

# Contents



- 1 Introduction
- 2 Key findings
- 3 A global perspective on China's chemicals industry
- 13 Emerging issues for China's chemicals industry
- 18 Focus on agro-chemicals
- 21 Focus on engineering plastics
- 24 About KPMG

## Introduction



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In 2008, China imported more than USD 84.5 billion worth of chemicals<sup>1</sup>, but at the same time it also continued to emerge as a leading producer of many individual chemical products, including acids, dyes and pesticides.

The signs of a global slowdown and the weakening of China's most important export markets are a cause for concern in an industry that has seen substantial capital investment and fierce competition. Most of the chemicals produced in China are now supplied to domestic users, but many of these users are producing goods for export, so the sector has not been immune to a global slowdown.

The encouraging news is that many segments are by their nature likely to be resilient in a downturn. Agro-chemicals is one such area, where China now leads the world in the production of herbicides and pesticides.

There are other reasons for optimism. The chemicals sector is not only improving its own environmental footprint, but also promoting innovations that will help create efficiencies and improve environmental performance throughout the economy.

China is becoming an important centre for research and development, with much of this activity directed towards commercial application and customisation, to meet the needs of China's increasingly sophisticated domestic market.

We hope you find this new chemicals report useful and we would welcome the opportunity to discuss its findings with you.

<sup>1</sup> Emerging Markets Information Service April 3, 2009

## Key findings



- In recent years, the chemical industry in China has witnessed strong earnings growth and double-digit profit margins. The current economic slowdown is reducing that growth and will limit further capital investment over the short and medium term. The industry should benefit from increasing domestic demand, but any export slowdown will weaken demand in some segments.
- Consolidation in the sector has been driven by rising cost pressures, regulatory scrutiny and inbound investment. Local governments can still exert an influence over the success, or otherwise, of particular investments and business combinations.
- While there are exceptions, most local Chinese chemicals companies are not yet in a position to expand globally. Most of their activity is limited to domestic investments with other local companies. At the same time, international players are expanding coverage in China by acquiring or partnering with local players.
- Many companies have started looking to western China as an option for plant location. This is partly due to the increased demand for chemicals as well as favourable government policies in the region.
- The government is strengthening health, safety and environmental (HSE) regulations to clean up the industry and tackle players who are compromising safety standards. The central government is acting to enforce more stringent norms across the industry.
- The industry is still exposed to some challenges, the most important being poor logistics, tight raw material supply and the lack of experienced management.
- Two particularly lucrative segments within China's chemicals industry are engineering plastics and pesticides. Both have struggled to meet rising demand.





Like other industries, the chemicals and petrochemical sector in China has been severely hit by the global downturn. According to the China Petroleum and Chemical Industry Association, consumption of finished oil products — a major indicator for the industry — dropped by 8.1 percent and 8.6 percent respectively in November and December 2008.<sup>2</sup> The decline was accompanied by price cuts and a dramatic rise in stockpiles of chemicals.

The present status and prospects of China's chemicals industry, as well as the challenges it faces, are unlike anything witnessed in the last three decades. While many companies have posted losses or lower profits in the fourth quarter of 2008, and slashed jobs around the globe, their China operations do not appear to have been so severely affected. For the multinationals, much will depend on how well they can ride out the crisis in their home countries.

The challenges faced by the state-owned Chinese corporations are somewhat different and in many areas they are backed by favorable policies from the government. Supported by industry-specific stimulus packages, Chinese chemicals giants are still looking for opportunities to expand, even if the current market conditions make it less of a priority.

Much hinges on the self-confidence of China's markets and producers to buoy the sector, despite the grim projections for 2009. The agro-chemical sector is poised for growth, and support packages in the United States and China are intended to stimulate construction, so their success — or otherwise — will have a direct impact on a number of specialty chemicals segments.

<sup>2 &</sup>quot;China's petrochemical industry reverses 10-y high growth," www.chinamining.org, 18 February 2009

## Global chemicals at the onset of the crisis

Having enjoyed an extended period of strong margins, driven by heavy demand and high prices, chemicals companies find themselves at the painful end of the down cycle. Although it is difficult to look too far ahead, prospects for the industry in the short to medium term are far from encouraging.

Global chemicals output could fall 6 percent in 2009, with output from the European Union, the United States and Japan projected to be down by 8.25 percent, and that from emerging markets flat, according to UK-based Oxford Economic Forecasting.3 Total chemicals output from China, however, may grow a little over 4 percent, the consultancy said.

Chemicals output fell more sharply than expected in the fourth quarter of 2008, with end-use demand collapsing and customers de-stocking. Industry experts say that until the consumer comes back, chemicals demand will continue to decline.

The crisis triggered by the bankruptcy of Lehman Brothers in September 2008 coincided with several events hitting the chemicals industry. Global overcapacities had been building up, especially with Middle Eastern giants adding to capacity at an unprecedented level. The signs of oversupply and a sluggish demand that were apparent since the beginning of the year started to look increasingly ominous for many corporations.

Along with many other industries, the chemicals sector was hit by tightening credit and the consumer slowdown. Companies in China — both domestic firms and multinationals — saw a drastic decline in chemical exports.

With financial institutions and stock markets collapsing at the same time, the credit crunch severely hampered deals in the chemicals sector. It also had a severe impact on leveraged chemical companies. Standard and Poor's (S&P's) chemical analyst Kyle Loughlin said in late December: "The credit markets are complicating issues around liquidity and refinancing risk."4

The price of crude oil added to the industry's woes. After a period of steep price rises, there was a significant drop in the latter half of 2008. The rapidly falling crude oil prices proved to be even more dangerous than the ever-higher prices seen in the middle of the year. The sharply lower oil price undermined producers' ability to maintain product prices, which have fallen rapidly since.

The final days of 2008 were characterised by reduced operating rates, plant shutdowns and announcements of further cutbacks to secure tighter cost control.

<sup>&</sup>quot;Global chemicals output could fall 6% in '09," Oxford Economic Forecasting (Source ICIS news), 24 February 2009 Available at http://www.icis.com/Articles/2009/02/03/9189849/chemical-industry-credit-quality-deteriorates-while-refir

Chemical companies have cut over 37,000 jobs worldwide since the onset of the global recession. In addition to the huge number of redundancies announced in Europe and North America, thousands more workers have been forced into shorttime working, as production has been cut in response to plummeting demand.5

#### The multinationals' response

Evidence from the world's chemicals markets suggests that most chemicals businesses are in a deep slump. Automobile, construction and consumer goodsoriented markets have been hit hard. The stimulus packages put in place by governments worldwide will need time to take effect. In February 2009, the US advisory firm Chemical Market Associates Inc advised that the global chemical industry needed to immediately shut down 25 million tons of operating capacity to diminish the projected huge surplus in production that threatens to last through 2015.6

On the positive side, lower gasoline prices have prompted a slight demand recovery in developed markets. Asian demand growth may also remain positive this year.

To tackle the unprecedented crisis, companies are speeding up restructuring programmes to control costs. They are beefing up their analytical teams to monitor markets more effectively. Senior executives are also being asked to monitor costs and pricing in an effort to spot short-term money-saving opportunities.

The German-based chemicals group BASF has accelerated its ongoing efficiency and restructuring programmes and will close less profitable plants and sites throughout the BASF Group. This applies to coatings sites in the United States, Asia and Europe, and to plants for plastics precursors in Asia. The company is closing them faster than originally planned. A total of at least 1,500 jobs will be lost worldwide in 2009 as a result. On 19 January 2009, BASF issued a profits warning, saying that its decline in business was greater than expected in November and would negatively affect earnings. "2009 will be a year of unprecedented challenges," warned the company's chairman Dr. Jürgen Hambrecht.7

On 4 December 2008, US chemicals company DuPont announced that it would cut 2,500 jobs as part of a restructuring to compensate for losses in its automobile and housing market businesses.8 On 27 January 2009, it reported a USD 620 million loss for the fourth quarter and pledged to reduce operational costs by USD 1.1 billion, cut capital spending 20 percent from 2008 levels and reduce working capital by USD 1 billion in 2009.9

<sup>&</sup>quot;Downturn fears hit European chemicals market," Reuters, 17 February 2009

<sup>&</sup>quot;Chemical sector must shut 25m tonnes capacity — consultant: Stephen Burns," ICIS news, 19 February 2009

Available at http://www.icis.com/articles/2009/01/19/9186043/BASF-issues-profits-warning-introduces-short-time-working.html

Available at http://money.cnn.com/2008/12/04/news/companies/ATN/findex.htm

Available at http://www.marketwatch.com/news/story/dupont-reduce-costs-11-billion/story.aspx?guid=%7BE310ECD6-232D-4AC6-A2A2-92A7DC14ED03%7D

The Dow Chemical Company also announced a series of aggressive actions in December to accelerate its transformation strategy in light of current economic realities. Dow's creation of a new shared Business Services Group and other significant changes to its business operating models from January of 2009 onwards, were meant to accelerate the company's ability to shed high-cost assets and centralise functional structures.

Dow has also planned to eliminate approximately 5,000 full-time jobs, close 20 facilities in high-cost locations and divest several non-strategic businesses. These job reductions represent roughly 11 percent of Dow's global workforce. Once fully implemented, these actions are expected to result in USD 700 million in annual operating cost savings by 2010.10

On 3 December 2008, Swiss specialty chemicals company Clariant froze wages, cut back production and implemented working hours at selected production sites worldwide due to low demand. It announced a Swiss franc 207 million net loss from continuing operations in the fourth quarter, as it suffered from deteriorating demand in the leather and textile markets. It reaffirmed its plans to cut 1,000 jobs. The company reported a 5 percent drop in sales for the full year.<sup>11</sup>

### Multinationals rethink expansion plans in China

In order to cater to the rapidly increasing demand in the boom years, almost all major multinational chemicals companies established a presence in China. However, the financial crisis has caused many international chemical firms to reassess much of their investment plans and cut staff worldwide.

BASF is reconsidering the timing of a new major chemical plant in Chonggoing, in southwestern China, because of weakened global demand. The start-up of the 400,000 metric tons per year MDI plant was slated for 2010. The company, however, is moving ahead with plans for a major petrochemical complex in Nanjing with Sinopec. The two giants have invested USD 2.9 billion in the Nanjing venture.

Dow Chemicals showed an unexpected profit in the first quarter, but has undertaken major revamp to trim costs. It will lay off several thousand workers worldwide and try to sell USD 4 billion of assets to help repay a USD 9.5 billion loan used to acquire rival Rohm & Haas. 12 It has claimed to remain committed to several large investments in China, including a coal to chemicals joint venture with Shenhua, a liquefied epoxy resin plant at its existing production base in Zhangjiagang and an epoxy chloro-propane plant in the Shanghai Chemical Park. Dow also holds a 10 percent partnership in the USD 9 billion oil refinery project signed between Sinopec and Kuwait Oil Company in Zhanjiang, Guangdong.

<sup>10</sup> Dow Accelerates Implementation of its Transformational Strategy: http://www.dow.com/, December 2008 11 Available at http://www.reuters.com/article/rbssChemicalsSpecialty/idUSN2745669920090127 12 Available at http://www.bloomberg.com/apps/news?pid=20601087&sid=apKvMbCACKoc

DuPont is maintaining its plans to double its investment in China by 2010, from the 2005 level of USD 700 million. Ashland announced in April 2009 the opening of its Nanjing Technical Support Centre, occupying 1,200 square metres on the Nanjing University campus and catering for its cellulose customers.

Clariant announced a joint venture with Kunming Gaoheng Huagong Chemical Industry Co. and Panchem International Trading and Industrial Co, in Kunming, Yunnan Province, for phosphorus pentoxide production. DSM and Akzo Nobel are also continuing to pursue growth and investment in China in 2009. Boosted by a record gross profit of 10 percent — despite the downturn — in 2008, DSM opened its new DSM Campus, its fourth feed premix plant in China (in Changchun, Jilin), and signed contracts for nutrition and anti-infection joint ventures with NCPC in China early in 2009. Meanwhile, Akzo Nobel is building a EUR 250 million chemical production base in the Ningbo Chemical Industrial Zone.

## Domestic challenges

Over the last 30 years, as multinationals sought to leverage China's domestic appetite for chemicals, local companies too became more innovative and competitive. Chinese chemical corporations have moved far beyond copying the technology of their international peers and competing on low cost. They have invested significantly in research and development and invested heavily in building petrochemical zones and complexes.

The industry was already facing slower growth before the knock-on effects of the global financial crisis. Existing mismatches between capacity and demand, and the distorting effect of pricing mechanisms such as controlled gasoline prices, are all being exacerbated in the current economic climate. The sharp drop in exports has led to a further build up of inventories, and consequent cash flow problems, especially for the many smaller, low-cost players in the highly fragmented base chemicals sector.

However, the downturn could be seen as an opportunity for an industry shakeout: eliminating weaker players and allowing the larger firms to emerge stronger
and more efficient. Such consolidation would clear out the more inefficient
industry capacity, especially those unable to meet the increasingly necessary
technological upgrades. Stronger players should be able to pick up weaker
competition to develop a broader, more stable and reliable market share.
The industry has already made moves towards restructuring, with successful
development of upstream capabilities. But room remains to consolidate
downstream and build more responsive and competitive local chemical services
groups.

## A solid base

#### **Huang Wensheng, Sinopec Board Secretariat**

Sinopec is one of the largest oil companies in Asia, but has proved very quick in establishing its presence in the chemicals sector, supported by the strength of its infrastructure and access to raw materials and end markets.

Huang Wensheng has many years of experience at Sinopec and has witnessed the growth of the chemicals business. Having worked his way through a number of functions, including plant operations, R&D, human resources, corporate strategy, international investor relations, corporate governance and internal controls, he is now deputy director general of the board secretariat.

Chemicals now account for a quarter of the Sinopec group's total business, based on operational income, but Mr. Huang knows there are significant challenges ahead. While demand is still growing, it is at a lower rate. Increasing labour costs and the appreciation of the renminbi have forced product prices up, while substitute products are also appearing on the market.

With new production for export coming onstream in the Middle East, the additional supply has the potential to depress prices and leave companies exposed with large inventory levels.

Given that, at present, basic chemical products continue to make up a significant proportion of total consumption in China, this is a genuine cause for concern. Consumption of specialty chemical products is proportionately far less than in Europe and the US, but Mr. Huang believes it is becoming more important for Sinopec.

"Pricing of these products is relatively stable and clients are reliable, which makes it attractive for us. The way people consume is constantly changing. Everybody is seeking to improve their quality of life through new products that require the development of down-stream chemical products."

Huang is clear about the need to address this opportunity through inhouse research and development. "The current technology used in China is mainly application-oriented and we need to invest more in research and development," he says. "We also need to develop our own world-renowned brands to rival the likes of Dow Chemical and DuPont."

Huang believes multinationals can provide great support since they aim at "high investment, high returns," as such, "they have very advanced technology that we are willing to pay for; in these instances our cooperation is mutually beneficial." However, other challenges need to be addressed closer to home. "We have plenty of staff at middle and low levels, but we need to nurture more high level technicians and product developers and other people for senior management roles."

The commercial environment has created a more challenging cash flow situation for Sinopec's business. "We should view this issue from both angles: our revenue will grow a lot without price control, and we will have adequate cash for overseas investment, especially upstream investments. We have a huge domestic market in China, so we have a competitive edge in logistics. This can help us weather the worst of the downturn, but we still have to do the right things to take our business forward and keep it competitive."

Current champions in the industry may require a change in mindset to achieve these gains. At present, many are guided by policy objectives such as building strategic resources or gaining technology transfers, as well as by the desire to directly maximise shareholder value. As pressures on profits and margins become ever more intense, they should grasp the opportunity provided by the need to respond to the current economic crisis and focus on how they can reorganise themselves.

#### Stimulus packages in the US and China boost the industry

The stimulus packages announced by the United States and China are expected to provide support to the chemicals industry.

US President Barack Obama signed into law a USD 787 billion stimulus bill in February that by some estimates could generate USD 26 billion in additional demand for chemicals and derivative products over the next two years. <sup>13</sup> This is sure to have knock-on impacts for chemicals demand in China and also for the financial strength of international chemicals companies planning their investments in China.

A lot of expectations also ride on the stimulus package announced by China. In early 2009, the government pledged to spend RMB 3 trillion (USD 439 billion) on infrastructure projects and RMB 1 trillion on rebuilding earthquake-hit regions. Any spending focused on infrastructure should come as a boost to the chemicals sector.<sup>14</sup>

The Chinese government also approved measures to help the country's petrochemical industry survive the economic slump. The new strategy stresses industrial restructuring and loosens investment controls. It follows similar industrial support packages that have been passed for the steel, automotive, shipbuilding and textiles industries.

The plan urges that key chemical industry sectors be prioritised to stabilise industrial development, ensure supplies of agrochemicals, promote key projects, implement finished oil product reserves and increase the supply of credit to the industry. Meanwhile, the plan also places restrictions on outdated production capacities, strictly curbs the piecemeal development of coal to chemical conversion projects, and halts approvals for projects to expand charcoal and calcium carbide production.

<sup>13</sup> According to the American Chemistry Council, USD 135 billion in project funding could generate USD 26.3 billion in chemicals sector product

demand

4 "Spending details revealed for economic stimulus package," Shanghai Daily, 7 March 2009

The government also plans to invest tens of billions of renminbi in building new petrochemicals facilities and is prioritising approvals for new oil storage and refining centres in locations such as Ningbo, Nanjing, Shanghai, Guangzhou, Quanzhou and Tianjin.<sup>15</sup>

Hand in hand with the stimulus packages, governments will be anxious to protect their tax bases during the downturn. Enterprises already operating or looking to invest in China will need to pay particular attention to recent shifts in tax laws and applicable rates. An introduction is provided below, and KPMG China's tax department would be pleased to provide further guidance and assistance.

## Tax and transfer pricing considerations

### **Corporate Income Tax (CIT)**

China's CIT Law, which came into effect on 1 January 2008, stipulates a unified standard CIT rate of 25 percent for both domestic and foreign-invested enterprises. It also revoked a number of incentives, such as the two-year exemption and three-year half reduction on CIT, which were enjoyed by many foreign-invested enterprises engaged in manufacturing in the chemicals industry in China prior to 2008. Entities are therefore subject to potentially increased CIT costs under this new CIT regime. On the other hand, the new CIT Law provides for certain preferential CIT rates, including the reduced rate of 15 percent applicable to qualified Advanced and New Technology Enterprises (ANTE). Companies operating in the chemicals industry may fall within the scope of the ANTE regulations. However, given the criteria to qualify as an ANTE — including the requirement for proprietary intellectual property to be registered in China, or for a worldwide exclusive licence of proprietary intellectual property for a term of more than five years — it is likely that PRC domestic enterprises operating in the chemicals industry will be better positioned than their foreign-invested counterparts to enjoy the preferential CIT rate.

Occasionally, foreign-invested enterprises in the chemicals industry in China may undergo corporate reorganisations, such as mergers and acquisition, spin-off and post deal integrations, to streamline their operations. In particular, in the current economic environment, foreign investors are keen to simplify their corporate structure via integration to reduce the number of legal entities in China and consequently minimise their costs of operations. Tax is also one of the reasons for foreign-invested enterprises carrying out corporate reorganisations. For example, in the absence of a consolidation tax filing system in China, some foreign investors are contemplating integrating their subsidiaries in China to fully utilise the losses suffered by some subsidiaries and accordingly to minimise the tax cost for their China operations as a whole. Recently, the Ministry of Finance (MOF) and State Administration of Taxation (SAT) jointly issued a tax circular governing the CIT treatment of corporate reorganisations, which has the potential to significantly impact reorganisation activities carried out in China from a tax perspective. Under the circular, enterprises undergoing corporate restructuring may be eligible for "special tax treatments", including the deferral of CIT for gains or losses on the transfer of assets and liabilities (if they satisfy a special set of criteria including reasonable business purpose, continuity of substantive operations and continuity of interests). "Special tax treatments" may also apply to certain cross-border reorganisations if additional criteria are met.

<sup>15 &</sup>quot;Govt boost for light, petrochemical industries," China Daily, 20 February 2009 and "China approves refining stimulus to help economy," Bloomberg, 20 February 2009

#### **Turnover Taxes**

In addition to the CIT reforms detailed above, regulations on turnover taxes have also been substantially changed recently. Adjusting the Value-added Tax (VAT) export refund rates continues to be an important macroeconomic tool. In view of the financial turmoil in late 2008, the Chinese government sought to relieve pressure on some export companies and therefore increased the VAT export refund rates for certain products, including chemical products, stone materials and raw materials of nonferrous metals. These measures significantly reduced the irrecoverable VAT cost to entities operating in the chemicals industry.

Furthermore, the State Council promulgated the revised VAT and Business Tax (BT) Provisional Regulations and their Implementation Rules in late 2008, which could have a significant impact on the operation of the enterprises engaged in the chemicals industry. These turnover tax regulations and rules came into effect on 1 January 2009.

Under the new VAT regulations, which have changed the tax from production-type to consumption-type, input VAT on the purchase of plant and equipment can be creditable against any output VAT on sales — good news for most foreign-invested enterprises in the chemicals industry. At the same time, however, the abolishment of the import VAT exemption on imported equipment will result in greater cash flow pressure for enterprises that previously qualified for the exemption under the old VAT regime. Enterprises engaged in the chemicals industry will need to carefully assess the impact of the above VAT reforms on their operations.

On the other hand, under the new BT regime, BT will apply as long as the enterprises which either provide or receive taxable services (services other than processing, repairing and replacement services) are located in China. In contrast, under the old BT regime, only income derived from services rendered inside China was taxable for BT purposes, and offshore claims on BT exemption might have been possible. We understand that many enterprises engaged in the chemicals industry in China receive technical or supervisory services from foreign enterprises that should be subject to BT according to the revised BT Provisional Regulations. However, the practices of different local tax authorities in China in enforcing the new BT Provisional Regulations may vary. Foreign enterprises providing services to enterprises in China need to consider potential additional BT costs under the revised BT Provisional Regulations and to discuss their implementation of the new regulations with their local tax authorities.

#### **Transfer Pricing**

The cyclical nature of the chemicals industry, in addition to the current macroeconomic conditions, may put many chemical manufacturers at a high risk of scrutiny from the tax authorities, particularly with respect to transfer pricing.

The transfer of assets, particularly intangible assets, may lead to additional transfer pricing exposure, as different tax authorities use different valuation methods for such transfers.

Enterprises are also exposed to risk through the common industry practice of centralising regional and global management in order to reduce task duplication, with costs then allocated from the centres out to the subsidiaries. This structure may be more cost effective, but increases transfer pricing risks, especially when cross-border transactions between related parties are involved.

# A long history in Asia **Peter Lindner, Clariant**

Peter Lindner of Clariant believes that keeping an active attitude and being adaptable to change is the best way to compete in China and to come through the current challenging market in a stronger, more sustainable position.

Clariant has been conducting textile, leather and paper businesses in China since 1948, initially under the name of Sandoz. Since 1995, Clariant has steadily widened the range of its products and shifted focus towards the domestic market. The Swiss headquartered company provides chemical ingredients for many consumer and industrial applications. Having once been reliant on exports, today the majority of all Clariant's production in Greater China is consumed domestically.

Peter Lindner was appointed the President of Clariant Asia Pacific and Country President of Greater China in 2009. He has brought with him experience of management in multicultural organisations, through previous roles in Europe to the Middle East and was excited by the chance to drive business in China and Asia Pacific. "Clariant is already well placed in Asia, but we know we can grow further" he says. "We have huge confidence in our further development in this region, with top priority for investment growth in China, India and Southeast Asia."

Clariant opened its first plant making masterbatches, or plastic dye pellets, in Guangzhou in 1995. Peter believes that Guangdong remains very much "the home of the plastics industry in China" and Clariant has shown its continuing commitment by opening its newest facility in the province in September 2008.

The company has several other plants in the region, each operating through a local entity but overseen by Clariant for all management, governance and investment issues. Fully-owned or JV operations with full trading licenses have been established.

The masterbatch business has many consumer applications. "As we are colour-matching all the time, we track global trends in terms of what colours are most popular," Peter says. "It's an example of how we really keep in touch with our end consumers."

The textile, leather and paper chemicals businesses are areas where Clariant has a long history and is recognised for its leading position in Asia. "This is an area requiring a lot of innovation. We have held our own fashion shows with retailers and designers in order to promote these trends and ideas and opened a new centre for matching textiles and colours in South China," Peter explains.

The pigments and additives business is separate from dyes and serves the paints and coatings industries. These are two areas that have seen dramatic growth during the construction boom of the last decade.

Clariant has also invested in the expansion of a Chinese joint venture producing Quinacridone organic

pigments. These are finding uses in high-performance coatings — including architectural, automotive and industrial, as plastics and printing applications.

The other expanding segment in Asia is functional chemicals. This business is predicted to have some of the highest growth potential of all businesses in Asia and Clariant is positioning itself with newly planned facilities in China. The company is opening a new surfactants plant in Zhenjiang, Eastern China to help to meet the needs of the country's growing demand and will primarily serve consumer-related markets such as personal care and industrial application fields. Following the market needs there is a shift towards service-driven products and Clariant is committed to meet this demand.

Clariant went into China to take advantage of the low cost base and to market its chemical products throughout the region. Today, the story has changed. "We have to keep our sales force focused on adding value through strong customer relationships, rather than simply getting drawn into competition with lower-cost rival producers," comments Peter.

The company continues to pursue the highest environmental standards to match any other Clariant production site in the world and Peter sees a direct link to operational efficiency. "Those that compete by skimping on environmental standards or by running old, inefficient equipment in China can no longer survive," he comments.

## Emerging issues for China's chemicals industry



Since the 1980s, China has been self-sufficient in basic chemicals and attention in recent years has focused increasingly on specialty and new-generation chemicals. <sup>16</sup> The global specialty chemicals market grew by 7.1 percent in 2008 to reach a value of USD 680.4 billion. The sector now faces a pressing set of challenges that need to be addressed in order to raise performance, stay globally competitive and meet the evolving needs of its customers. Any company seeking to navigate the current economic conditions needs to fully understand the key issues of location, logistics costs, health and safety, intellectual property, and consolidation. More details are given below.

## **Choice of location remains key**

Currently, there are about 600 chemical zones in China, many targeted towards petrochemicals, inorganic chemicals and coal-based and gas-based chemical industries. These zones are mainly concentrated in the Bohai Sea area (including Tianjin, Qingdao and Dalian), the Yangtze River Delta area (including Shanghai, Nanjing, Ningbo, Wuxi, Changzhou and Hangzhou) and the Pearl River Delta area (including cities in Guangdong such as Huizhou, Zhuhai and Maoming).

With the government's ambitious plans to develop infrastructure in central and western China, the chemicals industry can be expected to expand to more inland provinces. In 2005, BASF, for example, started to build its regional centre in Sichuan province, to strengthen its business in the west of the country.

The large chemical parks, which usually comprise entire value chains, are designed for the world's top players, while the small and medium-sized chemical parks are meant to attract domestic investors. Along with specific financial incentives, these chemical parks offer companies modern integrated facilities and established logistics, allowing companies to get their operations underway quickly.

<sup>16</sup> According to the Datamonitor May 2009 "Global Specialty Chemicals" report

### Logistics costs remain high

A related point is that the infrastructure constraints associated with the transportation of raw materials are a particularly significant challenge for the industry in China. In 2007, the gross cost of logistics reached USD 653.8 billion, accounting for 18.4 percent of China's GDP for the year. 17 In more developed countries, this ratio is typically much lower.

Over the past decade, logistics costs in the chemicals industry have grown even faster than the average for the rest of the economy, reflecting the increased specialisation and complexity of chemicals products, as well as more stringent health and safety requirements. Chemicals companies have more of a vested interest than most in the government's proposals to improve logistics infrastructure. To expedite the process of transporting raw materials and building a pipeline for feedstock, many infrastructure projects have been announced. These include building pipelines, road and rail routes to allow for more flexible transportation of raw feedstocks.<sup>18</sup>

Not only the cost, but also the time spent on distribution is another major concern for the industry. These issues are further aggravated by the prominence of in-house facilities and weak third-party support, which increases complexity as well as the cost of operations.



### Health and safety is a rising concern

In June 2007, the municipal government of Wuxi promised to close 772 small chemical companies that did not have complete business licenses and did not meet emission standards.<sup>19</sup> It was an attempt to reduce the pollution of rivers and lakes caused by a large number of small chemical companies.

<sup>17</sup> Available at http://yxj.ndrc.gov.cn/xdw/t/20080327\_200477.htm
18 Available at http://www.gov.cn/zwgk/2009-03/13/content\_1259194.htm
19 "Wuxi to close 772 small chemical plants", Sina News, 26 June 2007, in Chinese

Many similar attempts to clamp down on environmental malpractice have been observed over the past two years and environmental regulations are being enforced more strictly by local level authorities as well as the central government.

The central government is changing the emphasis of its health, safety and environmental policies, from minimising and treating pollution to fostering sustainable development. It has upgraded the Environmental Protection Agency from agency to ministry status and given greater enforcement powers to environmental protection bureaux throughout the country. These changes are helping more robust companies stand out in the market from rivals who try to compete by compromising on standards. In the current tough market conditions, companies are being urged to look at safety and sustainability issues as a way to improve efficiency and reduce operational risks.

Stricter regulations also give better prospects to sectors involved in cleaning and purification, and environmentally friendly products too. There are opportunities for large domestic, as well as foreign players, to acquire the assets of companies that have shut down.

### Intellectual property protection measures are being put in place

China is now the third largest patent application jurisdiction in the world and may soon overtake the US in total patent applications. The State Intellectual Property Office (SIPO) received a total of 828,328 patent applications in 2008, a year-on-year increase of 19.4 percent. Among these, 717,144 were domestic applications.20

The government's response to these developments has been to increase efforts to protect intellectual property. It has established a searchable online database, put in place an appeal mechanism and a hierarchy of courts to accommodate infringement cases and distinguished more clearly between administrative and judicial processes. The need for strong legislation is not only an issue for multinationals and the government, but also for domestic companies as technology transfer will be a key issue in the future.

Of course, patents registration and laws to protect them constitute only one side of the issue. Enterprises may still need to fight to protect their interests. For example, in 2007 DuPont had to initiate a lawsuit against Jiangsu Trustchem Chemicals Co., Ltd., after the latter sold agricultural products containing rimulsfuron, a protected DuPont patent in China. DuPont reached a settlement in which Trustchem paid compensation and issued an apology.<sup>21</sup>

<sup>20 &</sup>quot;Firms get upper hand in application process," China Business Weekly, 23 February 2009 21 Available at http://english.ipr.gov.cn, August 2007

### Consolidation opportunities still exist

Since 2005, the industry has witnessed the beginning of the consolidation, spreading across all sub-sectors. A consolidation process is sure to continue as some 90 percent of companies are still small or medium-sized. In some provinces, units with fewer than 20 employees account for 50 percent of the total number of chemical companies.

BASF's operations in China provide a useful example. Having expanded its reach with the acquisition of Degussa AG's construction chemicals business, including Degussa's regional headquarters and R&D centre in Shanghai, in 2006, BASF rationalised its operational scope by selling its catalysts manufacturing facilities in Nanjing to Süd-Chemie AG in April 2009.<sup>22</sup>

In a similarly targeted expansion, Ashland acquired Nanjing Clear Environment Protection Co., Ltd., to enhance its existing investments in China's strategically important water treatment business.<sup>23</sup>

In the present environment, many international companies are holding back on plans for acquisitions or greenfield investment, but there remain many domestic Chinese companies seeking investment opportunities.

## Investment categories in the chemicals sector

Any company investing in a chemicals business in China needs to understand whether the target's business is an "encouraged", "restricted" or "prohibited", according to the *Catalogue for Directing Foreign Investment* issued by the Ministry of Commerce. Foreign investors are not allowed to invest in the prohibited sector and if the invested businesses fall in the restricted category, the application requires additional approvals.

- Encouraged sectors include production of ethylene with an annual production capacity of 600,000 tons or more, processing and manufacturing of derivatives of downstream products of ethylene and comprehensive utilisation of ethylene side-products, production of ethylene with an annual production capacity of 200,000 tons or or production of more Polyvinyl chloride resin (in the way of ethylene)
- Restricted sectors include production of sodium hydroxide and potash, benzidine and other sensitive categories including chemicals from which narcotics can be easily produced
- Prohibited sectors include production of carcinogenic, teratogenic, mutagenesis and persistent organic pollutants.

Foreign investors need to file for approvals and complete registration processes from local or national authorities including Ministry of Commerce, National Development and Reform Committee, and State Administration for Industry & Commerce.

<sup>22</sup> BASF News Release, 20 April 2009

<sup>23</sup> Available at www.ashland.com, 13 November 2008

# Prepared for tougher times Guy Bessant, Sasol

Sasol, the energy and chemicals company, has been doing business in China for more than a decade. It now produces and markets a wide range of speciality and commodity chemicals at sites in South Africa, Europe, USA and China. Guy Bessant, General Manager at Sasol Chemicals Shanghai Co Ltd, believes the company is well-positioned to handle growing pressures in the market and expects the domestic sector to emerge leaner and stronger from the current downturn.

A key landmark in Sasol's expansion into the chemicals business in China came in 2001, through its acquisition of Condea, a German company. With this acquisition, it inherited a surfactant plant in Nanjing, which produces a wide range of products. Since then, it has invested in a joint venture in Lianyungang to manufacture fatty alcohol, and is now also conducting feasibility studies for a multi-billion dollar coal-to-liquids facility.

"We are mostly focused on the commodities side, although some of our products, such as waxes, surfactants and some of the solvents range, are closer to the specialty segment," explains Bessant. "This is important as our main competitors are seeking to dominate in both areas, with many pursuing aggressive growth through acquisitions."

The Middle East is another key region for Sasol due to the proximity of petrochemical feedstock. "You only

have to look at the relative shortage of feedstock, such as propylene, to realise that it's not an area where China is currently competitive. However, China does offer potential in other areas given its coal reserves," says Bessant.

Bessant is unequivocal about the potential of China and the need to show long-term commitment: "where immediate profit potential may not be realised then we need to take a long-term view of the market and recognise the great potential within China."

Many of Sasol's domestic competitors stick to a limited range of products and compete fiercely on cost. Sasol's approach has been to produce a wider product range and develop a more sophisticated marketing mix that can adapt to customer needs and feedback.

Another issue is that smaller chemicals producers in China are running on a cash flow basis and one can expect some of these to come under even greater pressure in the months ahead, due to weakening demand and tightening credit from banks. Some companies have also been shut down for regulatory reasons.

Ultimately, Bessant believes, these developments will make the sector more resilient. He expects the current pressures to trigger consolidation and wider adoption of the kinds of service and marketing approaches employed by Sasol. Bessant has also seen several large domestic chemicals

companies bringing in experienced management from international chemicals companies. He suggests that over time these managers have helped in influencing the commercial culture of their organisations.

Bessant is clear that Sasol's research and development (R&D) programmes remain a valuable asset. "Our global R&D capability is a key element in our organisation. Many of China's domestic chemicals companies don't have that advantage yet," he remarks.

However, the sheer ambition of China's domestic companies will also force international investors to seriously assess their approach. An example has been the willingness of Chinese companies to build up huge capacity from scratch, rather than ramping up an investment project in phases. This proved logical up until recently, when growth in demand and market conditions was strong. It would take enormous courage for international investors to pursue the same approach under current circumstances. With the chemicals industry well-established in the eastern region around Shanghai and along the southern coast, Bessant believes great potential still lies ahead in the northern and western regions of the country, and describes the north as "the great frontier, with huge potential for growth in the future."

# Focus on agro-chemicals



With more than 40 percent of the Chinese labour force engaged in agriculture, agro-chemicals form an important part of the chemicals industry in the country. Over the last 10 years, pesticide output has more than doubled, rising from 647,700 tons in 2000 to over 1.9 million tons in 2008. The country is now the largest producer of pesticides in the world.<sup>24</sup>

Figure 1: World's top 10 seed companies

Company	2007 seed sale: (USD millions)	% of global proprietary seed market
1. Monsanto (US)	4,964	23%
2. DuPont (US)	3,300	15%
3. Syngenta (Switzerland)	2,018	9%
4. Groupe Limagrain (France)	1,226	6%
5. Land O' Lakes (US)	917	4%
6. KWS AG (Germany)	702	3%
7. Bayer Crop Science (Germany)	524	2%
8. Sakata (Japan)	396	<2%
9. DLF-Trifolium (Denmark)	391	<2%
10. Takii (Japan)	347	<2%
Top 10 Total	14,785	67% [of global proprietary seed market]

Source: ETC Group report: "Who owns nature?", November 2008

<sup>24 &</sup>quot;China opens doors to the world: Domestic pesticide producers focus on the expired patents," China Chemical Reporter, 26 January 2002

In 2008, China imported 6.18 million tons of agrochemicals, a drop of 47 percent from 2007. However, the average import price soared 130 percent to USD 561.8 per ton. Russia, Canada and Belarus are the major sources of the chemicals.<sup>25</sup> It was the largest agrochemical importer from the US until 2003 and in 2006, it imported fertilisers<sup>25</sup> worth USD 337 million and pesticides worth USD 40.4 million from the US alone.

Growth has been driven by increasing demand for foodstuffs and the accompanying need to increase the output per unit area of arable land. According to the Ministry of Agriculture, the total output of summer foodstuffs increased by 2.6 percent, or 6.1 billion catties, year-on-year to 240 billion catties for 2008. This was a consecutive year increase and reached an historical high. The output per acre rose 7.2 kilograms, or 2.5 percent, to 299.5 kilograms. The prime quality rate for wheat advanced to 63.2 percent.<sup>26</sup> Seventy percent of this was attributed to increased arable land use, while the remaining 30 percent was attributed to increased use of fertilisers and pesticides. Since fertiliser dosages are already at a high level, any increase in foodstuff volume will have to come from higher levels of pesticide dosage, or through developments in seed technology and treatment techniques.

As Michael Frank, President Asia Pacific President of Monsanto explains, "China's agricultural productivity growth is not keeping up with consumption growth. In particular, this is due to Chinese consumer's appetite for meat, for which production is more feedstock intensive."27

There are more than 2,600 pesticide producers in China, comprising around 600 raw pesticide producers and 2,000 pesticide processing enterprises. Many of the largest companies, such as Fujian Sannong Group Co., Ltd, Jiangsu Chemical & Pesticide Group Corp, Jiangsu Nantong Jiangshan Agrochemical & Chemicals Limited Liability Co., Shandong Dacheng Chemical Group Co., Ltd, Zhejiang Xinan Chemical Group Co., Ltd, and Nanjing Redsun Group Corp, are engaged primarily in pesticide production but have recently begun to diversify their operations.

Insecticides were historically the main segment of China's pesticide industry, but the potential for future growth may be higher for herbicides and bactericides. The percentage share of insecticides decreased from 64 percent in 2002 to 46 percent in 2007,<sup>28</sup> while herbicides represent a growing share of the market. "Glyphosate it's the largest family of herbicides and having once been under patent to Monsanto. It's now being produced domestically by many of the large domestic players," adds Mr. Frank.

<sup>25</sup> Available at http://www.agri.gov.cn/fxycpd/qt/t20090210\_1215618.htm
26 China Securities, 30 July 2008
27 KPMG interview with Mr. Michael Frank, Vice President, Finance, Monsanto, 4 December 2008
28 Available at http://www.agronet.com.cn/News/Detail\_164120\_0.aspx

To reshape and strengthen the market, the government has taken some initial steps, including officially prohibiting the manufacturing and application of certain highly toxic pesticides. The government has also allocated special funds to support the development of substitutes.29

Since 1 March 2008, it has been mandatory for new companies in raw materials to have over RMB 50 million (USD 7.2 million) in registered capital, and for processing companies, this cannot be lower than RMB 30 million (USD 4.32 million).

There have also been measures put in place to assist the development of China's pesticide industry. For example, the China Pesticide Development & Application Association was established by the Ministry of Agriculture in Beijing in October 2006.30 This association provides management support and acts as a link between the government and companies.

For international companies, the emphasis is moving from simply selling pesticides to more active R&D in areas such as crop protection and seed treatments. For example, Syngenta announced in early 2008 that it will invest USD 65 million over the next five years in a new biotech research and technology centre in Beijing, tapping into China's research potential and expertise in agriculture.

With food security and a desire for self-sufficiency as high governmental priorities, a focus on developing high-yielding crop seeds is likely to increase, as well as the desire to cultivate crops on marginal lands with varieties more tolerant to abiotic stresses than the current ones. As a result, notes Alan Bonjean, Managing Director of Limagrain China, genetically modified organism (GMO) crops could be more quickly adopted in China than, for example, in Europe.31



 <sup>&</sup>quot;China Agrochemical Industry into Golden Era," China Securities, 29 February 2008
 "China Pesticide Development and Application Association established," China Chemical Rep.
 KPMG interview with Mr. Alan Bonjean, Managing Director of Limagrain China, 22 April 2009 al Reporter, 16 January 2005

## Focus on engineering plastics



The engineering plastics sector in China suffers a strange dichotomy. While the domestic industry produced 2.28 million tons in 2007 (2.68 times the 2006 amount), domestic consumption continued to far outstrip this amount, rising to 9.43 million tons for the same period.<sup>32</sup> With urbanisation and rising technological awareness driving growth among major endusers in the auto, electronics and telecommunications sectors, China's demand for engineering plastics has increased dramatically, making it the largest importer in the world in 2007. The automotive and electronics sectors comprise 12 percent and 33 percent respectively of engineering plastics consumption in China.<sup>33</sup>

China remains dependent on foreign companies for many sophisticated engineering plastics products, and has consequently placed the industry high on its development agenda for the next decade. Improving and elevating the country's domestic industry will require greater technology transfer from foreign companies to their Chinese partners, and may also require high levels of foreign investment.

Looking at total consumption, the engineering plastics industry could be defined as a small-size industry. Nevertheless, engineering plastics have a breadth of applications in downstream industries such as e-communications, automotives, construction materials and office equipment, many of which enjoy significant support from the State. This means prospects for the industry in China should remain bright.

<sup>32</sup> See www.chemhello.com, 13 April 2009 33 See www.chemhello.com/Consult/html/5650.html

In their analysis of the industry in China, Frost & Sullivan found that while the engineering plastic market earned revenues of USD 5.50 billion in 2006, this is likely to more than double to USD 11.56 billion by 2013.34

A large proportion of this increased demand comes from the continued development in the electronic/electric, automobile and construction sectors over recent years. The consumption of general-purpose engineering plastics in China was just 394,000 tons in 2000, but reached 1.716 million tons in 2007, with an average annual growth of 23 percent.35

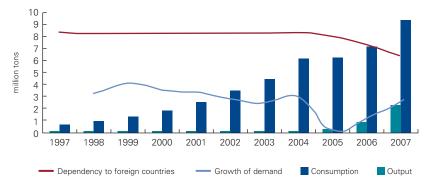
### International players dominate

Although the self-sufficiency rate increased from 9.3 percent in 2000 to 34.4 percent in 2007, the hi-tech polymers market in China is still dominated by international players.36 With limited domestic production technologies, most of China's engineering plastic producers remain foreign-funded enterprises.

The production capacity of the local Chinese plastics market has proved insufficient to meet rising local demand because most local enterprises have a comparatively weak competitive edge. Dominant multinationals such as Teijin, Bayer, DuPont, Asahi Chemical and LANXESS have all built wholly-owned or joint venture plants in China, and provide the leading edge products and technologies.

Few original, international patents with intellectual property rights have been registered in the domestic industry, and while general-purpose products are in surplus, high performance and high added-value products remain in short supply.

Figure 2: Production and consumption of plastic within China between 1997-2007



Source: www.chemohello.com, 13 April 2009

Frost & Sullivan: "Chinese Engineering Plastics Markets," October 2007
 See www.chemhello.com/Consult/html/5650.html
 Opportunities and worries in the development of engineering plastics," China Chemical Reporter, 6 January 2009

However, domestic player China National Bluestar (Group) Corporation has managed to develop a considerable presence in the engineering plastics sector through its product variety and production scale, so it is not impossible to compete.

#### Opportunities and development trends

Technology remains a major weakness for many players in the domestic industry and will continue to be a force that differentiates the many players in the market. Domestic firms that wish to plug the existing gap and catch up with future demand will require greater resources — both technological and financial — and the right strategies to harness those resources.

Taking lessons from successful international experience, many regions in China have instituted favourable policies in terms of reduced construction and operating costs, as well as complementary distribution of upstream and downstream production units, to encourage and develop the industry.<sup>37</sup>

With China pushing forward its domestic capabilities in numerous industries, such as aircrafts, nuclear plants, railways, ship-building and more, engineering plastics and their applications are likely to continue to grow. Urbanisation continues to drive demand for automotive and electronic products, despite the effects of the global downturn on consumer sentiment within China.

Figure 3: Demand for engineering plastics in China (thousand tons)

	2000	2001	2002	2003	2004	2005	2006	2007	2010e
PA*	83	120	138	161	192	217	256	294	510
PC*	164	213	360	484	624	700	798	966	1,500
POM*	96	107	130	158	187	192	222	249	320
PBT/PET*	41	44	56	72.7	94	110	182	221	250
MPPO*	10	15	18	24	33	40	50	62	84
Special	n/a	n/a	n/a	n/a	n/a	n/a	32	45	n/a
Total	394	499	702	899.8	1,130.2	1,259	1,540	1,837	2,664

Source: Association of China Engineering Plastics, "Retrospection and Prospection of China Engineering Plastic Industry in 2007," available in Chinese at www.cnki.net

<sup>\*</sup> PA — Polyamide; PC — Polycarbonate; POM — Poly-oxymethylene; PBT/PET — Poly-butylene terephthalate/polyethylene terephthalate; MPPO — Modified polyphenylene oxide.

<sup>37</sup> Opportunities and worries in the development of engineering plastics," China Chemical Reporter, 6 January 2009

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Publication date: August 2009

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