

THE SOUTH AFRICAN PHOSPHATE MANUFACTURING INDUSTRY

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As you can see from the programme of this FSSA Convention, I am supposed to present a paper on the South African phosphate manufacturing industry, covering primarily industry's present and future competitive situation on the international export market with special reference to raw material costs. Please accept my apologies that due to unforeseen circumstances and developments beyond my control, I was unable to prepare this paper in advance, but as I am reasonably well conversant with this subject, I will try to talk to you with the help of these few notes and based on my experience in this professional field. I wish to emphasize that I am talking here today in my personal capacity and not as a representative of my company Fedmis. All facts and figures quoted may not necessarily be 100 per cent accurate, but they should in my opinion be reasonably realistic in order to give a simplified guidance throughout this address.

It is generally known that phosphates are one of the most important plant nutrients incorporated in fertilizers required to produce the food for the hungry world population multiplying presently at a frightening rate. We in South Africa are extremely lucky to have in Phalaborwa one of the largest single deposits of raw phosphate in the world, the capacity of which is so enormous that it can feed our growing South African population for many hundreds of years to come and in addition can give to South Africa's phosphate manufacturing industry a large quantity of raw phosphate to be processed for exports. The quality of our raw phosphate in Phalaborwa is generally speaking excellent and in many ways superior to most of the overseas raw phosphates. Thanks to Foskor's pioneering technical and commercial abilities, (and to our Government's foresight in developing our reserves against considerable opposition), Phalaborwa's phosphate deposit has been developed to one of the most efficient and most impressive enterprises of this kind in the world.

Raw phosphate as mined and processed by Foskor, being completely insoluble, cannot be utilized by plants as such. For this reason it has to be further processed physically and chemically by the fertilizer industry. Large quantities of sulphuric acid are required for this purpose in order to make phosphates soluble and available to plants. A wide range of soluble phosphates are being produced, such as single superphosphates, double-superphosphates, ammoniumphosphates, phosphoric acid, and phosphatic animal feeds. For export purposes, higher concentrated products have been favoured in order to reduce transport costs. We at Fedmis have decided to export our soluble phosphate primarily as phosphoric acid of 54 per cent P_2O_5 concentration.

As a result of Foskor's and the industry's efficiency and ingenuity, and greatly assisted by the price controller's

watchful eye, the present price of South African phosphates is one of the lowest, if not the lowest in the world, in spite of the recent price increase which has resulted in certain criticism from the farming community.

About eighteen months ago Foskor's management, supported by our Government, made a decision to expand their mining and processing activities in order to give to the South African phosphate manufacturing industry an additional $1\frac{1}{4}$ million tons of phosphate rock per year primarily for export purposes. This quantity of raw phosphate will be purchased on long term agreements by Triomf and Fedmis in such a way that Triomf will receive 750 000 tons and Fedmis 500 000 tons per annum.

I would like to emphasize here that in my opinion there is no shortage of raw phosphate in the world neither at present, nor in the foreseeable future, and there is no shortage of processing facilities in order to transfer this raw phosphate into a final form of usable phosphates. Consequently the South African companies embarking on comparatively large phosphate export projects will face strong international competition and will succeed and survive only if they are able to produce and deliver soluble phosphates at competitive prices, giving better quality of product and better service than most of the international producers.

I would like here to immediately touch on the most interesting and sensational part of the South African phosphate export deal and that is the price of Phalaborwa raw phosphate used for this enterprise. During the last two years the main phosphate rock producers in the world, i.e. Morocco and the United States of America, have increased the fob price of rock phosphate from approximately US \$14 per ton to the present US \$65 per ton. We anticipate that Foskor raw phosphate to be used by Fedmis and Triomf in their forthcoming export business starting in 1977, will be in the region of \$25 per ton. In order to produce one of the most popular phosphate export commodities, i.e. phosphoric acid, approximately three tons of raw rock is required per ton of P_2O_5 as phosphoric acid. Please do not get confused by this chemical expression which is used by most overseas countries and companies and is exclusively used in the export business as the commercial unit. We in South Africa are expressing the phosphate unit in a different way. You can see that the difference between the international and South African price of rock is expected to be approximately US \$40 per ton. As mentioned above, the total quantity of raw phosphate supplied by Foskor to Triomf and Fedmis is $1\frac{1}{4}$ million tons per year and this quantity multiplied by a price advantage of US \$40 per ton appears to give to Fedmis and Triomf an annual "present" of 50 million dollars. This impressive amount is justifiably agitating the minds

of everyone involved in phosphate business not only in South Africa, but throughout the world, and our future customers are in a way expecting that at least a portion of this apparent benefit would be for their account. Some of our colleagues in South Africa have also been influenced by this raw phosphate price differences and a while ago our newspapers published reports of sensational profits which South African export of phosphate is expected to earn in the next 20 years.

I can imagine that Foskor's management is looking with great envy and jealousy at this apparently easy profit which the phosphate manufacturing industry is going to make, and I would not blame them if they would from their side, consciously or subconsciously, put every effort to participate as much as possible in this phosphate export profit. I would also not be surprised if in this case the South African Government would attempt to persuade the manufacturing industry to subsidise local fertilizer prices from its export revenue. I think that this is an appropriate opportunity to dispell all these dreams and unrealistic calculations. In our opinion, I can as a summary say that the South African phosphate manufacturing industry can only be viable and financially sound on the international market and cope with a great number of risks linked with export business if the price difference between our local and international phosphate rock would remain and be maintained at the present envisaged level of approximately \$40 per ton.

We believe that the present international price of raw phosphate of approximately US \$65 per ton is not realistic and is being maintained in close co-operation by a limited number of important overseas producers who are dominating the phosphate export market. No prophet on this earth can forecast if this price will be maintained or if it will be increased or decreased at a future date. For this reason I feel it to be futile to embark on crystal gazing and that it is far more important to find out what is the lowest realistic phosphate rock price at which Moroccan and American rock producers could export rock or use it for manufacture of soluble phosphate such as phosphoric acid and so-called secondary phosphates. According to our investigations and studies undertaken during the last twelve months, this raw phosphate floor price is in the region of \$20 per ton fob Morocco or Florida. We think that both these exporters could at this price survive and possibly make a modest profit for a long time to come. If raw phosphate price should drop to this level, then, taking all other unfavourable factors into account which I will mention later, the South African phosphate export industry would face difficult problems. I hope, however, that this extreme case will never happen and that Moroccan and American Phosphate producers will be lucky, wise and strong enough to overcome successfully the enormous difficulties which they have created with their drastic price increases. Consequently let us assume that for us, the favourable raw phosphate price difference of \$40 per ton of phosphate rock will be maintained and let us see

how our phosphate manufacturing industry is going to fair with this favourable difference on the export market.

In order to simplify the matter, I will relate my further considerations to the price per ton of P_2O_5 as phosphoric acid. The apparent advantage to the South African phosphate export industry resulting from the lower price of rock is about \$120 per ton of P_2O_5 ($3 \times \40). On the other hand, the South African industry has, due to geographic, political and a number of other reasons, substantial disadvantages in competing in the international phosphate export market. In order to analyse these disadvantages and express them in dollars per ton P_2O_5 , we will confine ourselves to *three main export areas for the South African phosphates* which in our opinion, are as follows:

- (i) Western Europe
- (ii) South America
- (iii) Far East.

Our *disadvantages* common to all these market areas can be summarised as follows:

(a) *Capital cost for plant and equipment*

Taking into account the fact that a comparatively large part of the specialised equipment for our new export factory has to be imported from the USA and Europe, and that the main contractors in Fedmis' case are from the USA and in Triomf's case, I think, from Europe, the planning, design, transport and travelling costs for our new factories will be higher than in the case of our competitors. A number of other factors are against us — for example the fact that a portion of Moroccan phosphoric acid capacity was installed a while ago at a considerably lower capital cost. Our calculations show that capital cost for our new phosphoric acid plants will be about 20 per cent higher than the same present capacity in Morocco and USA.

According to our knowledge and experience, the capital cost for a 200 000 tons P_2O_5 phosphoric acid factory in South Africa will be at present about \$50 million. The 20 per cent difference amounts to \$8 million.

	Assuming:	16 per cent return on capital
As		10 per cent depreciation
		4 per cent maintenance
Total		<u>30 per cent or \$2,4 million per annum or \$2,4 million : 200 000 tons P_2O_5</u>
		= \$12 per ton P_2O_5

(b) *Sulphur*

Most of the American phosphoric acid producers have directly or indirectly their own sulphur at comparatively short distances from their phosphoric

acid production facilities. In South Africa we would be lucky if in the foreseeable future our local production of sulphur, and sulphuric acid would be sufficient to cover domestic demand for solubilised phosphates. Consequently sulphur required for export of phosphates will have to be imported for a long time to come and this in our opinion, mainly from Canada. Our cost disadvantage mainly resulting from freight and compared with USA and Morocco is considered by us to be in the region of \$12 per ton P_2O_5 .

(c) *Inland transport cost for rock, sulphur and phosphoric acid*

Generally speaking the American and Moroccan phosphoric acid factories are in most cases situated at or near the sea with their own loading and off-loading facilities. Their phosphate rock mines are usually located very close to the factories. South Africa's disadvantage in this respect are calculated to be about \$16 per ton P_2O_5 .

The total South African disadvantages falling in this category can be summarised as follows:

(i) Capital cost	.....	\$12 per ton P_2O_5
(ii) Sulphur	.....	\$12 per ton P_2O_5
(iii) Internal transport	.....	\$16 per ton P_2O_5
Total S A 's disadvantages		\$40 per ton P_2O_5

The South African cost disadvantages related to various export areas

Europe

Freight

South Africa's disadvantage compared with Morocco is about \$70 per ton P_2O_5 .

Import duty

The European Common Market countries which are by far the biggest importers of phosphoric acid in Europe are raising an import duty on South African phosphoric acid of 13,2 per cent of the c & f value. Assuming the c & f price of \$400 per ton of P_2O_5 , the South African disadvantage resulting from this import duty would be \$55 compared with Moroccan acid which is imported duty free.

Far East

The biggest potential user of phosphoric acid in this area is Japan and we have selected this country for the cost comparison purposes between South Africa and USA. American acid exporters to Japan have a freight advantage of about \$15 per ton P_2O_5 . In addition, chemical back-

haul facilities from Japan to the USA compared with Japan and South Africa, give the United States exporter an additional advantage of about \$39 per ton P_2O_5 .

South America

The fast-growing population in this continent makes this area an attractive potential user of phosphoric acid but unfortunately so far only Brazil has shown an impressive increase in demand for phosphoric acid. Considering the political instability of this continent, including Brazil, and bearing in mind that Brazil has a reasonably good chance of becoming self-sufficient in raw phosphate and phosphoric acid in the not too distant future, we would dare to plan our export to this area of say maximum 20 per cent.

Freight

Morocco have a freight advantage of about \$14 per ton P_2O_5 compared with South African exporters.

Summary

Based on an overseas phosphate rock price of \$65 per ton, the South African phosphoric acid export disadvantage or advantage in the three main areas would be as follows:

	Europe \$/t P_2O_5	Far East \$/t P_2O_5	South America \$/t P_2O_5
Fixed SA disadvantage	- 40	- 40	- 40
Variable SA disadvantage	- 70	- 54	- 14
Import duty	- 55	nil	nil
Total SA disadvantage	-165	- 94	- 54
SA rock price advantage	+120	+120	+120
Balance	- 45	+ 26	+ 66

Assuming that a South African company for valid commercial reasons would decide on the following phosphoric acid export distribution:

Europe	.....	40 per cent
Far East	.....	40 per cent
South America	..	20 per cent

then the average South African price advantage would be \$5,60 per ton P_2O_5 .

This exercise shows that the South African phosphoric acid exporters under the above assumptions, could not afford to pay for Foskor's raw phosphate more than the anticipated \$25 per ton. Considering that this price is approximately 20 per cent higher than the local controlled price, it appears that the export price agreement between Foskor and industry is fair to both sides.

The South African phosphate industry has still plenty of scope to improve its export position, for instance, every effort should be made to reduce or eliminate import duty on phosphoric acid into the European Community market area. The question of profitable chemicals backhaul from Europe and the Far East could be improved in due course and the general production efficiency at our factories could also in due course be brought into line with American industry. These and many more possibilities would make

South African phosphate export industry in the future considerably more viable and prosperous.

The two large South African phosphate export factories now being erected will employ a comparatively large number of black labour force in the Border Areas and, in addition, these factories will make a substantial contribution towards our foreign exchange position. For these and other good reasons we are sure that these enterprises will always enjoy the most favourable Government support.