



Rabobank

Rabobank International

Food & Agribusiness Research and Advisory

Global Farm Inputs team

rakhi.sehrawat@rabobank.com
+31 30 71 23910
NL - dirk.jan.kennes@rabobank.com
+31 30 71 23818
NL - harry.smit@rabobank.com
+31 30 71 23804
SG - adam.tomlinson@rabobank.com
+65 6230 6742
AU - michael.harvey@rabobank.com
+61 3 9940 8407
BR -
jefferson.carvalho@rabobank.com
+55 11 5503 7206
IN - vaishali.chopra@rabobank.com
+91 124 2713170
US - alexander.griffin@rabobank.com
+1 314 317 8201
US - sterling.liddell@rabobank.com
+1 314 317 8038

www.rabotransact.com

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Playing the Potash Field

Scenarios for Change through to 2020

The global potash industry has a high degree of concentration, which allowed producers to weather the storm when demand came under pressure in 2009. Elevated prices and strong profitability have attracted investment interest from several new players including not only junior mining companies but also mining giants such as BHP Billiton, Vale and Rio Tinto. Numerous new greenfield and brownfield mining projects have been announced across the world. The geopolitical motives of major importers may have a major effect on whether some of these projects are realised, which may imply unprecedented challenges for existing producers as the entry of new players may weaken the current oligopolistic supply structure that has until now supported price levels in favour of suppliers. It is difficult to predict the future of the potash market with precision. Hence, three scenarios have been developed to analyse possible demand and supply scenarios and the resulting pricing situation in 2020. These scenarios take into account the three key importers' (Brazil, India and China) geopolitical and strategic motives to improve their self-sufficiency in potash and create a certain 'walk-away' factor when faced with tough contract negotiations with the two supplier consortiums, BPC¹ and Canpotex. Key for the industry will be to determine the point at which the purely economic parameters become less relevant and the long-term supply security of importing countries begins to dominate supply growth; this will result in lower price sensitivity of greenfield investments.

Introduction: Oligopoly structure and changing market dynamics

The prospects in the potash market have been robust for the supply side since concerns over food security sparked the agri commodity boom in 2007. A comparison of the average price² of potash from 2001 to 2006 with the average price from 2007 to 2011 shows a remarkable structural shift from USD 140 per tonne to over USD 420 per tonne. The consolidated nature of the industry enables producers to dictate the potash price by matching supply with demand, especially when demand is weak. Additionally, high capital costs for building new supply ranging between USD 1,000 to USD 2,000 per tonne and a long lead time of over seven years create high entry barriers for new entrants.

However, structurally higher potash prices in recent years have provided a strong incentive for both new and existing players to add capacity. Numerous projects have been announced to unlock the vast reserves of potash in Africa, South America, North America and Russia. This development poses a critical challenge to the future of the oligopolistic structure of potash industry. The prospective brownfield and greenfield mines pose a threat of overcapacity and oversupply in the market. Additionally, the entry of the three giant miners—Vale, BHP Billiton and potentially Rio Tinto—is set to change the potash game towards 2020. Another major factor that will influence the demand/supply picture in 2020 is the top importing countries' (China, Brazil and India) desire to improve self-sufficiency for potash and reduce their reliance on the oligopolistic supply base. Depending on the level of strategic investments by these countries in overseas and domestic mines, this development could recast world trade in potash, which is currently dominated by the two consortiums Canpotex and BPC.

With the new wave of potash mines set to emerge and importing countries' desire to break their dependence on limited players, the current oligopoly's prospects look less positive. However, the future picture of the potash market will depend on several key variables that form the basis of the three scenarios developed to analyse possible demand and supply

¹ Belarusian Potash Company.

² Standard Grade MOP, Vancouver FOB Price.

scenarios and the resulting pricing situation in 2020. Based on the effect of these factors in the next ten years, the three potential scenarios for demand/supply in 2020 suggest potash overcapacity of between 59 percent and 100 percent on the open market.³

The underlying conclusion of the three distinct scenarios is that the combination of some of the low-cost brownfield and well-funded greenfield projects is going to increase global capacity quite substantially, resulting in a two-tiered market comprising established traditional players and new entrants. Not only will this shift the market towards the buyer's side, but as new suppliers emerge, it will also pose unprecedented challenges for the existing established relationships in the market.

Three variables will determine extent of oversupply

Despite all the caveats, the emergence of oversupply and entry of new players point towards significant changes in the global potash market. Importing countries' desires to secure self-sufficiency, junior miners' ability to procure financing and the response of existing players in light of emerging oversupply, will play a crucial role in carving out the future picture of the potash market.

Importers motivated to secure stable supply of potash

Collectively, Brazil, India and China imported close to 18 million tonnes of potash (potassium chloride, KCl) in 2011, accounting for over 40 percent of total world imports. Their collective total in 2011 was 49 percent higher than in 2001, having risen from 12 million tonnes to 18 million tonnes of imported KCl. Growing import reliance, frustration from one-sided contract negotiations with suppliers and the strategic importance of potash for the sustainability of their growing agricultural sector are primary drivers for these countries to invest in greenfield projects. Furthermore, given the sizeable number of junior mines being developed, there are clearly plenty of options for importers to choose from, either through equity investment or acquisition. However, in the end, it is mainly geopolitical and long-term strategic security parameters that justify such investments. In fact, from a pure economics angle, many of these investments might render losses if prices come under pressure due to oversupply from brownfield expansions, especially after 2015.

Long-term potash prices in the range of USD 350 to USD 450 per tonne (excluding inflation adjustment on costs and prices) are required to justify investments in the majority of greenfield projects (i.e. projects with a capital expenditure (capex) requirement of over USD 1,100 per tonne and a target internal rate of return (IRR) of 10 percent to 15 percent). On the other hand, lower cost brownfield projects require a much lower market price of USD 250 to USD 350 per tonne to remain viable and reap an IRR of 10 percent to 15 percent. As a result of heavy capital costs and long lead times, none of the private players in India will make the multi-billion dollar investment unless the government devises a mechanism to absorb price fluctuations in the international potash market.

In Rabobank's view, import-dependent countries are increasingly including geopolitical decision-making parameters in their investment assessments. The need to build a better walk-away factor by ensuring secured access will drive the market entry of several junior miners and result in shrinking open markets. Such strategic investment is expected to result in closed supply chains, meaning fewer opportunities for traders in the potash market.

Securing financing a bottleneck for new producers

Elevated potash prices and solid profitability for industry players have attracted a host of junior mining companies seeking opportunities in the potash market. Over 60 new projects have been announced, and most have successfully completed the scoping stage of development. Costs of developing a greenfield mine vary quite significantly depending on the location, geology, grade of potash available and the type of mining technique applied. Overall, building new potash capacity is very costly and takes a long time. Hence, most of the junior mining projects, which require a capital expenditure of at least USD 1,000 per tonne, will not realise production until 2020 as securing financing will become a key bottleneck. Other factors that cast a doubt on the success of these projects are obtaining environmental agreements, the progress of engineering works on site and connecting mines with the demand regions.

The gush of new projects is good news for buyers and a worry for existing suppliers. More potential capacity, even if not realised, puts a certain cap on the price of potash as higher

³ Open market implies the remaining demand and supply left after excluding the demand and supply fulfilled through potential strategic investments by India, China and Brazil.

prices will help attract greater financing for these projects and this new supply puts a cap on prices. All in all, greater diversity of supply puts importers in a better position than they are in today.

Traditional players discouraging entry of new players

The potash world is set to change with new players in the market. In light of these developments though, the traditional players—especially those with the advantage of low-cost production—will take steps to maintain their own competitive position. Producers such as Potash Corp and Uralkali not only have low-cost production but also have the scale to discourage many mines from realising production, at least in the next ten years. Both companies are significantly boosting their existing capacities through brownfield expansions in Canada and Russia. In addition, fiercer competition on a smaller open market could pressure prices, thereby squeezing out some of the marginal producers over time. Existing high cost mines of K+S in Germany, ICL in the UK and Spain, and Mosaic in Canada and the US, could be the first to face these headwinds. Moreover, flexible and fairer pricing of potash by BPC and Canpotex could also serve to send a signal in the market to discourage greenfield investments.

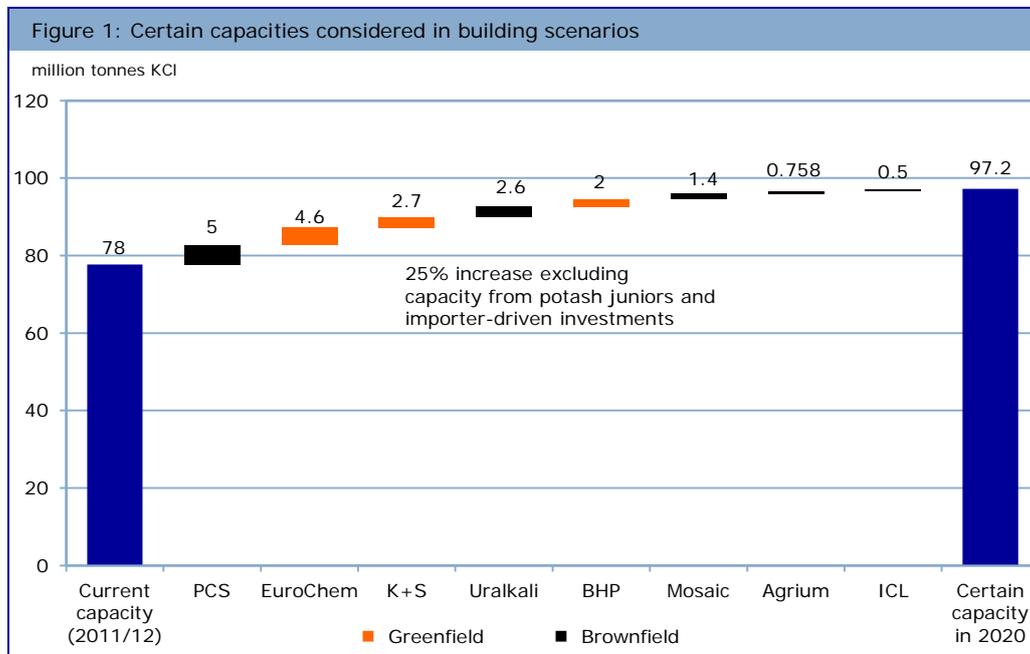
The emergence of new market dynamics could also spark further consolidation in the already oligopolistic market structure. This could be driven either by the existing players or by the mining super giants (i.e. Vale, BHP Billiton and Rio Tinto). Additionally, more buyer-friendly contract negotiations by producers could dilute importers' incentive to make strategic investments in greenfield mines.

Scenarios for 2020

There are three potential scenarios that may help to analyse the possible demand/supply developments and the resulting pricing situation in 2020. The key elements that differentiate these scenarios are Brazil, India and China's geopolitical motives to secure potash supply, and mining investments driven by major existing buyers of potash. This will act as a driving force behind financing some or many greenfield junior mines. Other important factors that influence the scenarios are economic viability and stage of development of new projects as well as counteraction taken by existing players to discourage new investments.

In developing the three scenarios some factors on the demand and supply side remain constant across all scenarios. On the demand side, we assume a consistent global demand growth of 3 percent per annum over the period of 2011 to 2020. This is based on the assumption of a stable market environment with global economic growth of 3 percent per annum, near 2 percent per annum growth in crop production, historically high agri-commodity prices over the next decade, and an extrapolation of average per annum growth in global demand for potash in the last ten years. The exception to this 3 percent per annum growth assumption is China, where we assume a higher growth rate of 4.3 percent. The 2020 outlook for China's potash demand is for 14 million tonnes KCl. However, potash price trends will definitely have substantial bearing on the potash demand outlook in the longer term. Lower potash prices would incentivise higher demand growth relative to high potash prices, which would limit upside demand. The 3 percent per annum demand outlook is considered optimistic but is in line with expectations of further crop production needs globally.

On the supply side we assume that some brownfield capacities by existing players and greenfield capacities by new players (BHP Billiton and EuroChem) as well as K+S are certain to come online by 2020 (see *Figure 1*). This assumption is supported by the location advantage of these mines as they are close to existing infrastructure, as well as the advanced stage of the projects, the experience of the players in the fertiliser market (K+S and EuroChem), the vast knowledge in mining (BHP Billiton and K+S) and their financing capability. These certain capacities exclude projects driven by the three major importers of potash—China, Brazil and India. To determine the exact supply on the market we assume a capacity utilisation rate of 85 percent.



Source: Company reports, IFDC, Rabobank, 2012

Scenario analysis: Potential implications for potash importers and producers

The result of the scenario analysis points towards an imminent oversupply in the market (see Box 1). This will certainly pose implications for all stakeholders in the supply chain, from importers to producers and traders of potash.

Box 1: Scenario outcomes in a nutshell

Scenario 1: Base Case

- Overall decline in collective import reliance of China, India and Brazil
- Much stronger competition among producers exporting to Brazil
- Open market pricing favours buyers

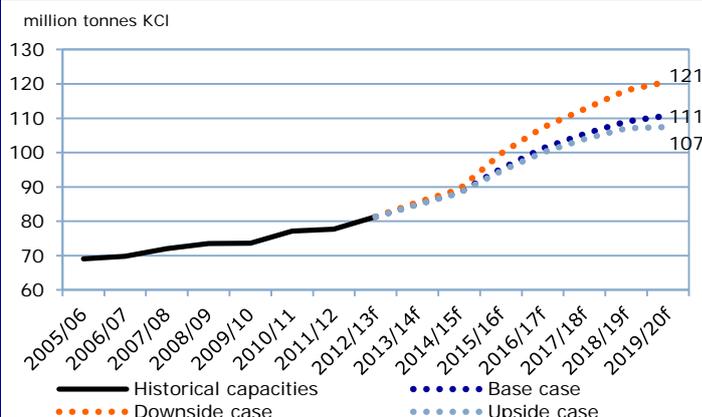
Scenario 2: Wildcard/downside case

- Strong decline in collective import reliance of China, India and Brazil
- Much stronger competition among producers exporting to China, India and Brazil
- Open market pricing favours buyers

Scenario 3: Upside case

- Marginal decline in collective import reliance of China, India and Brazil
- Much stronger competition among producers exporting to Brazil, but overall market is favourable for sellers
- Open market pricing favours suppliers

Figure 2: Scenario outcomes in a nutshell, 2005/06-2019/20f



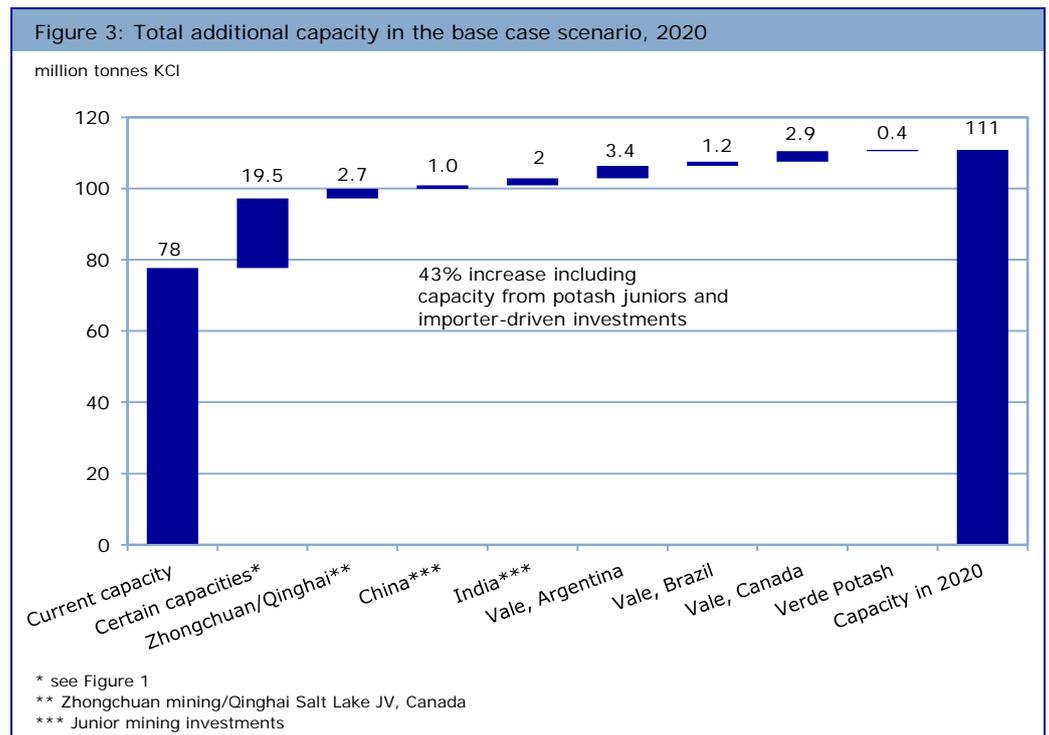
Source: IFA, IFDC, Rabobank, 2012

Scenario 1: Base case scenario, where only partial supply is secured by key importers

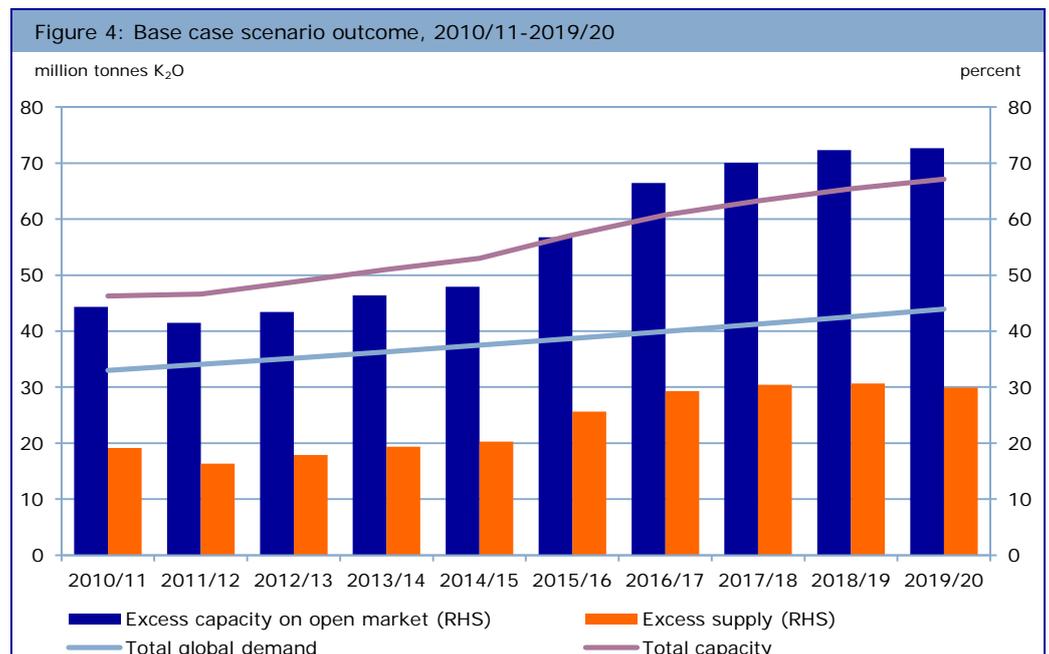
In the first scenario we assume that Brazil becomes almost self-sufficient at 88 percent, while India becomes partially self-sufficient at 25 percent, and China becomes 67 percent self-sufficient. Brazil's and China's self-sufficiency comes from a mix of domestic and overseas investments. In the case of India, due to no availability of potash in the domestic market, we assume that the country makes at least one overseas investment, either through direct share acquisition by the government or by investing through a consortium of private players where the government shares some risk (see Figure 2).

The outcome of such a scenario, in which Brazilian miner Vale adds 8 million tonnes in Brazil, Argentina and Canada, India secures 2 million tonnes through offshore investments, and China procures an additional 4 million tonnes through greenfield offshore investments,

is 73 percent of excess capacity on the open market and 30 percent of overall excess supply (see Figures 3 and 4). The overall import volume of China, India and Brazil declines from the current level of 18 million tonnes to 12 million tonnes of KCl. This scenario marks a gradual shift from a seller's to buyer's market towards 2020.



Source: Company reports, IFDC, Rabobank, 2012



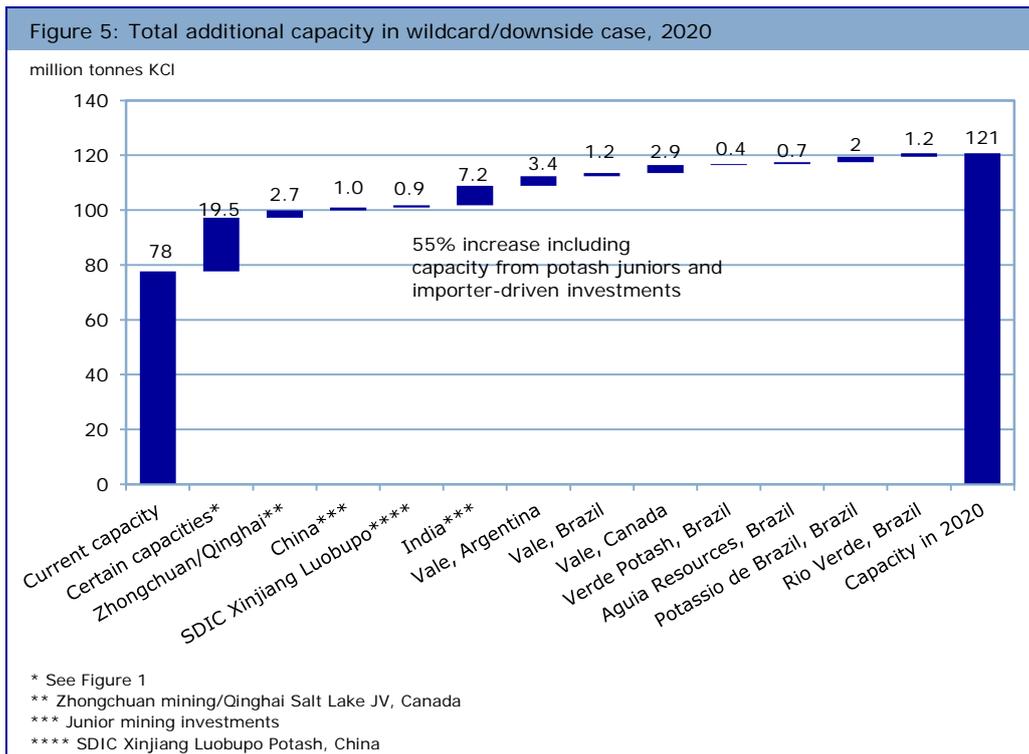
Source: Company reports, IFA, IFDC, Rabobank, 2012

Scenario 2: Wildcard/downside case, where sizeable supply is secured by key importers

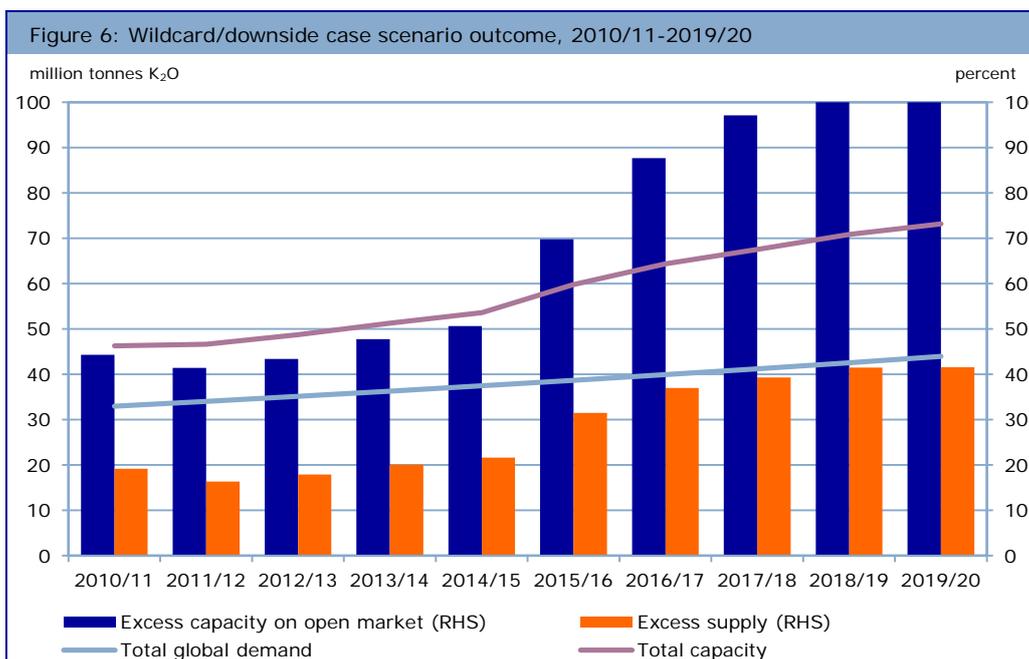
In the second scenario we assume that Brazil and India become almost self-sufficient with over 100 percent and 87 percent, respectively, and that China achieves 73 percent self-sufficiency. This is a stress case scenario, where we have included the maximum number of new mines that could come into production. Some of the projects in Brazil, which are still in the scoping stage, were included to see the potential outcome of a strong push from the government to not only become self-sufficient but to potentially export potash. It is a less likely scenario as we also assume that India will make several investments to gain 87 percent self-sufficiency by investing in overseas mines, while the private sector and the government of India have yet to determine a suitable mechanism to ensure investment

returns for greenfield projects abroad. However, this scenario serves to test the impact on the market if each importer were to act in isolation and if geopolitical parameters overruled the economic principles. India could go for this option if it wants to gain long-term security for potash as it is the only major importer that relies 100 percent on non-strategic sources.

The outcome of such a scenario, in which Brazilian miner Vale adds 8 million tonnes in Brazil, Argentina and Canada, other junior mining projects in Brazil add a total of 4 million tonnes, India secures as much as 7 million tonnes through offshore investments, and China drives an additional 5 million tonnes through domestic brownfield and offshore greenfield investments, is 100 percent excess capacity on the open market and 42 percent of overall excess supply (see Figures 5 and 6). The overall import volume of these three countries declines from the current level of 18 million tonnes to 2.2 million tonnes of KCI in 2020. Unlike the base case, this scenario marks a strong shift from a seller's to buyer's market and could result in a dual market structure, where a large share of demand is met through strategic investments by importers and the rest is met on the open market.



Source: Company reports, IFDC, Rabobank, 2012

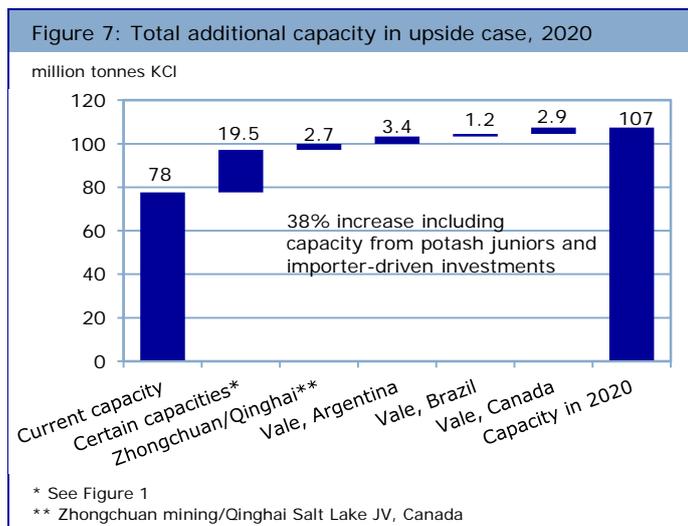


Source: Company reports, IFA, IFDC, Rabobank, 2012

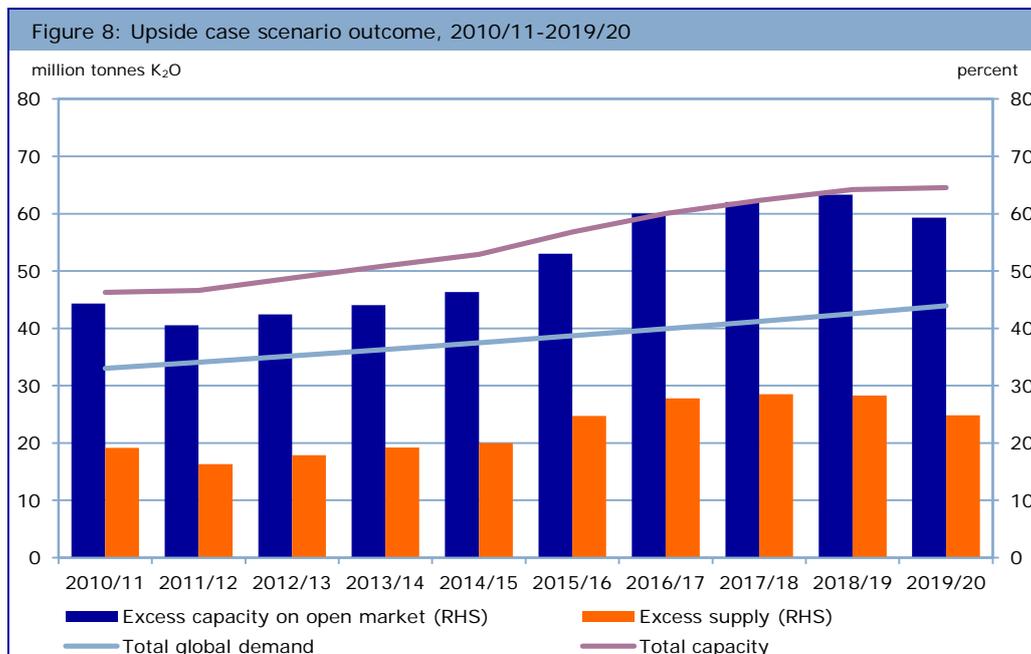
Scenario 3: Upside case, where importers take limited action to secure supply

In the third scenario, we test the level of oversupply if purely economic motives dominate and only some of the planned greenfield projects come on stream. Most of the junior mines remain undeveloped since it becomes hard to obtain financing. This is an upside scenario for suppliers as we assume India and China maintain heavy import reliance on the open market. In this scenario, China becomes 51 percent self-sufficient, Brazil becomes 83 percent self-sufficient and India remains 100 percent dependent on the open market.

The outcome of a scenario in which Vale adds 8 million tonnes, India does not secure any supply through strategic investments and China drives an additional 3 million tonnes through an offshore greenfield investment, is 59 percent excess capacity on the open market, and 25 percent of overall excess supply (see Figures 7 and 8). This is more in line with the current state of the market and is the most favourable scenario for the suppliers. The overall import demand of China, Brazil and India declines slightly from the current level of 18 million tonnes to 17 million tonnes of KCl in 2020. This scenario points towards a positive outlook for current and potential producers of potash as the import reliance of India and China continues to grow in volume and demand/supply remains more balanced.



Source: Company reports, IFDC, Rabobank, 2012



Source: Company reports, IFA, IFDC, Rabobank, 2012

Conclusion and outlook for 2020

The strong hold of the Canpotex and BPC players in the potash sector is expected to remain intact as they expand their capacities through more cost-efficient brownfield projects and leverage their existing infrastructure to sell larger quantities of potash. However, the influence of traditional consortium players Canpotex and BPC will decline in determining potash prices as the key importers will improve self-sufficiency through investments into potash assets. A significant change on the supply side will be the entry of new players, which will add to incremental supply and offer greater optionality to importers in sourcing potash. The dynamics in the potash market are clearly going to change, and it will become difficult to regulate production to match market demand as is currently possible. Hence, the oligopolistic profits that the industry makes today will clearly come under pressure in 2020 and beyond.

However, some swing factors will largely influence the level of oversupply in 2020. Risk appetites of private investors and the governments of India, Brazil and China will be a primary factor to watch out for. Additionally, the ease of financing new projects and the responses of existing potash suppliers to discourage new investments will also play an important role in carving out the future of the potash market.

Winners and losers on the production side in this changed world of potash will be determined by the costs of production, wholesale price trends, logistical advantages in accessing the demand markets, and the ability to secure more value-added and differentiated markets for potash. It is difficult to exaggerate the significance of looming oversupply to the business model of current producers. With oversupply which could lead to lower potash prices, demand may surpass preliminary expectations that are already considered optimistic. Investments in specialty fertilisers and downstream integration into local blending operations could be a way for some of these players to capture further margins and secure sales through greater customer access.

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