Chapter Six

The Phosphate Cluster: Mining for Opportunities, 2001

Overview

The efficient exploitation of phosphate is considered of paramount importance to the Jordanian mining sector particularly since Jordanian phosphate enjoys a distinct quality, namely the low content of the cancerous element cadmium. The input of the mining sector to Jordanian GDP reached 3% in the year 2000 as opposed to 3.2% in 1999, thereby becoming the fifth largest contributing sector to the Jordanian economy after services, the manufacturing industry, construction and agriculture respectively. The regression the mining sector witnessed in the year 2000 is mainly due to the significant decrease in the volume of phosphate exports for that same year. The value of raw phosphate exports in 2000 amounted to JD 91 million; 8% of total national exports, in comparison to JD 115.1 million in 1999.

Nevertheless, Jordan is considered the sixth largest producer of phosphate rocks worldwide after the US, China, Morocco, Russia and Tunisia. Its reserves are estimated at 943 million tons, which could last for 90 years if annual production averages 5.4 million tons. However, Jordan ranks fourth worldwide in terms of phosphate exports as a result of the US and Tunisia consuming a significant amount of their phosphate in the production of fertilizers.

Competitive Analysis of Jordan Phosphate Mines Company (JPMC)

JPMC was established in 1949, and turned into a public shareholding company in 1953. In the year 2000, JPMC's financial results revealed that total losses amounted to JD 128 million. According to the company's annual report this phenomenon was triggered by various factors such as:

- The decline in sales volume as a result of shortages in the exports of phosphate and fertilizers, in addition to the low prices they command in the world market.

- The undertaking of accounting adjustments: in the form of allowances, such as early retirement expenses (JD 50.9 million). In addition to allowances for the amortization of the raw phosphate account from levels A1, A3/ Eshidiya Mine (JD 29.9 million), allowances for the drop in investments value, bad debt and amortization of fame (JD 13 million), and allowances for spare parts with low turnover (JD 11.4 million).

However, the analysis of the competitive status of the JPMC clearly indicates that exports are focused on Asian markets. More specifically, 89% of Jordanian phosphate exports are directed to Asian markets, 69.6% of which is directed towards one market; the Indian market, the largest phosphate consumer in the world, and a market in which Jordan maintains excellent prices for the phosphate exports.

The geographical position grants Jordan a strategic advantage that allows for a competitive edge over Morocco and other phosphate exporting countries, in reaching Asian markets, particularly India. Consequently, the

relative proximity saves Jordan the additional costs incurred by other countries, like the dues for passing through the Suez Canal, which entails the payment of certain fees. Hence, unlike other exporting countries, Jordan benefits from the comparative advantage of lower transportation costs.

The Indian market is also considered the primary market for fertilizer sales; the JPMC fertilizer exports amounted to 41.1% from the total of Jordanian fertilizer exports in the year 2000. However, focusing exports towards one market exposes JPMC to the added risk of that market closing for one reason or another.

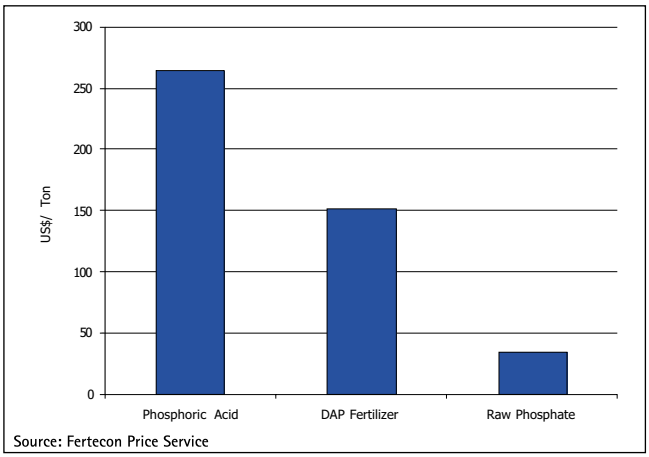

Figure 6.1: Average World Price for Phosphate Acid, Raw Phosphate and DAP Fertilizers in September 2001

To avoid and eliminate such risks the JPMC needs to target other markets and access them in the shortest-term possible. Furthermore, the Indian market is actually a market that absorbs low value added phosphate products. Hence, the largest segment of the JPMC production in 2000 consisted of raw phosphate (4,125 million tons, JD 90.8 million) followed by basic fertilizers and chemicals (0.7 million tons, JD 94 million). The sales of the Fertilizer Unit in 2001 only amounted to 210 thousand tons, despite the annual production capacity of 420 thousand tons. Figure (6.1) indicates world prices for raw phosphate, Diammonium Phosphate (DAP) and phosphoric acid in September 2001. The difference in the selling price of various phosphate products worldwide entails the adjustment of the JPMC strategy to target more developed and advanced markets.

However, the focus on value added products requires that the JPMC formulate an effective marketing strategy conferring more weight to R&D. The JPMC expenditure on R&D for the year 2000 did not exceed JD 740 thousand; equivalent to 0.375% of the company's net sales. This is almost half the amount allocated for R&D in 1999. The amount was entirely spent on training activities and material testing, rather than the development of new products with high value added; and this is the main reason why the majority of exports were raw phosphate rather than phosphate products.

This sort of strategy, with the focus on the production of low value added products and traditional export markets, led to the loss of several important markets, such as New Zealand and Australia, as it failed to produce high quality, odorless phosphate. The Netherlands was yet another market lost; as it abandoned fertilizer production for environmental reasons, and closed down the raw phosphate market. This state of affairs gave Jordan the golden opportunity to enter the market with high value added products, such as fertilizers, if only the JPMC was ready to satisfy the Dutch demand. The recommendation is that Jordan rises up to the general trend in world markets, and focus on the production of high value added products.

Box: 6.1: Missed Opportunity

By focusing on low value added products, JPMC is missing out on the opportunity to achieve high profits by producing fertilizers or chemical substances that maintain higher prices in the world market than raw phosphate.
Although, it should be noted that the direction towards more high value added products requires huge investments in addition to the provision of sophisticated production technology. According to one manager in the company, the establishment of a plant with a phosphoric acid production capacity of 200 thousand tons requires investments estimated at JD 250 million. Another manager states that even though Food Grace Acid is sold for US$ 800-900 per ton in the world market, its production requires advanced production technology.

More export markets were also lost because of the entrance of new competitors entering the market. The most significant new entrants were Russia and China. In the year 2000, their phosphate exports increased by 42.4%, while fertilizer production increased by 20%. As a result, the company should seriously consider the development of a clear and effective strategy to cope with new competitors, and identify new markets for its products.

Futhermore, the factors mentioned so far merged with the decline in the world demand for phosphate and fertilizers and caused a decrease in the volume of Jordanian phosphate exports by 21.1% in the year 2000 compared to 1999. In parallel a 22.8% drop in the quantity of fertilizers sold in 2000 occurred relative to 1999. It is also worth noting that in some cases JPMC is forced to buy phosphoric acid from joint venture projects as it does not always meet the agreements and contracts signed.

As for the local demand on raw phosphate, it is restricted to two main sources, the JPMC industrial complex, and the Indian-Jordanian Company. The total local demand for raw phosphate reached 2.07 million tons in the year 2000, noting that the JPMC could increase local demand substantially, though it has not as yet. The local demand can be increased by capitalizing on the comparative advantage of Jordan, namely the availability of both phosphate and potash, and the ability to produce all the range of chemical compounds deriving from the two substances.

Box 6.2: Exploiting Jordan's Comparative Advantage

Enhancing the linkages between both the phosphate and potash companies is a prerequisite to exploit Jordan's comparative advantage, particularly if there is a desire to produce high value added compounds composed of both potash and phosphate.

The factores negatively affecting the JPMC's ability to compete in international markets, include high production costs reflected in high wages and labor costs (representing 20% of total production costs), as well as high mining and port fees, constituting 14% and 4.26% of the production costs respectively. Another factor contributing to the diminished ability of the industry to compete in international markets is the inefficiency of the production process, which has been marked by a 10% decline in productivity. The decline is primarily due to the Eshidiya Mine's inability to produce sufficient quantities of raw materials

and match the quality products required in international markets. Yet, the Eshidiya Mine has gained considerable importance as a raw phosphate supplier since JPMC cannot depend on El-Hassa and El-Abiad Mines for raw materials. These two mines have low quality raw phosphate rendering the extraction process highly inefficient.

Box 6.3: Lowering Mining Fees

The cabinet agreed on 5/7/2000 to lower the mining fees charged to the company's phosphate sales, to become US$ 5 per ton as opposed to US$ 7. The decision became effective on 1/1/2001. However, the government wants to further embrace this initiative by lowering the fee in question even further to US$ 2.

Despite the assistance extended by the government, the *unjustified expenses* in the phosphate industrial complex add up to actual production costs and foster an increase in fertilizer price. The general high costs and the inflated selling prices considerably diminish the marketing and promotional opportunities of Jordanian fertilizers in the traditional and new export markets equally. The company has to put up with weak and inefficient factor conditions, particularly those related to infrastructure such as electricity supply. The collapse of the main, and emergency, electricity generators in some production units last year, led to a fallback in the production of phosphoric acid in the industrial complex, and in turn delayed the production of the fertilizer DAP. Hence, productivity rate hit all time low levels. Beyond doubt, the company does not have the ability to accommodate sudden changes, or withstand disruptions and emergency conditions.

Furthermore, the absence of highly efficient and competent supporting activities, as in the case of the transportation sector, has a negative impact on company competitiveness as well. Despite the government's decision to modernize the Aqaba Railway and the conclusion of the agreement between JPMC and Aqaba Railway, the transportation sector fails to meet the company transportation needs. In an attempt to rectify, or compensate, for this deficiency the company resorts to the private sector trucking network since company owned trucks are in such a bad condition that they cannot assure proper transportation to the destination. The inconsistency in the number of trucks available is an additional obstacle for the JPMC and hampers its performance.

Box 6.4: Inferior Road Conditions

JPMC could not produce one of its high value added phosphate products in the form of granules due to inferior road conditions. Such conditions have led to the breaking of the granules when being transported from the mines to the port of Aqaba. Thus, the value of the granules substantially decreased.

JPMC Joint Venture Projects

In an attempt to evade the vicious cycle of producing low value added products, the JPMC embarked on a number of joint venture projects with the aim of saving the necessary investments to produce high value

added products such as DAP, Nitrogen Phosphorus Potassium (NPK) fertilizers and phosphoric acid. This may be conducive to ensuring JPMC market share in foreign markets, as well as abate or stabilize the fluctuation of prices for raw phosphate. Following is a brief on JPMC projects:

- Indo-Jordan Chemicals Company (IJC): The company is located in the Eshidiya region. JPMC contribution to the company capital is 34.8% and Jordanian labor constitutes 60% of the overall labor force. Production commenced in August 1997; the main product being phosphoric acid. In the year 2000, profits reached US$ 7.2 million.
- Nippon-Jordanian Fertilizers Company (NJFC): The Company is located in Aqaba. JPMC share constitutes 20% of the company capital whereas 97% of the company labor force is Jordanian. It started production in April 1997. The fertilizers DAP and NPK are considered the main products. In the year 2000, profits amounted to US$ 930 thousand.
- Fauji Fertilizer Company (FFC)- Fauji-Jordan Fertilizer Company (FJFC): The company is located in Pakistan. JPMC share in the company capital is 10.36%. Production commenced in 1998. The primary products are DAP fertilizers, ammonia and urea. However, the company incurred losses worth US$ 62 million in the year 2000. The considerable loss is mainly the result of the Pakistani government's decision to discontinue its commitment to the company and prevent similar products from entering the Pakistani market.
- Norsek Hydro Company (Norwegian project): This project has not been implemented. It was expected to be effective by the end of March 2001. The company was expected to invest approximately US$ 750 million, 40% of which was JPMC share. However, the Norwegian partner declared its withdrawal from the project on 1/12/2000 under the pretext that Norsek Hydro's current direction focuses on investments in the oil and gas industry. However, some analysts believe the true reason behind Norsek's withdrawal has been the regional political situation.

Box 6.5: Joint Venture Exemptions

A decision was made by the cabinet to exempt JPMC from mining fees placed on phosphate sales to joint venture projects for 5 years, starting from the projects' production date, subject for an additional time extension based on the projects' profits.

Conclusion

The study indicates that JPMC is facing serious obstacles, the most important of which are high production costs, and the low productivity of the Eshidiya Mine that holds 96% of Jordan's total phosphate reserves. This resulted in the JPMC's loss of export markets, and decline of its competitive ability. Hence, the following recommendations should be considered:

- The JPMC restructuring should be granted top priority on the government's agenda.
- The establishment of a field workgroup to monitor the production process at the Eshidiya Mine to the tiniest details, provided the workgroup is conceded considerable authority to enable implementation and change.

Finally, the close coordination between the JPMC and the APC can strengthen the exporting ability of the Jordanian phosphate industry. Moreover, such cooperation may bring about better opportunities for the production of value added products that combine the two elements; phosphate and potash. The formation of a committee to bring together representatives from both companies, the JPMC and the APC, is strongly recommended to achieve the objective at hand.

Box 6.6: Case Study: The Israeli Phosphate Company; Rotem Amfert Negev

Rotem Amfert Negev is an Israeli company fully owned by Israel Chemicals Ltd., which includes a group of sister companies as well. This group produced and manufactured in the year 2000 about 35% of Bromine production worldwide, 9% of Magnesium production worldwide, 9% of potash production worldwide and 3% of phosphate production worldwide.

The most noticeable product of the Israeli company is phosphoric acid used in the food industry, and which is not available in the JPMC production line. This product is sold for US$ 800-900 per ton. In 1999, the company's total sales reached US$ 731 million, 95% of which came from exports.

The Group's competitive advantage stems from the natural resources available to it, the existence of a complete cluster, inclusive of supporting activities related to research, studies, transportation, distribution and other complementary industries. The availability of marketing offices throughout the world also adds to the Group's competitive edge.

Furthermore, there is close cooperation between the Rotem Amfert Negev company for phosphate and the Dead Sea Works company for potash in terms of production of advanced fertilizers. Unfortunately such cooperation is missing in Jordan since JPMC and APC do not collaborate.

Finally, in line with the international trend to produce new environmentally friendly products, Rotem Amfert Negev focuses on developing its primary activities, bearing in mind the various environmental dimensions of the phosphate industry. This is accomplished through:

- **Joining the Covenant of Air Pollution Abatement; the Manufacturers Association of Israel signed an agreement with the Israeli Ministry of Environment to reduce or rather limit air pollution.**
- **Signing the Treaty for Sustainable Development of the World Business Organization.**
- **Implementing the Environment Management System in compliance with ISO - 14001.**