

Oil and gas problems in kazakhstan essay



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Kazakhstan's Oil Supply Chain Management Challenges Kazakhstan is endowed with rich oil reserves, which provide an important source of revenues for stable economic growth and improvement of the country's living standard. This paper addresses the challenge the Republic of Kazakhstan faces in managing its oil supply chain. The country's capacity for refining crude oil is minimal and a substantial portion of that refining capacity is outside the Republic; added to that, most of the pipelines and refineries to export oil to international markets are jointly managed by the Republic and multinational corporations (MNCs).

Thus there are political, technological and financial risks for the republic's oil supply chain. 14 Jay Nathan, The Peter J. Tobin College of Business, St. John's University As in other oil producing nations, Kazakhstan's oil industry revenues directly depend on the worldwide prices for oil and oil products, based on supply and demand; and revenues depend on the cost of production and transporting the final product to customers (Rasizade, 1999). For Kazakhstan's oil supply chain, the physical distribution infrastructure connecting supplies of crude oil to refineries and to the world markets through pipelines, has been challenging and costly.

Moreover, currently Kazakhstan is equipped with only a few ; refineries and therefore the major portion of Kazakhstan's crude oil is being refined in Russia. Recently, China has invested heavily in the construction of pipelines across the Republic of Kazakhstan to supply the increased demand for oil in China. Thus Kazakhstan has to manage political, technical and financial risks in the integration of her oil supply chain (Gaudenzi and Borghesi, 2006; Lockamy and McCormack, 2004). In the era of rapid technological

development and globalization. It is imperative that every nation adapts to such an environment.

Supply chain management has become an important means for sustaining competitive advantage for all successful industries and businesses (Magretta, 1998). The objective of every supply chain, including the global oil industry, is to maximize the overall value generated. The value a supply chain generates [to an organization, or to a nation] is the difference between what the final product is worth to the customer and the effort the

Introduction Kazakhstan has considerable deposits of oil; however, the country faces a serious disadvantage of not having any direct access to the open sea, as the Caspian Sea is landlocked.

While her oil industry's upstream cost, i. e. , the cost for exploration, development and production of crude oil, may be similar to that of most other oil producing nations, its downstream cost, i. e. , transportation of crude oil to the refinery, refining and transportation to markets in particular, is more costly (Sridharan, Canines and Patterson; 2005). For Kazakhstan to transport the oil to world markets, the industry has to depend on pipelines (Cavenagh, 1999) through other countries. Also, maintaining such an operation requires a large number of skilled workers, but Kazakhstan does not have enough of them.

Kazakhstan's Oil Supply Chain Management Challenges 15 supply chain expends in filling the customer's request. For most commercial supply chains, value will be strongly correlated with supply chain profitability, the difference between the revenue generated from the customer and the

overall cost across the supply chain (Chopra and Meindl, 2003; Lee, 2002; Cavinato, 2002). The Republic of Kazakhstan will do well to monitor—especially to sustain growth — the overall value of her oil supply chain in the coming years. because of refinery gain {www. gravmag. com, 2006}.

It is important to note that greater economic rewards can be gained only with well-integrated global oil supply chain management. Oil Production Sharing Agreement and Risks in Kazakhstan The Ministry of Energy and Mineral Resources of Kazakhstan and the Ministry of Fuel and Energy of Russia, periodically set quotas for Kazakhstan's oil flow through Russian territory. For example, on December 25, 2000 the quota for Kazakhstan was set at 17. 3 million tons. The memorandum between Kazakhstan and Russia of October 9, 2000 sets the principle of “ a single route,” whose sole operator is the Kazakh Oil Company.

Annual quotas depend mainly on the political relations between the two nations. Besides politics, there is also a technical risk factor, i. e. , the high degree of pipeline wear and deterioration, which may hamper the effectiveness and quality of services provided to exporting countries. In addition, the lack of proper maintenance of these oil pipelines does exist primarily due to the fact that a large number of well-trained local technicians and engineers who are required are not available to day (Doing Business with Kazakhstan, 2004).

Kazakhstan's oil pipeline systems were built in the '70s {more than 60 percent of oil pipelines of the Western branch, to be exact) and the rest in the '80s {75 percent of the Eastern branch). Thus, at the end of the year

2000, Oil producing countries and global supply chains Energy makes the wheels of global supply chains go round (Bud La Londe, 2006). A typical oil supply chain begins with the crude oil producer, next, the oil moves to the refiner, the transporter, the retailer and finally to the gas pump where a customer receives the product.

The top world oil producers are Saudi Arabia, Russia, the United States, Iran, Mexico, China, Canada, United Arab Emirates, Venezuela, Norway, Kuwait, Nigeria, Brazil, Kazakhstan and Iraq. The Organization of the Petroleum Exporting Countries (OPEC) controls major crude oil supplies to the world. OPEC influences the price of crude oil by setting production quotas. The values {revenue opportunities) are added by processing and chemically changing the crude oil, which is called “ refining. A 42-gallon barrel of crude oil makes about 19 1/2 gallons of gasoline, nine gallons of fuel oil, four gallons of jet fuel and 11 gallons of other products, including lubricants, kerosene, asphalt and petrochemical feed-stocks to make plastics. This adds up to more than 42 gallons Supply chain management has become an important means for sustaining competitive advantage for all successful industries and businesses. Kazakhstan’s Oil Supply Chain Management Challenges 16 55 percent of the pipelines were 10 to 20 years old and 12 percent had been used for more than 30 years.

Only 1 percent has been used for less than 10 years. As time goes by, those pipelines are getting even older and that means not only the risk and cost of maintaining them would be larger, but also the situation presents serious technical problems as well for the Republic of Kazakhstan {Petroleumjournal.com, 2006). form of joint ventures, production sharing agreements and <https://assignbuster.com/oil-and-gas-problems-in-kazakhstan-essay/>

exploration/field agreements. Oil is recovered from 55 fields. The largest of these fields are: Tengiz (some one billion tons of predicted oil reserves); Karachaganak (340 million tons in oil reserves, more than 1. billion tons in gas condensates and more than 1. 3 trillion cubic meters of natural gas); Uzen (with over 1. 5 billion tons of geological hydrocarbon reserves, of which more than 200 million tons are extractable) and Kumkola (with 350 million tons of oil reserves, of which 80 million tons of oil and 75 billion cubic meters of natural gas are proven). The Caspian and Aral Sea shelf also contain significant reserves. Currently, there are only three major refineries in Kazakhstan: Atyrau, Shymkent and Pavlodar (see Exhibit 2). Kazakhstan's Oil Fields and Production

Mangistau and Atyrau oblasts (provinces) are the main oil producing areas in Kazakhstan (see Exhibit 1). They account for more than 70 percent of the total oil extracted in the Republic. The other three extracting regions, Aktyubinsk, Kyzylorda and Zapadno Kazakhstanskaya, account for the remainder. International oil projects have taken the Exhibit 1: Production (in thousand tons) by regions 1998 Crude oil, thousand tons Aktubinskaya Atyrauskaya Zapadno-Kazakhstanskaya Kyzylordinskaya Mangistauskaya 23, 818. 7 2, 640. 8 11, 135. 1 3, 007. 8 7, 035. 0 1999 26, 735. 8 2, 326. 7 12, 359. 3 3, 928. 8, 121. 7 2000 30, 647. 9 2, 701. 1 13, 422. 0 13. 5 533. 8 9, 173 2001 36, 060. 0 3, 405. 3 15, 589. 5 49. 4 6, 172. 8 10, 843. 0 Source: National Statistics Agency of Kazakhstan, 2005 Kazakhstan's Oil Supply Chain Management Challenges 17 Exhibit 2: Design and Delivery Capacities of Major Refineries Plant Design Capacity m In. tons Actual Deliveries min. tons Per month Design thousand tons Actual thousand tons Per day Design

thousand tons Actual thousand tons Shymkent Oil Refinery PavlodarOil Refinery Atyrau Oil Refinery 6. 5 3. 6 2. 3 590 326. 8 189. 5 245. 4 19. 7 22. 6 14 10. 9 6. 3 7. 5 4. 677 418 2. 7 8. 2 Source: National Statistics Agency of Kazakhstan, 2005 • Pavlodar (a foreign investor was given a management concession in 1997; the plant has been under government control since summer 1999) processes mainly light crude from Siberia and supplies the northern region of Kazakhstan; • Atyrau belongs to Kazakhoil, processing heavy domestic oil and supplies the western region; • Shymkent was mostly sold (95 per cent) to private investors in 1996. It processes dedicated crude from the region (Kumkol, Aktyubinsk, Turkmen fields) and supplies the south, particularly Almaty.

Kazakhstan's Oil Production and Distribution Costs A multitude of different schemes exist for dividing oil revenues between the host country and the foreign partner. The usual target for distribution of revenue from production to market is about 85 percent to the host country and 15 percent to the oil company. This ratio can be construed in a variety of different ways with different types of contractual forms; it also depends on the host country's laws and preferences, but in general oil companies target this ratio.

This number has varied over the years. For example, in Saudi Arabia the ratio is much higher in favor of the Saudis due to huge reserves and tower production costs. In the Caspian, the ratio is likely to be lower due to additional transport costs of getting the oil out of the region, i. e. , pipeline construction costs and transit fees and political risks in the area. Part of the problems with signing contracts with Caspian nations has been the nations'

unwillingness to recognize the economic necessity of decreasing the ratio (Feiveson, 1998).

The upstream breakdown of costs is about 10 percent for exploration to find an economical field (odds are about one in 10 holes drilled will hit a commercial-sized field), 80 percent (or higher) to develop the find and 10 percent in continued on pg. 20 The benefits an increased number of properly educated personnel would befor the proper management of the entire supply chain activities are enormous; it is a strategic necessity for the Republic of Kazakhstan to leverage and sustain future oil revenues. Major Oil Pipelines and their Routes Map

Here are the various Kazak pipelines and their routes: Kazakhstan's Oil Supply Chain Management Challenges 18 Exhibit 3: Map of Major Pipelines Oil ptpalin« a Existing) prundw eonsiruClior A Maior Ott nekl RBfinoty » Planntd wunott • • confl ruction 0 Mil« 200 Km 400 Oil Pipelines Infrastructure in Central Asia Source: Adapted from Kazakhstan Oil and Gas International Conference Proceedings, 2002 The major pipelines are identified by the Kazakhstan Ministry of Power, Industry and Trade as the projected priority export routes for oil in the following order: 1.

Atyrau-Samara pipeline: The possibilities for oil exports along the AtyrauSamara oil pipeline are restricted by its throughput capacity and by the quota set by Russia. This is a constraining factor for the growth of both crude oil production and export supplies. To increase the throughput capacity from 10 to 15 million tons per year, a series of technical measures in Kazakhstan and Russia are being taken at a cost of 22 million dollars;

Kazakhstan's Oil Supply Chain Management Challenges 2. Tengiz-

Novorossisk oil pipeline: The Caspian Pipeline Consortium's (CPC) oil export pipeline project is a short-term priority westward.

This project ensures an independent outlet for Kazakhstan's oil exports to the Black Sea and opens up opportunities for the attraction of foreign investments in the oil-and-gas sector. The necessary agreements for the project participants have already been signed and operations initiated; 3. Trans-Caspian pipeline: Planned to follow a route through the Black Sea to Turkey, the Trans-Caspian oil pipeline project is considered to be a priority. The oil pipeline will stretch from Western Kazakhstan to an outlet on the Mediterranean (the Turkish port of Ceyhan) via the Caspian Sea.

The territory of Azerbaijan, Georgia and Turkey creates risks for the project due to the complicated mountainous terrain and water barriers and the need to cross conflict-prone zones; 4. Kazakhstan-China pipeline: Since 2004, in the Kazakhstan section of the Caspian Sea, the volume of the crude oil production has increased. The export oil pipeline of the CPC alone cannot meet the demand for oil transportation infrastructure. Preliminary engineering and economic calculations have shown that an oil pipeline eastward to China is a promising and economically favorable project.

The Kazakhstan-China oil pipeline project can, simultaneously, meet Kazakhstan's national security interests and provide an outlet to meet China's growing demand for oil. The oil pipeline's route will pass over the territory of Kazakhstan and China will guarantee the project funding. The downside of the project is that the People's Republic of China can potentially

control the price paid for the oil; 5. Persian Gulf-Iranian oil pipeline: The Persian Gulf-Iranian oil pipeline provides another possible oil pipeline route to the south.

However, severe competition from OPEC countries can bring about a reduction in the price paid for oil from the Persian Gulf. Consequently, a reduced load on the oil pipeline may occur at some time in the future due to low profitability in that market. No terms for investment mobilization for this project have yet been defined; 6. Arabian Sea-Trans-Asi an oil pipeline: The Trans-Asian oil pipeline via Kazakhstan-Turkmenistan-Afghanistan-Pakistan to an outlet in the Arabian Sea is politically highly risky, since it passes over the territory of Afghanistan.

Currently, consideration is being given to the basic question of how the funding will be organized for the project. Kazakhstan's Oil Supply Chain Management Challenges 20 Exhibit 4: Comparison of Transport Costs per barrel of Kazakh Oil Route Cost to Port \$1. 42 \$1. 42 \$1. 42 Black Sea Tanker Second Pipeline Final Tanker Cost \$1. 23 Total Tengiz Novorossiysk Samsun Ceyhan NovorossiyskBosporus Bypass Turkmenistan – Kharg Source: KazakhOil Report, 2005 \$2. 65 \$3. 46 \$3. 17 \$2. 50 \$0. 40 \$0. 40 \$0. 88 \$0. 59 \$0. 76 \$0. 76 \$0. 93 \$1. 57 operating costs to produce the oil.

Exploration costs are cash expenditures, which include payments for exploration licenses to the host countries. Development costs are capital costs depreciated over time and operating costs pay for themselves with the sales of crude oil production. Downstream costs include transportation of crude to the refinery, refining, transportation of products to market and

marketing. If one were to examine the cost breakdown of a gallon of gas {called petrol in some countries) averaged around the world, from ground to market, the distribution would be approximately:

- 2. percent for exploration
- 12. 5 percent {or more) for production and development
- 20 percent to the host government
- 2. 5 percent for transportation to a refinery
- 7. 5 percent for refining
- 2. 5 percent to transport to market
- 2. 5 percent for marketing
- 50 percent in taxes to the consumer at the pump

For example, the costs per barrel for export of Tengiz oil are: lifting costs (the costs to get crude oil extracted from below surface and bringing it to the ground level) \$2, pipeline costs \$1. 2, transit fee \$3, shipping by oil tanker {including other means) \$1. 23. The total comes to \$7. 65.

Kazakhstan’s Oil Supply Chain Management Challenges

In Kazakhstan the preferred contract form is a joint venture between a foreign firm and a state enterprise, generally KazakhOil, which is the state oil company. In a joint venture both the state enterprise and the foreign venture invest stated amounts of capital, which can take various forms, including physical assets and rights to land. Risk is shared in proportion to capital invested. The amount of control the foreign firm has is usually limited and in some cases joint ventures are little more than contracts for procurement. The usual target for distribution of revenue from production to market is about 85 percent to the host country and 15 percent to the oil company.

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Kazakhstan has two separate pipeline networks: a crude oil pipeline from Western Siberia supplies Pavlodar and Shymkent, while Atyrau runs solely domestic crude from northwest Kazakhstan.

The current pipeline system is fragmented and does not link the east and the west of the country, nor does it move petroleum from oil producing fields in the west of the country to the Pavlodar or Shymkent refineries located in the north and the east. The domestic pipelines capacity will not cope with the anticipated significant volume increases the Republic hopes to be producing in the years to come. At present some of Kazakhstan's production is exported by means of barges to Baku, Azerbaijan, where it is fed into the Azerbaijan pipeline network system and sent to world markets (Rasizade, 1999).

The existing pipeline networks will require large investments, if Kazakhstan is to develop its crude oil and gas potential to the fullest. Kazakhstan's major oil ports are: Atyrau and Aktau ; major oil export pipelines are: Tengiz-Novorossiisk (Russia); Uzen-AtyrauSamara (Russia); the Kenkyak-Orsk (Russia) line that transports oil from the Aktyubinsk fields to the Orsk refinery; and the Caspian Pipeline Consortium (CPC) that transports oil from Western Kazakhstan to the Black Sea at Novorossiysk (Baker and McKenzie, 2002).

Even though the Republic has upgraded its overall educational system, especially the post-secondary curricula, degree offerings and the academic rigor modeling after the Western-type system, there is still a paucity of engineers and technicians to maintain and to sustain the growth of the oil industry. The benefits an increased number of properly educated personnel would be for the proper management of the entire supply chain activities are enormous; it is a strategic necessity for the Republic of Kazakhstan to

leverage and sustain future oil revenues. Current Issues in Global Energy Market

In recent years, demand for energy has surged. This unrelenting increase has helped fuel global economic growth, but placed considerable pressure on suppliers augmented by geopolitics and other disruptive factors. On the demand side, increased energy security and environmental concerns may lead to changes in consuming countries' energy policies. These uncertainties have been reflected in the market through volatility and high prices (Birol, 2006). Daniel Yergin of Cambridge Energy Research Associates Inc. (CERA) during a symposium on “ The Economics and Geopolitics of Russian Energy” at Georgetown University in Washington D. C. n October 29, 2007, forecasted that oil prices are becoming increasingly decoupled from the fundamentals of supply and demand (Yergin, 2007). Policy Implications for the leadership in Kazakhstan Kazakhstan is not a major player in geopolitics. OPEC member states and Russia have political clout in the global energy market. Russia, Kazakhstan's northern neighbor, not only has huge oil reserves on her own, but also Energy makes the wheels of global supply chains go round. Kazakhstan's Oil Supply Chain Management Challenges 22 controls the refining capacities, as well as some of the flows of refined oil from Kazakhstan to world markets.

However, for the young republic, the rich deposit of oil is a blessing; at the same time, it can easily be squandered by mismanagement and bad public policy. Fortunately, in today's global world — armed with first-class business know-how and with lessons learned from other oil producing nations — it is possible for the leadership of Kazakhstan to take a long-term view of proven

crude oil deposits in the Caspian Sea and within the sovereign republic of Kazakhstan. 7. Feiveson, H. (1998). " The Problem of Caspian Energy. " Princeton, New Jersey: Princeton University. 8. Gaudenzi, B. and A. Borghesi. (2006). Managing Risks in the Supply Chain Using Ahp Method. " International journal of Logistics Management, vol. 17, pp. 114-136. www.gravmag.com 9. Lee, Hau L. (2002). " Aligning Supply Chain Strategies with Product Differentiation. " California Management Review, pp. 105-119. 10. Lockamy, A. and Kevin McCormack. (2004). Linking SCOR planning practices to supply chain performance. International journal of Operations & Production Management, vol. 24, pp. 1192-1218. 11. National Statistics Agency of Kazakhstan, 2005. www.petroleumjournal.kz References 1. Birol, F. (2006). " World Energy Prospects and Challenges. The Australian Economic Review, vol. 39, no. 2, pp. 190-195. 2. Bud La Londe. (2006). " Energy Problem Cries for Decisive Action. " Supply Chain Management Review, Vol. 10, Issue 6, pp. 6. 3. Cavenagh, A. (1999, February 24). " Caspian Oil Project Has a Slov^ Road to Syndication. " Project Finance International, pp. 50-51. 4. Cavinato, J. (2002, May June). " What's Your Supply Chain Type? " Supply Chain Management Review, pp. 60-66. 5. Chopra, S. and Meindl, P. (2004). SupplyChain Management (Second Edition). New Jersey: Prentice-Hall. 6. Doing Business with Kazakhstan. (2004). Edited by Marat Terterov. London, England: Kogan Page Publishers. 12. Rasizade, A. (1999). " Azerbaijan, the U. S. and Oil Prospects On The Caspian Sea. " Journal of Third World Studies, vol. XVI, No. 1, pp. 29-48. 13. Report of Baker and McKenzie. (2002, November). CIS Energy Notes. 14. Report of KazakhOil (2005). 15.

Sridharan, U. , Caines, R. and C. Patterson. | (2005). “ Implementation Of Supply Chain Management and its Impact on the Value Of Firms. ” Supply Chain Management, Vol. 10, pp. 313-318. 16. Yergin, D. (2007). “ Oil Market Fever as Prices Near \$100. ” Pipeline & Gas Journal, Issue II, pp. 97-97.