Disincentives to oil companies. The analysis in this paper is far from exhaustive and focuses on two key disincentives that increase the cost contracting from local firms:

- Exemptions on duty and VAT for imports, but no similar benefits to local firms. IOCs procuring with such contracts find that they must pay VAT on locally procured content. As such, a locally available product will be 15-20% more expensive for many international oil companies than an imported product. While some VAT reimbursement programs have been introduced to address this problem, both IOCs and local suppliers feel that this is a serious impediment to growth in local supply.
- The need for local companies to satisfy separate local and international standards. Kazakh standards differ from international standards, forcing Kazakh manufacturers to design goods and services that both meet the Kazakh standards required by the government of Kazakhstan and the international standards required by its customers. As such, the divergence between Kazakh and international standards imposes an additional cost on Kazakh companies as compared to its competitors elsewhere in the world.

Removing these disincentives would bring Kazakhstan in line with international best practice. Nearly all major resource holders allow companies to work to international standards, particularly in the oil and gas industry. The United States, Norway, the Netherlands, Canada, and the United Kingdom all accept international standards. As for taxation, best practice in any industry is to treat international and local companies the same, though some major resource holders give tax incentives to local companies. Kazakhstan appears to be unique in having a tax structure that explicitly disadvantages local companies.

Excessively administrative rules and regulations. Kazakh rules need to be simplified. Today, rules and regulations in Kazakhstan are overly complicated and heavy on administration and bureaucracy. Work permits are an excellent example. In many countries, a quota will be established for a particularly type of skill that cannot be found in the country and then visas will be issued automatically to those who have this skill. Such a system is used, for example, in Russia. In Kazakhstan, on the other hand, the need for a worker is individually assessed for each work permit, significantly complicating the process of bringing workers into the country. This is just one example of how existing rules and regulations might be simplified. Simplifying rules and regulations will make them more predictable, as the outcome of, for example, an application for a work permit, will be easier to predict. This will lower risk for oil companies and make it easier for them to plan into the future and invest in customized processes to meet Kazakhstan rules and regulations.

Stability will help to promote local content. Greater stability of rules and regulations is also necessary in Kazakhstan. Major oil and gas projects often have local content requirements stated in their contracts and further local content requirements have been introduced through legislation. Moreover, implementation and interpretation of these requirements have varied. In practice, this makes local content requirements unclear and unstable. In this unstable situation, oil companies are hesitant to invest in major processes to facilitate local content growth.

The Kazakh government can further incentivize oil companies to invest in local content by implicitly linking successful local content development in current projects to winning future contracts. In many countries, operators who have performed well on local content on existing projects will be more likely to win projects. This is not done through a specific administrative mechanism, but rather informally. Given that each project is bid for by a different consortium, it is impossible to develop a mechanistic rubric (e.g. which one of the six owners of TCO would

get the credit in a bid for TCO's efforts?). However, if local content regulations are stable, the government can clearly signal to oil companies its emphasis on local content. If oil companies are then convinced that their performance on local content issues in current contracts will help them to win future contracts, they will see additional positive benefits from investing in local content. In Norway, for example, it is informally, but explicitly understood that future licenses will be granted in part on the basis of current performance in local content development of the companies bidding for license on their other projects in Norway.

Lack of transparency prevents local firms from going directly to oil sector value chains and from learning from their mistakes. Local content requirements of PSAs are not published, and oil companies' plans to meet their local content requirements also are difficult to access. As such, local companies do not know what opportunities a particular PSA affords them, nor whether there are any special provisions for the oil company meeting those requirements that might help local companies access the oil company's value chain. As such, local companies are often forced to use the government as an intermediary between themselves and oil companies, rather than approach oil companies directly. Great transparency of local content requirements and oil companies' plans to meet them would help to remedy this situation.

Moreover, decision making processes at both international and Kazakh oil companies are not transparent. Oil companies are not required to make local firms aware of why their bids have not succeeded. When a local firm loses a tender, it learns neither why it lost the tender nor how much it might need to improve to win such tenders in the future. As such, local firms do not know where they need to improve in order to improve their ability to win contracts. Moreover, lack of transparency makes decision-making unpredictable, making it difficult for local firms to predict how upgrading their capabilities will affect their ability to win contracts. Just as instability of local content requirements prevents oil companies from investing in processes to bolster local content, opaque and unpredictable decision making processes at oil companies prevent local firms from identifying and addressing key areas for improvement.

c. Supplier Development

There are three major areas that a supplier development program should address. First, few Kazakh firms have received the international certifications necessary to work for IOCs. IOCs are often unable to employ local firms that have not received international qualification because they are concerned about quality and also have insurance policies that require that subcontractors be internationally certified. Second, Kazakh firms also need assistance with business practices. Many Kazakh companies are lacking in business and management practice and need assistance in these areas. In Azerbaijan, the BP Enterprise Centre goes so far as to explicitly separate two different work streams—one looks at capacity building and focuses on certification and training while the other looks at business assistance, chiefly identifying opportunities for local supply and offering ad hoc assistance in response to particular needs. Third, oil companies and local suppliers often lack information about one another. Many Kazakh firms do not know how and where to integrate into the supply chains of oil companies, while oil companies lack information about local firms and their competencies.

Helping local firms become internationally certified requires structured programs to identify firms for technical assistance and target that technical assistance to key areas for improvement. For example, the Czech government introduced a Pilot Supplier Development Program in the

electronic industry in 2000-2002 to spread benefits of incoming FDI to the rest of the economy. The Czech program worked jointly with local firms and transnational corporations (TNCs). A survey was conducted of local firms and TNCs, which showed that local firms and TNCs identified different areas as important for technical assistance. In particular, while local companies thought that their greatest deficiencies were technical, TNCs identified deficiencies in business and management practices. Thus, it was found that local companies did not understand the needs of TNCs. Once local companies did, they could identify those areas in which they needed to improve. The government organized a series of seminars to help the firms improve in certain areas, and there was intensive management training given to these firms, with experts visiting these firms to help them develop concrete improvement strategies. Then a small subset of the most successful firms was given intensive training to improve them further. The program was successful in helping firms get more contracts in the long term.

Meanwhile, assistance with business practices is often needed in both a structured manner and on an ad hoc basis, in response, for example, to the announcement of a particular tender. In Azerbaijan, the BP-funded Enterprise Centre has run a successful series of seminars, under the broad heading, “How to do Business with Oil Companies,” which cover topics ranging from the IOC bidding process to steps to ISO certification.⁴ The Enterprise Centre coordinates its training programs with a range of development organizations like the German development agency GTZ and certification bodies like Moody International. The Enterprise Centre also provides targeted assistance to individual firms. The Enterprise Centre begins by assessing the suitability of a firm to supply the oil and gas sector. If the firm is suitable to supply this sector, the Enterprise Centre identifies particular areas where the local firm would benefit from technical assistance. These needs are then addressed both through customized technical assistance and the regular seminars discussed above. Once the firm is judged able to successfully complete projects, the Enterprise Centre will identify tenders that the firm might be able to win. The Enterprise Centre will walk the firm’s management through the tender process, providing assistance with both technology and business processes necessary to complete the tender. These programs have been successful in linking more firms into oil and gas supply chains, upgrading the technical capabilities of local firms, and supporting innovation by local firms.

Both sorts of assistance help local firms better understand oil companies and would assist local firms in promoting themselves to oil companies. Once local firms understand the importance of promoting themselves, they will begin market themselves to oil companies on the basis of the certifications, competencies, and past work. In the best case, this information will go directly to the databases of local firms that oil companies use to identify suppliers.

Finally, it is important to bear in mind that technical assistance, technology upgrading, and supplier development are about more than technology acquisition. That is the hardware side of the equation and it is undoubtedly important. But even more important are managerial competence, planning, quality control, skill development for workers, and assistance identifying where to integrate into energy industry supply chains. Academic work on Kazakhstan and Azerbaijan suggests that successful and unsuccessful local suppliers are differentiated not by their technical capabilities but by the quality of their management and business processes. Technical assistance programs thus should focus on these areas.

⁴ In May 2004, for example, the Enterprise Centre plans the following seminars: “ISO 9000 Internal Auditor course” on May 10-14, “First Steps of the process owner and his staff” on May 17-21, “Engineering methods in quality management” on May 31-June 4, and “ISO 14000 Internal auditor course” on May 31-June 4.

IV. RECOMMENDATIONS

Today, the Kazakh government mandates local content targets for companies IOCs, but does little to help local firms become qualified suppliers to oil companies. International experience suggests that these requirements will only build competitive, sustainable firms if these local firms are given help in identifying, competing for, and executing projects. The Kazakh government should work with investors and local firms to ensure that local firms can supply the goods and services required by IOCs and leading Kazakh companies. This change is illustrated in Figure 2, and this note is designed to show how this change can be accomplished. Thus, these recommendations seek to increase local content not through administrative fiat, but by making local firms more competitive, thereby enabling them to win more supply contracts. In fact, if they become qualified suppliers, they would be able not only to win contracts in Kazakhstan, but also in the Caspian region more widely.

In order to improve these three key pillars, this paper offers a number of recommendations. The recommendations outlined below do not require Kazakhstan to establish new institutions or change the mission of existing organizations. In this respect, the recommendations are explicitly designed to complement and help implement the economic development programs recently approved by the Kazakh government. It is important to stress that the recommendations outlined below should be viewed as a package. Each recommendation is designed to reinforce the others. Therefore, implementing one recommendation without the others will not be as effective as implementing the entire package. For example, the process of integrating supplier databases (Recommendation 12) will help to identify firms to participate in supplier training programs (Recommendations 13 and 14). These firms, in turn, will benefit significantly from the training opportunities afforded by working side-by-side with expatriate specialists (Recommendation 3) and sending their engineers for advanced training (Recommendation 1).

a. Training Opportunities for Kazakh Professionals

Recommendation 1. Kazakhstan should develop a center of excellence in petroleum engineering. In particular, this center should focus on the major technical innovations needed to address the problems of offshore oil production in the North Caspian. This center of excellence should work both with international centers of excellence, like Imperial University, the University of Texas, and Delft University, and with international experts in the private sector, including both IOCs and service companies.⁵

Off-shore North Caspian production is technically difficult. Some of the best operators in the world have already needed to engage in major innovation in production technology to extract hydrocarbons from the North Caspian Kashagan field. The geology of the Caspian suggests that future North Caspian fields will be similarly technically difficult. As KazMunaiGaz will likely operate a future North Caspian offshore PSA, it will need to develop the necessary technical expertise to complete such projects. This expertise could be garnered both through the training opportunities described in Recommendations 8 and 10 and through the development of a center of excellence in advanced petroleum engineering research. This center could be developed on the basis of existing petroleum engineering and oil and gas institutions.

⁵ This Center of Excellence would complement the World Bank's technology commercialization proposals.

Recommendation 2. The Kazakh government should consult with oil companies and major contractors to determine whether Kazakhstan's current cadre of engineers meets their needs. If not, Kazakhstan should develop an engineer retraining program in cooperation with major Kazakh educational institutions and oil companies to bring Kazakh engineers up to international standards.

This program is modeled on one that the U.S. Civilian Research and Development Foundation is implementing in Sakhalin to retrain Russian engineers. In such a program, oil and gas companies will be consulted to determine their specific engineering needs and in what areas Kazakh engineers fail to meet these needs. Representatives of other industries will also be consulted to ensure maximum synergies with other sectors of the economy. The Kazakh government should then identify opportunities for training by international experts both on-site and in leading technical institutions.

Recommendation 3. The Kazakh government should ensure that Kazakh personnel and companies gain technically from working with IOCs, international service companies, and international contractors. Existing requirements to replace many expatriate positions after two years should be augmented to ensure that technology transfer also takes place in projects of less than two years. International investors should be allowed to bring more expatriate personnel into Kazakhstan in return for sending Kazakh personnel abroad for international training.

Kazakhstan's current program to replace expatriate specialists with local personnel has had major successes. The program can now be taken two steps forward. On the one hand, work permits for expatriates should be tied to training of Kazakh personnel on projects of all lengths. The current regulations have no bearing on projects of less than two years, which include many of the second tier projects illustrated in Figure 1. Given the short duration of these periods, it would be most advantageous if skills were transferred directly to local partners by, for example, having expatriates work side-by-side with their counterparts in Kazakh partner companies. For example, personnel working in core analysis at KazakhCaspiShelf, a local company, successfully learned new techniques and adopted new technologies by working side-by-side with their counterparts at TCO and CoreLabs, an international core analysis contractor. Such joint work also has the added benefit that Kazakh engineers are more likely to know what is available in country and, as such, design to locally available standards (Recommendation 9).

On the other hand, IOCs should be incentivized to offer greater international training opportunities to their own Kazakh personnel as well as the personnel of their Kazakh partners. This could be easily accomplished if IOCs were allowed to bring one additional expatriate into Kazakhstan for each Kazakh sent abroad for training.

b. Rules and Regulations

VAT

Recommendation 4. The Kazakh government should consult with oil companies and local suppliers about the most efficient way eliminate the penalty against local suppliers that is created tax and duty exemptions for imports by most oil companies.

The current operation of the tax code creates a bias against local suppliers. Imports by most oil companies are often tax and duty free, while procurement from local suppliers includes taxes and duties. In some cases oil companies are entitled to reclaim these costs, but this process is convoluted, not transparent, and unreliable. Accordingly, a great many companies, including both oil companies and contractors, feel that the current tax code is, in effective, a 15-20% penalty on local suppliers. The government ought to rectify this problem to eliminate penalties against local suppliers.

Local Content Requirements

Recommendation 5. The Kazakh government should require that all future PSAs be public, particular local content requirements in PSAs.

Local content requirements should be published. Oil companies should make their plans for meeting these requirements public. Local firms should then have an opportunity to offer their services to the oil companies based on these local content plans. This whole program should be designed in partnership with oil companies. This should be done in a public forum and linked to the supplier development programs described below, so that this becomes part of a comprehensive program to build up the local supplier base for the production and supply by Kazakh firms of higher value-added goods and services. In Azerbaijan, PSAs have been published, which has led local firms to approach IOCs directly about their local content plans.

Recommendation 6. Oil companies feel that local content requirements fluctuate, making it difficult for them to invest in significant processes and facilities to meet these requirements. Therefore, local content requirements should be stated contractually (e.g. in production sharing agreements (PSAs)), not legislated, and should be fixed in content, interpretation, and implementation.

Oil companies are more likely to develop and commit resources to developing local content if these requirements are mandated in PSAs. Because PSAs are fixed throughout the period of the project, oil companies can develop long term strategies to meet these stable targets. Local content requirements are incorporated into the PSAs of major projects in Azerbaijan, which are then published (Recommendation 5). This has led oil companies there to invest in processes, like those in Recommendations 8 and 9, and permanent institutions, like those described in Recommendation 11, to promote local content.

Development of a Caspian regional market for Kazakh oil and gas services

Recommendation 7. Kazakhstan should work with the other Caspian littoral states to develop a trans-Caspian market for oil and gas equipment and services. This might, for example, include a regional agreement to treat all content in the region as

local, opening the benefits of a larger local market to suppliers throughout the region, regional trade fairs to develop trans-Caspian business linkages, and a pan-Caspian supplier database, building on the Kazakh databases described in Recommendation 12, below.

Kazakhstan's Caspian location is also favorable for the growth of local content, as it allows the possibility of developing a trans-Caspian market for many oil field services and equipment. Azeri, Iranian, and, eventually, Russian upstream oil and gas projects demand many of the same inputs as Kazakh projects, and the capabilities of the three countries are largely complementary. This would allow Kazakh companies to access consumers in all of the Caspian littoral states and would reinforce the success of those Kazakh firms, like the ChevronMunaiGaz polyethylene pipe plant, which already supply outside of Kazakhstan.

Oil company processes

Recommendation 8. The Kazakh government should work with oil companies to encourage the implementation of bidding processes that help local firms.

When possible, oil companies should use bid processes that facilitate local content. Oil companies can help local firms by announcing tenders as early as possible and, using the supplier databases in Recommendation 12, giving technical assistance to local firms in preparing bids. In the event that a local firm's bid is unsuccessful, the oil company should give extensive feedback on the failed bid, enabling the local firm to understand where it needs to improve. The firm could then look to the Oil and Gas Enterprise Development Center described in Recommendation 11 for technical assistance to help it improve in these specific areas. The government of Kazakhstan should work with the oil companies to encourage them to adopt these procedures.

Recommendation 9. The Kazakh government should work with oil companies to encourage the use of design processes that help local firms.

When possible, oil companies should design to locally available standards. For example, if a 15 minute fire resistant wall can be produced locally, but a 1 hour wall cannot, oil companies should consider whether a 1 hour wall is necessary. Similarly, local companies are more likely to be able to supply a pipeline to an offshore installation if that installation is served by a pipeline welded onshore and then pulled to the installation, rather than one welded in place by a lay-barge. In both cases, local companies can supply a less technologically intensive input which may be equally suitable for the application. Having local engineers working side-by-side with IOC counterparts (Recommendation 3) will encourage this as they will have had more experience working with locally available standards.

Standards

Recommendation 10. The Kazakh government should accept international standards as equivalent to Kazakh standards so that companies producing to international

standards do not have to engineer products to meet both Kazakh and international standards.

Kazakhstan currently continues to develop the Soviet-era GOST system of standards. As such, Kazakh standards do not match international standards. Kazakh companies designing to international standards must, therefore, ensure that their products also meet Kazakh standards, which imposes a significant cost on local firms. For example, Belkamit, a successful producer of pressure vessels and heat exchangers for oil companies in Kazakhstan, must design equipment that meets both the international ISO and ASME standards that its customers require and local standards. Belkamit would be able to design at lower cost and more quickly if it could do so only to international standards. Taken together with Recommendation 9 above, that IOCs try to use locally available standards when possible, we see that two things need to happen in parallel. On the one hand, companies need to try to use what is available in Kazakhstan. On the other hand, the government needs to start moving to make what is available in Kazakhstan match international standards. Either would help on its own, but both together would have the greatest impact.

c. Upgrading local firm capacities

Recommendation 11. Kazakhstan should establish an Oil and Gas Enterprise Development Center which will implement the following recommendations to ensure maximum synergies between them and give both oil companies and local firms a one stop shop for local content development. This institution can both run structured technical assistance programs and offer ad hoc advice to local firms, particularly about business processes.

Some local firms have had difficulty growing because they do not understand the range of options available to them. Firms need to have easy access to the full range of available technical assistance, and a single institution ensures this. Moreover, firms often need specific advice about business development that does not fall clearly into an existing technical assistance program. In one case, a local core analysis firm, KazakhCaspiShelf, unable to raise sufficient capital for technology upgrading, went into a joint venture to finance purchases of new equipment. However, KazakhCaspiShelf would not otherwise have sought an international partner. There have been significant strategic disagreements between the partners that have hampered the growth of the firm. KazakhCaspiShelf would have been able to avoid this disadvantageous partnership if KazakhCaspiShelf had had advice both about other ways to raise capital and about establishment of joint ventures.

Recommendation 12. The Kazakh government should work to integrate the supplier databases currently being developed and used in the public and private sector.

Today there are two government agencies—KazContract and the Center for Engineering and Technology Transfer—building databases of Kazakh suppliers to the oil and gas sector, as well as a number of private databases developed by oil companies and general contractors. The government databases alone will likely cost more than \$2 million. However, the lack of

integration of these databases limits their value, efficiency, and effectiveness. Consider the following hypothetical example:

A company in Atyrau prequalifies is identified by Parsons, Fleur, and Daniel (PFD) to prequalify for a particular type of welding. They successfully prequalify and complete a welding project for the Tengiz project. This information is now in the PFD supplier database.

Now, the Center for Engineering and Technology Transfer is starting a program to upgrade the skills of welding firms. They look at their database of welding firms, and see this firm, but have no way of knowing that this firm has successfully worked with PFD in the past. Nevertheless, they choose to upgrade the skills of this firm. The Center for Engineering and Technology Transfer database now indicates that the firm has these upgraded skills.

Now, KazContract is looking for a firm to do welding on a KazMunaiGaz project. They look in their database and see this firm, but they know neither that the firm worked successfully for PFD nor that the firm received technical assistance from the Center for Engineering and Technology Transfer. As such, KazContract is unable to differentiate this firm from others in their database on the basis of its successful work with PFD and the Center for Engineering and Technology Transfer.

It is excellent that Kazakhstan has so many databases—at least five major ones—but they need to be integrated to show the whole story of a firm. Integrating these databases will ensure that all firms have access to the full histories of the firms in their databases. As such, it will also give an incentive to firms to invest in new processes and technologies, as this information will be more readily available to oil companies.

Recommendation 13. The Kazakh Government should hold a seminar on supplying the oil and gas sector, commercialization of energy technology, and development of local energy technology. Participants in the seminar should include both local and international participants from business, international organizations, and academia.

This seminar would allow Kazakh companies to learn from international experts and from one another's experiences with technology transfer and upgrading and working with IOCs. The seminar would cover topics such as:

1. International certification.
2. Technology upgrading.
3. Sources of technical assistance.
4. Integration into oil and gas value chains.
5. Oil and gas procurement processes, particularly tendering.
6. Prequalification for tendering
7. Managing start-up companies.
8. Fundamental business skills.
9. Sources of training in fundamental business skills.

Recommendation 14. The Kazakh Government should hold a seminar on supplying the oil and gas sector, commercialization of energy technology, and development of local energy technology. Participants in the seminar should include both local and international participants from business, international organizations, and academia.

The Kazakh government should implement a training program that will do the following:

1. Work jointly with local firms and IOCs.
2. Identify, through discussions with IOCs and site visits to local firms, areas in which local firms will need to improve to meet IOC requirements.
3. Organize a series of seminars open to all local firms in cooperation with IOCs, international certification organizations, and development organizations around the areas identified as needing improvement.
4. Support particularly promising local firms through site visits by foreign experts and extensive management training in areas of particular need.
5. Offer further intensive training to those firms that are most successful in upgrading their technical and business capabilities.

As discussed above, similar programs have been used to great effect in both Azerbaijan and the Czech Republic. The Kazakh economy also has an important layer of firms with potential to become world-class suppliers. But these firms are hindered in their ability to meet that potential without help to overcome the information and skill gaps. The Kazakh government should establish a supplier development program that would bring together the full range of stakeholders, including the government, oil companies, and world class educational, development, and certification organizations.

The World Bank can offer assistance implementing these recommendations. Many of these recommendations are also applicable to FDI in other sectors in Kazakhstan.

Many local companies try to access upstream energy projects at this primary level

This secondary level, however, is often a more effective place to enter the value chain

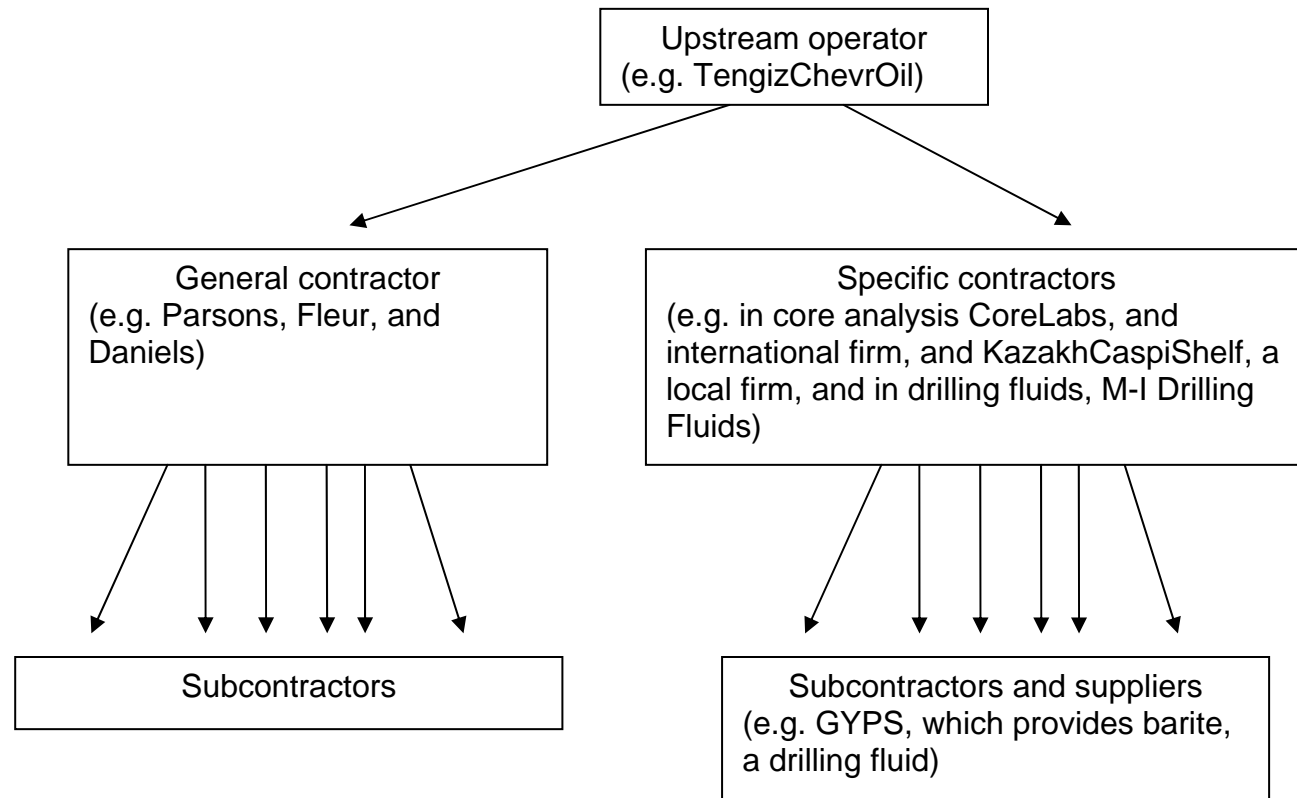


Figure 1: The upstream value chain in detail and where local companies can most effectively integrate.

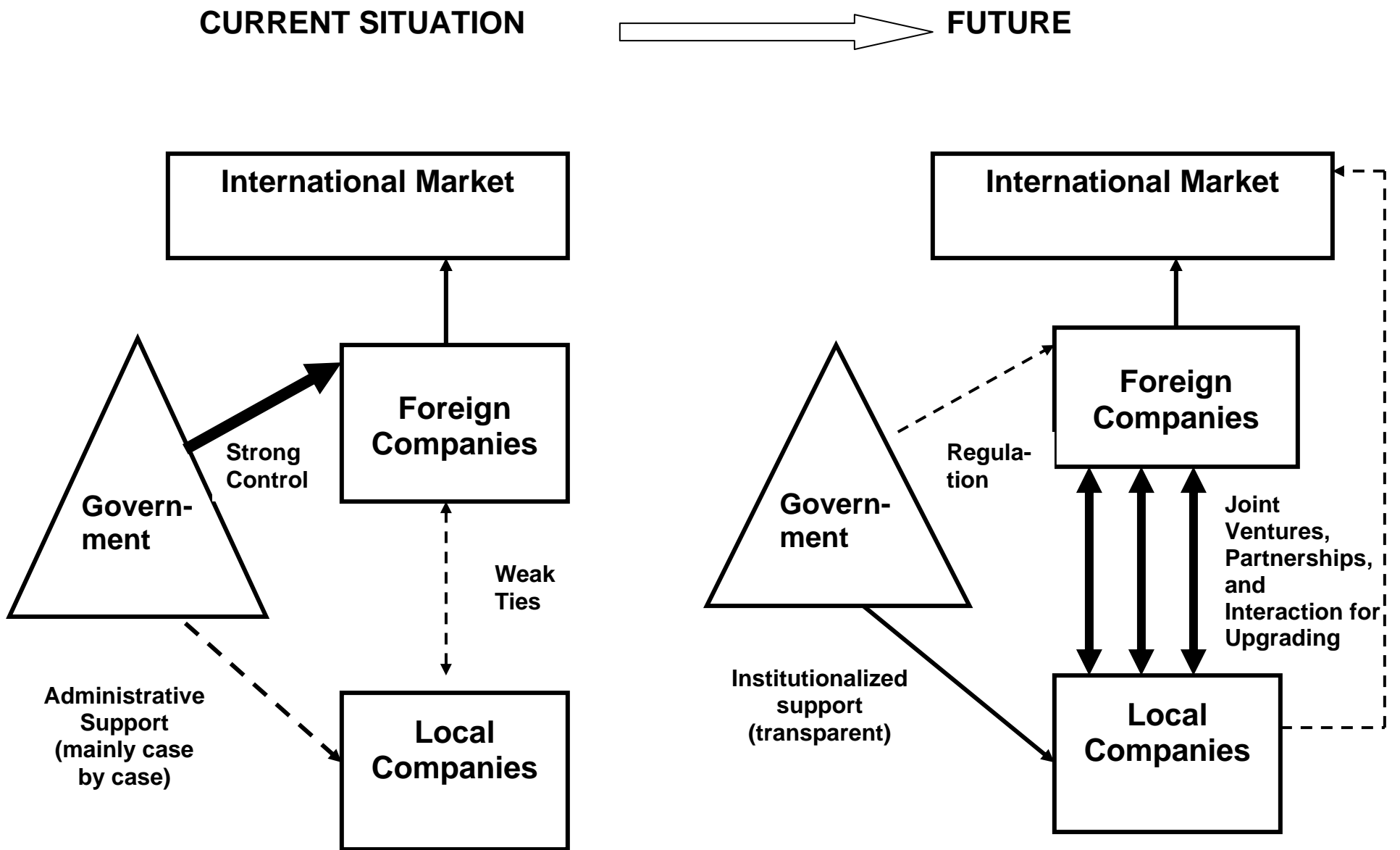


Figure 2: Links between key players in Kazakhstan.