

Indian farms in urgent need of more phosphate and potash-based fertilizers

✘ India has to do something about its fertilizer situation. McKinsey & Co, in their latest report on the sub-continent, say that India has the potential to increase its crop yields by 70% over the next decade, but one of the factors requiring to be addressed is both the inadequate amount of fertilizers but also the imbalance that sees far too little use of fertilizers based on phosphate and potash. India has delayed potash imports as it tried to force down prices of potash in particular but, while those prices have fallen, it seems the market has bottomed. The problem for India is that it still has to deal mainly with the North American and Russia/Belarus in terms of potash and its bargaining strength is somewhat limited.

With phosphate, there is more choice. Recently the Indian External Affairs Minister Salman Khurshid spent three days in Morocco, and was involved in talks to obtain more supplies of phosphate. The state-run OCP Morocco, the world's biggest phosphate exporter, already has trading ventures with Tata Chemicals and Chambal Fertilisers, and 400,000 tonnes a year of phosphoric acid is exported each year to India. In addition, India buys 5 million tonnes a year of rock phosphate, 20% of which comes from Morocco. India is also looking to get more phosphate from Tunisia.

As McKinsey points out, more needs to be done. In its report, *India's Path From Poverty to Empowerment*, the research company notes that India's crop yields are well below Asian averages. India is an agricultural powerhouse; its land-based farming industry produces more than 405 million tonnes a year of food, well up from 1980 when the total was just 192 million tonnes.

Yet the total land under cultivation has not increased significantly over that period.

But now land is being swallowed up for industry, infrastructure and urban growth. "Without the ability to increase the area under cultivation, India will have to focus on productivity to ensure food security and increase farming incomes," the report says.

At present, and even with all the progress that has been made, Indian yields (with the exception of wheat) are between 10% and 50% lower than Asian averages. Chinese farmers on average get more than three times the yields per hectare than their Indian counterparts, and Vietnamese and Malaysian farmers get about double the tonnages per hectare.

"India's current average crop yield of 2.3 tonnes a hectare will have to rise to 4.1 tonnes to match the yields elsewhere in Asia," says McKinsey. About 60% of that improvement can be driven by input factors, including fertiliser and manure use to improve the quality of the soils.

India's soil has low levels of nitrogen and phosphorous as well as rapidly declining levels of potassium (no doubt the delayed imports of potash will be a contributing factor).

Despite 4.2% compound annual growth in fertilizer use per hectare of cultivated land, Indian farmers use only about one-third the amount of fertilizer than do their Chinese counterparts. "Each year's crop cycle further depletes the soil, drawing out more nutrients that need to be restored through the use of fertilizer and manure," says McKinsey. In 2008-09, 8 million tonnes of nitrogen, phosphorous, and potassium were added to India's soil – but 17.7 million tonnes were removed.

In fact, the drop in potassium was by far the most dramatic. With nitrogen, 5.5 million tonnes went in but 7.7 million were removed, a 29% depletion; for phosphorous, there was a 50%

decline (1.5 million tonnes in, 3 million tonnes out); but with potassium there was a staggering 86% differential, with just 1 million tonnes added – again the failure to import sufficient potash and allow the market to operate without government interference – and 7 million tonnes removed.

McKinsey has another point: apart from applying more fertilizer in total, there needs to be a rebalance. Due to extensive government price controls in favour of urea/nitrogen-based fertilizers, Indian farmers used less phosphorous and potassium fertilizers in 2011-12 than the levels recommended to achieve the correct proportions.

The world's food supply and fertilizer – is it time for new strategies?

☒ Call it unorthodox, maybe even heretical. But, even for those of us who believe government (usually) has no business interfering in business, perhaps there's a case for an exception. And that exception could be fertilizer. We are starting to see cases of how governments can work with companies to clear roadblocks to ensure sufficient future supplies of fertilizer can be made available.

For a world that has made so many astonishing technological advances, with talk of creating human tissue with 3D printing just being the latest, we're still not too good at managing food supply. This is something to keep in mind for those moments you begin to despair of the fertilizer sector, and worry about the stock you own in potash and phosphate companies, sectors which are going through a sluggish price

environment.

As droughts show – and the California drought is showing this right now – we still don't have a handle on ensuring that the world has enough food. And it is also clear that governments have to step in and take a key role. Just this week we have seen Brazil's government-backed Inova Agro financing program, which is charged with funding agriculture development, deciding to finance a potash mine to be developed by Verde Potash. As we have noted many times, Brazil still imports 90% of its potash requirements.

In Mali, as has also been reported here on Investor Intel, that government's Institute for Rural Economic Development has been working with Great Quest Metals, the results of their work showing that the company's direct application fertilizer is an effective replacement for much costlier imported chemical phosphate across the full range of crops and regions of the North African state. The trials using Mali's phosphate resources provided results for all of Mali's most important crops: cotton, maize (corn), rice (irrigated, upland and lowland varieties), millet, sorghum, cowpea (or black-eyed pea), and peanuts using GQ blends of enriched high grade (35% P205) and enriched medium grade (27% P205).

Mali actually had a phosphate mine that operated between the 1970s and into the early 1990s. Since then efforts to get new mines to exploit the substantial resources have foundered due to either downturns in the global economy, falls in the phosphate price and – in the case of Mali – the invasion by Islamic insurgents, which was effectively stopped by French and other forces. But in 2009, for example, Mali could afford to import only 70,000 tonnes of fertilizer, but that was enough for just 10% of the 2.7 million hectares of arable land in the country. However, fingers crossed, Great Quest and the Mali government may show that such public-private co-operation can really work.

Northern Mali has a drought at the moment. So does Kenya; there President Uhuru Kenyatta has announced a reduction in prices of subsidized fertilizer to spur productivity and close the cycle of food shortages.

Australia is suffering a severe drought covering large tracts of inland New South Wales and Queensland. There is talk of some towns being evacuated, and thousands of stock are being shot, there being no feed for them. Australia is drought prone and there have been some shockers since European settlement. (I know a little about this: I authored a book *The Farming of Australia* which deals with this whole subject – it's available through Amazon.)

But Australia is a country that, until the mining boom came along, was built on the economic foundation of agriculture. But the country still doesn't have a single potash mine (despite substantial deposits, especially in the brine lakes) and one major phosphate mine (despite having large by world standards deposits for which money cannot be raised).

Over the years, the government in Canberra has propped up all sorts of industries: the automobile manufacturers (until now ☐☐– all three plants are going to close within a few years), and drought relief is given to farmers. But Canberra seems never to have given a moment's thought to developing its potash and phosphate resources, even though there is talk of Australia being a "food bowl" for Asia.

Now the United States is being reminded of the fragility of its food supply. California produces a significant proportion of the nation's fruit and vegetables, dairy products and wine. As one writer details, California supplies 99% of the artichokes grown in the U.S., 89% of the cauliflowers, 86% of its lemons, 90% of American avocados, 88% of its strawberries and 95% of celery consumed by Americans. Some scientists believe it's California's worst drought in 500 years.

There is a worldwide food crisis. Fertilizer, of course, cannot redress the problem of drought; but it can be a significant boost to world food supplies so that a drought in one area can be offset to some extent by high production from other parts of the country/globe.

China is showing us how it can be done. It is investing in farming around the world (large Australian properties have recently been purchased) and buying into potash and phosphate projects. We have seen Indian and Middle East interests pump money into African agribusiness projects.

Yet something is wrong with the world food system. It is the one vital area that we still cannot control. Meanwhile, millions more mouths arrive each year.

Fortunately, private enterprise does what it can, as we saw recently with the alliance formed by Allana Potash and ICL to produce potash in Ethiopia, supplying farmers in East Africa.

But more is needed. That's why I suggest it may be time to think about how the system could be improved, and whether private finance is enough.

ICL and Allana form a strategic alliance to take advantage of growing potash demand in Asia and Africa

✘ Israel Chemicals ('ICL', TASE: ICL) and Allana Potash ('Allana', TSX: AAA | OTCQX: ALLRF) have established an

alliance to develop Allana potash mine in the Danakhil region of Ethiopia. Under the deal, ICL has acquired USD\$ 23 million in shares and warrants of Allana Potash Corp or 16%. ICL is one of the world's leading mineral fertilizer producers. Should ICL exercise the warrants included in the 'units', the total investment would amount to some USD\$ 87 million or about 37% of the company. Moreover, ICL has also signed an offtake arrangement from the Danakhil project; Allana and ICL started negotiations for the deal last December. Allana is at an advanced stage in the project, having already completed the definitive feasibility study (FS) and secured the necessary mining license needed to start construction of the mine itself. As part of the agreement, ICL will offer Allana technical advice on the mine development as well as marketing assistance for the product.

The FS feasibility study suggests that Allana has the potential to produce about a million tons of high-grade potash a year. ICL is the world's sixth largest potash producer and it sold about five million tons of potash in 2013 and has mines in Spain and Great Britain as well. In turn, ICL – which was highly coveted by Potash Corp (NYSE: POT) in 2012 and 2013 as it sought strategic partnerships to gain better access to the emerging markets where potash demand has been most intense such as India, China and Indonesia. Had the ICL bid been successful, Potash Corp would have overtaken the Russian OAO Uralkali as the world's largest producer, giving it even more market influence. Potash Corp had targeted ICL also because of its closer geographic position. Israel's proximity to the Suez Canal would have given Potash Corp a significant advantage in selling and delivering potash to markets in China, India and other Asian powers.

The Israeli government faced internal pressure to block the sale. Moreover, even as ICL's deal with Allana eases access to Asian markets, it opens the door to Africa, which is the continent where potash consumption will grow fastest as many

countries start to pursue more effective agricultural policies. Sub-Saharan Africa was second only to South East Asia in the intensity of economic growth over the past decade. The Horn of Africa, from where Allana's potash will be shipped, is strategically located to serve India, China and more importantly, all of the markets where potash demand is rising fastest such as Indonesia, Malaysia and Laos – all countries featuring potash intensive palm oil production. More importantly, Allana is strategically located to serve the Africa, which is where potash consumption, now among the lowest in the world, will increase fastest. Ethiopia alone will guarantee significant sales for Allana. Indeed, Ethiopia, which is home to some 90 million inhabitants, has ambitious economic growth plans and agriculture is its highest priority given that some 85% of the people work in that sector.

Africa has continued to experience growth even as Europe and North America have struggled to recover from one of the worse recessions since the Great Depression. Resources, mining, oil and gas explorations have fueled Africa's growth, but agriculture has also emerged as an important factor. In the 1960's-70's, the use of mineral fertilizers grew considerably in Latin America while dropping in Africa. Not surprisingly, those decades (and until now) saw various famines in Africa, while food production increased in Latin America. Now, the International Fertilizer Industry Association suggests that African potash use could reach five million tons over the next few years. It is now not even close to a million metric tons. While in Europe, the gross domestic product shrank by 11% in the last five years, it rose by 29 percent in Africa. Allana's FS suggests it is on track to reach production by early 2015, while all the other aspects of the project are also proceeding on target, including the relevant roads and the port in Djibouti. Allana has measured and indicated sylvinite resources in 2013 of 327.42 million tons of 28.31% KCl and inferred sylvinite resource of 90.76 million tons at 27.80% KCl. Once in production, Allana will offer ICL a more

sustainable future. Indeed, ICL's potash plant on Dead Sea has faced growing criticism from environmentalists. The tourism sector is complaining of receding waters and the growing and spreading concerns could lead to ICL having to shut down the 'Dead Sea Works', given that it has been blamed for of the problem.

Allana's project in the Danakhil offers some of the best economics in the industry with very low operational and capital investment costs (OPEX and CAPEX); in simple terms, Allana will be one of the cheapest potash mines to build and operate with operating costs expected to be USD\$ 100 per ton (to port). This is well below the peer group average, providing a healthy return even if potash prices remain at the current USD 300/ton (based on CANPOTEX's recent China contract). In addition, the FS noted that the CAPEX of around 642 million dollars would also be among the lowest in the industry, largely because the Danakhil deposit is found at relatively shallow depths. While some projects and potash producers have faced greater risks of failure in the wake of the lower prices, caused by the collapsed of the CANPOTEX/Russian-Belarusian duopoly last summer, others like Allana have actually gained even better chances of success. Allana is one of these because its project based in Ethiopia's Danakil region may well be the one best suited to benefit from the new potash market dynamics. ICL's expertise and market access have merely confirmed Allana's value.