

REACTION

Chemicals Magazine / Twelfth Edition

M&A trends in the global chemical industry

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cutting through complexity



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External factors
drive increased
M&A in chemicals

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China's chemical
industry: the
emergence of
local champions





Introduction

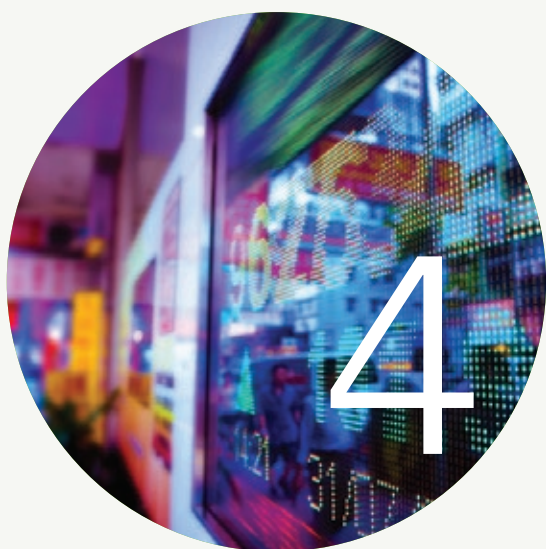
Welcome to the latest edition of Reaction Magazine and the last edition for the 2013 calendar year. It's been a year of reasonably positive growth for the industry, while the outlook remains one of guarded optimism – not helped by external shocks such as the recent government shut down in the US and tapering of growth rates in emerging markets, in particular China, where more moderate economic growth appears to be the new normal.

In this edition, we review the Chinese chemicals sector, looking at how the sector has developed through the growth of both State Owned Enterprises (SOEs) and Privately Owned Enterprises (POEs) and provide a future outlook for the development of this growing and competitive sector. We also review the chemicals M&A market, including the major influences impacting the global M&A landscape and what we can expect in the future.

Our Global Chemicals and Performance Technologies Practice continues to be active in the industry, by recently attending the ACC Chairman's dinner and meeting members of the Asia Pacific chemicals community during our annual visit to the region.

We will be back with our next edition of Reaction in February 2014. If there are any other topics you would like us to cover in future editions please don't hesitate to contact us.

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Summary



External
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increased

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by *Paul Harnick*

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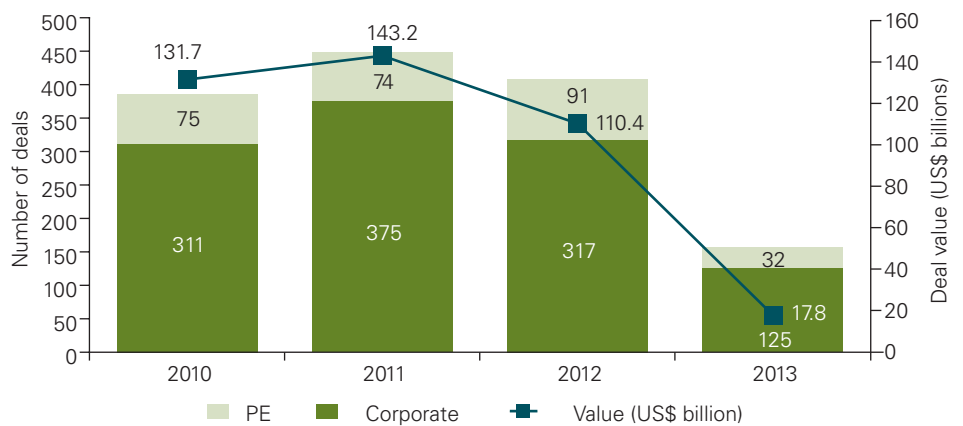
in chemicals



Fracking has substantially reduced natural gas prices, thereby making US energy independence a real possibility.

Recently, a fundamental change has occurred in the US energy landscape. Fracking has substantially reduced natural gas prices, thereby making US energy independence a real possibility. Energy prices are a major factor in the global chemical industry and this shift, as well as global macroeconomic trends, is causing the chemical industry to fundamentally rethink its long-term growth strategy. One of the most likely scenarios is an increase in M&A. Deal activity has been limited due to an economic slowdown in Asia, continued weakness in Europe and uncertainty surrounding US economic policies. However, we expect that today's increasingly stable global economic environment, combined with ongoing dynamics within the industry, will make deal activity more prevalent in the near future.

M&A activity in the global chemical industry



Source: Mergermarket, November 2013

Note: PE deals include acquisitions by investment companies and sovereign wealth funds



Chemical companies take advantage of scale to have a global presence. However, different regions are in very different stages of the business cycle.

A tailored geographic approach is needed

Chemical companies take advantage of scale to have a global presence. However, different regions are in very different stages of the business cycle. Additionally, local market demand, access to technology, infrastructure capacity and labor, tax and political stability all have notable impacts on geographic decisions. Therefore,

executives must focus on different criteria in terms of strategy and analyze different issues during due diligence, depending on where they are investing. Global chemical companies also need to ensure that they are making optimal use of investment capital and management time.



US market dynamics drive

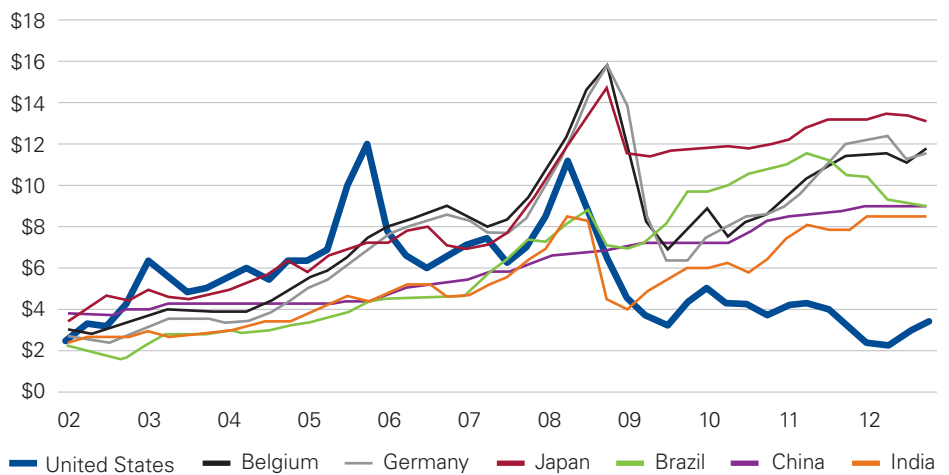
global reallocation and growth



Shale gas is an important component in chemical production, both as a feedstock and in its power generation capacity.

Trends in natural gas prices around the world

\$ per million BTUs



Sources: EIA, Petrobras, IMF, World Bank, November 2013

"Shale Gas, Competitiveness and New US Chemical Industry Investment: an Analysis Based on Announced Projects," American Chemistry Council, May 2013

Shale gas is an important component in chemical production, both as a feedstock and in its power generation capacity. The sheer abundance of proven shale gas – a 200-year supply based on current US demand outlook – has been a global game changer. In fact, the abundance of gas has resulted in a price decline from US\$15/million Btu in 2008 to less than US\$4/million Btu in 2013. Suddenly, it has become cost-effective to build or move manufacturing facilities to the US. Further motivated by an improving economy, chemical companies have been expanding existing facilities and are also exploring investments in greenfield assets. US-based companies, as well as overseas companies – many of those from emerging markets – make up the potential investor base.

Ultimately, these investments will have a huge impact on the entire

manufacturing sector and supply chain, providing products for other industries in the US, such as the automotive and aerospace industries. ‘Made in America’ has the potential to become a cost-effective option.

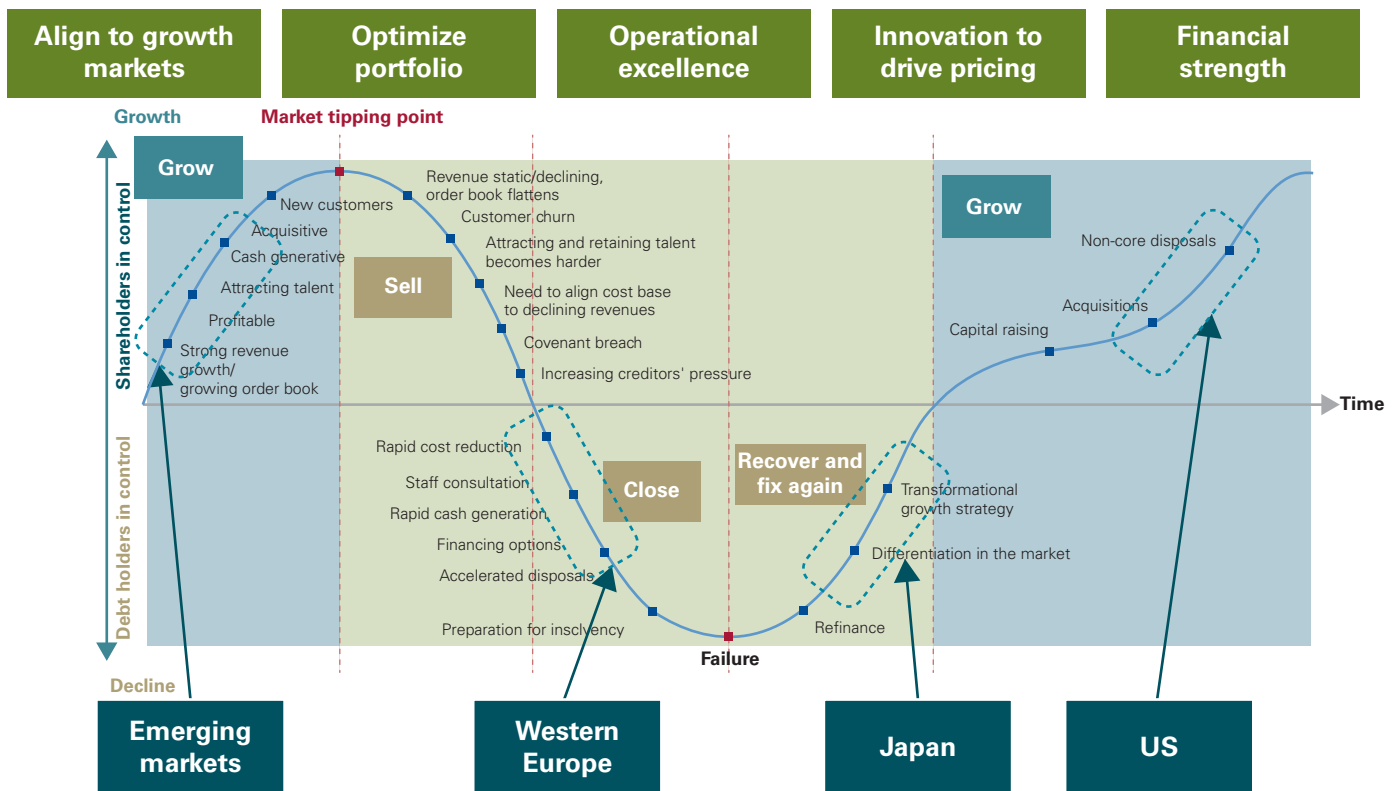
At the same time, a huge appetite remains for specialty chemical assets in the US, as companies continue to focus on these high technology and higher-margin areas of the value chain. Producers in this sector tend to respond to critical global challenges, such as population growth, climate change and food and water shortages.

In the US, buyers outnumber sellers of chemical companies, particularly in popular segments such as Personal Care and Specialty Ingredients. This relative scarcity of attractive assets has resulted in high valuation multiples. At this end of the value chain, the cheaper

price of gas is less important, since energy costs are a smaller percentage of production costs. Due diligence should focus on support for synergies (to the extent they underpin valuation) and robust integration planning that captures all aspects of the supply chain, including manufacturing footprint, logistics and procurement. Commodity chemical investments need to be built on a clear commercial strategy.

Despite the likely on-shoring of manufacturing, the US market will not be able to absorb all of the planned new capacity. Market entry studies and a thorough analysis of supply chain and logistics need to be critical parts of due diligence prior to any investment decision. Overseas buyers also need to understand state and local tax issues, the potential availability of subsidies and optimal methods of accessing finance.

Managing global growth is challenging



Source: KPMG Analysis, 2012



The last 12 to 18 months have seen an increased interest in newer emerging economies that will provide the next wave of chemical demand.

Emerging markets provide both eager acquirers and favored investment destinations

Asia, and particularly China, continues to be one of the strongest engines of growth for the global chemical industry. In 2010, China overtook the US as the largest chemical producer in the world,¹ and despite the slowdown in its economy, domestic production is still growing at approximately 8 percent a year. In addition, the last 12 to 18 months have seen an increased interest in newer emerging economies that will provide the next wave of chemical demand. These regions include Indonesia, Vietnam, the Philippines, Thailand and Eastern Europe.

However, many global companies have been slow to diversify their emerging market strategy away from just China. A recent KPMG survey found that 30 percent of industry executives said they did not have an emerging market strategy in place.² We believe it is critical for companies to have an established emerging market footprint. Even if shale gas moves the industry supply base to the US, long-term demand growth will be in the emerging markets.

In the emerging markets, a joint venture is usually the most common investment approach. Joint ventures are mandated by local law in many developing

countries. In other emerging markets, even if regulations allow for more direct investment, a joint venture may still be beneficial since it matches Western technology and know-how with local knowledge of customers and business culture.

Common challenges for established chemical companies seeking to invest in emerging markets include understanding the landscape of potential targets, unraveling complicated ownership structures and ensuring the protection of intellectual property. Due diligence should include a Foreign Corrupt Practices Act (FCPA) component and an understanding that deals are likely to take longer to complete than in established markets. Furthermore, these deals may involve significant amounts of management time. Investing in emerging markets requires buyers to spend time understanding the local culture and building a credible relationship with the ultimate decision makers. Successful joint ventures will include a detailed plan of shared objectives and clarity of post-deal operating structure, as well as an agreed exit strategy if applicable to both parties.



In the emerging markets, a joint venture is usually the most common investment approach.

¹ CEFIC, Facts and Figures Report, September 2011

² Survey undertaken during a KPMG International Webcast entitled "Strategic realignment in the global chemical industry", August 2013

Divestitures likely in Europe

Europe continues to be plagued by slow growth and long-term structural issues, including overcapacity in certain segments, as well as an abundance of inefficient plants. However, Europe can be an attractive market for certain global players. It has a large end-market with a high intellectual capital base. There is currently an excess of likely sellers over buyers in Europe as companies seek to rationalize their holdings and divest under- or non-performing assets. We expect to see continued consolidation at the commodity end of the market. For example, in May, Solvay and Ineos Group, two of Europe's largest chemical companies announced the creation of a PVC joint venture, one which will eventually allow Ineos to buy out Solvay's stake for approximately €1 billion.³

Even though buyers in Western Europe may have an advantage, they will still need to focus on several challenges. On the due diligence front, acquirers need to have a comprehensive understanding of the union and workforce rules, since it may be difficult to implement any cost savings assumptions involving a workforce reduction in certain countries. For sellers, the key to maximizing value is preparation. Sellers should fix underlying performance issues before bringing assets to market, undertake a robust financial and operational carve-out to disentangle businesses and have a clear view of both the value proposition of the business and the likely bidder community. Buyers also need to consider legacy environmental and pension issues, helping to ensure adequate warranty and indemnity protection in sale and purchase agreements.



Europe continues to be plagued by slow growth and long term structural issues, including overcapacity in certain segments, as well as an abundance of inefficient plants.

³ Financial Times, "Solvay takes step to shed PVC unit through Ineos joint venture," 7 May 2013



At least some of the buy-side activity in commodity chemicals in Europe and the US is expected to come from private equity (PE) investors.

PE buyers will

also be active

At least some of the buy-side activity in commodity chemicals in Europe and the US is expected to come from private equity (PE) investors. PE firms are finding it difficult to compete with strategic buyers in the specialty chemicals space because they cannot price in the synergies needed to be successful at high deal multiples. They are also unable to leverage deals to the

extent they could pre-2008. However, PE firms are attracted to the commodity space, where those non-core assets can provide a solid return. Recent examples include The Carlyle Group's US\$4.9 billion acquisition of DuPont's powder coating business⁴ and SK Capital's US\$500 million purchase of Clariant's textile, paper specialties and emulsion business.⁵

⁴ Carlyle Group press release, 3 February 2012, "The Carlyle Group Completes Acquisition of DuPont performance Coatings."

⁵ SK Capital press release, 27 December 2012, "SK Capital to acquire three businesses of Clariant."

Conclusion



Conclusion

The global chemical industry is undergoing dynamic changes, with external factors presenting industry executives with different challenges in different regions of the world. Leading companies are matching their M&A strategies to their long-term business strategies.

In the US, the strength of the business case and a matching of long-term supply and demand is critical at the commodity end of the market. At the same time, delivering on synergy targets and robust integration are keys to returning shareholder value on highly priced specialty deals. In emerging markets, up-front risk mitigation, combined with a portfolio approach that is not limited to China will help companies capture the broad array of available benefits. In Europe, the strategy is to focus on quality business units, ruthlessly restructure the operational cost base and take the time to carve out and successfully divest non-performing assets. In all locales, tailored due diligence is key and can help acquirers engage in the most successful deals.

The challenge for global chemical companies is that achieving one of the above is simply not enough. A successful business strategy requires all aspects to be performed equally well (and often at the same time) to fully benefit from an upturn in chemical industry M&A activity.



China's

CHEMICAL INDUSTRY

the emergence of local champions



by
Norbert Meyring

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The Chinese economy has entered a unique stage of development. It is slowing, but in a controlled and more sustainable manner. This is the 'new normal', a period where China's growth rate will be modest and a more mature economy will rebalance itself away from its investment-led model to focus on consumption and services. A key development in this current environment is the emergence of low-profile but powerful chemical players known as 'local champions'. Both state-owned and private, these companies have large economies of scale, extensive portfolios through innovation and a keen eye for overseas expansion.



Chemical industry performance in 2012

Investment

- Total chemical industry: RMB1.23 trillion/growth – 27.9 percent year-over-year (yoy)
- Synthetic materials: RMB154.43 billion/growth – 54.5 percent yoy
- Basic chemical raw materials: RMB407.25 billion/growth – 43.5 percent yoy
- Special chemical crystal industry: RMB276.18 billion/growth – 16.3 percent yoy
- Rubber industry: RMB133.31 billion/growth – 5.7 percent yoy.

Overall market demand

- Total consumption of main chemical products: 434 million tons, up by 7 percent (3 percent below 2011)
- Organic raw material consumption: up by 7 percent (12 percent below 2011)
- Inorganic raw material consumption: up by 5.7 percent (6.7 percent below 2011)
- Synthetic rubber consumption: up by 6.6 percent (1.4 percent over last year).

Source: China Petroleum and Chemical Industry Federation (CPCIF)

Chemical industry performance in H1 2013

Business revenues	RMB3.8 trillion/growth: 13.2 percent yoy
Profits	RMB171.71 billion/growth: 10.6 percent yoy
Investment in fixed assets	RMB610.4 billion/growth: 13.3 percent yoy
Export volume	US\$71.3 billion/growth: 3.6 percent yoy

Source: National Development and Reform Commission (NDRC), 2013

Despite a recent slowing of demand, China commands a third of the global chemical market and is expected to maintain continued market and production growth in the years ahead.

An understanding of current and future growth trends must take into account the crucial role played by the government's Five-Year Plan that serve as guidelines for the government and industry.

The 12th Five-Year Plan:

self-sufficiency and sustainability

China's 12th Five-Year Plan (2011-2015) demarcated seven strategic industries, of which four are directly related to the chemicals sector.

China's 12th Five-Year Plan (2011-2015) remains a sound reference point to predict the future of the domestic chemical industry. The Plan has demarcated seven strategic emerging industries and four of these are directly related to the chemical sector: new energy sources, new materials, automotive manufacturing and green, energy-saving products.

Until now, medium-to-large Chinese companies were mostly engaged in the bulk chemicals side of business, while

a relatively small number of foreign multinational corporations dominated the niche market in specialty and high-end chemical segments. Since chemical manufacturers have high fixed costs and produce commoditized products, it was difficult for Chinese companies to differentiate and expand their portfolios. As a result, each player developed dominance over their respective segments and the markets of local and global corporations seldom overlapped.



All this is now changing. The 12th Five-Year Plan seeks to increase China's self-sufficiency in chemicals and establish an environment that promotes sustainability. Accordingly, domestic chemical manufacturing companies are being encouraged to enhance their value chains and compete internationally. This is evident from the marginal retreat of basic chemicals and the emergence of synthetic materials and specialty chemicals.

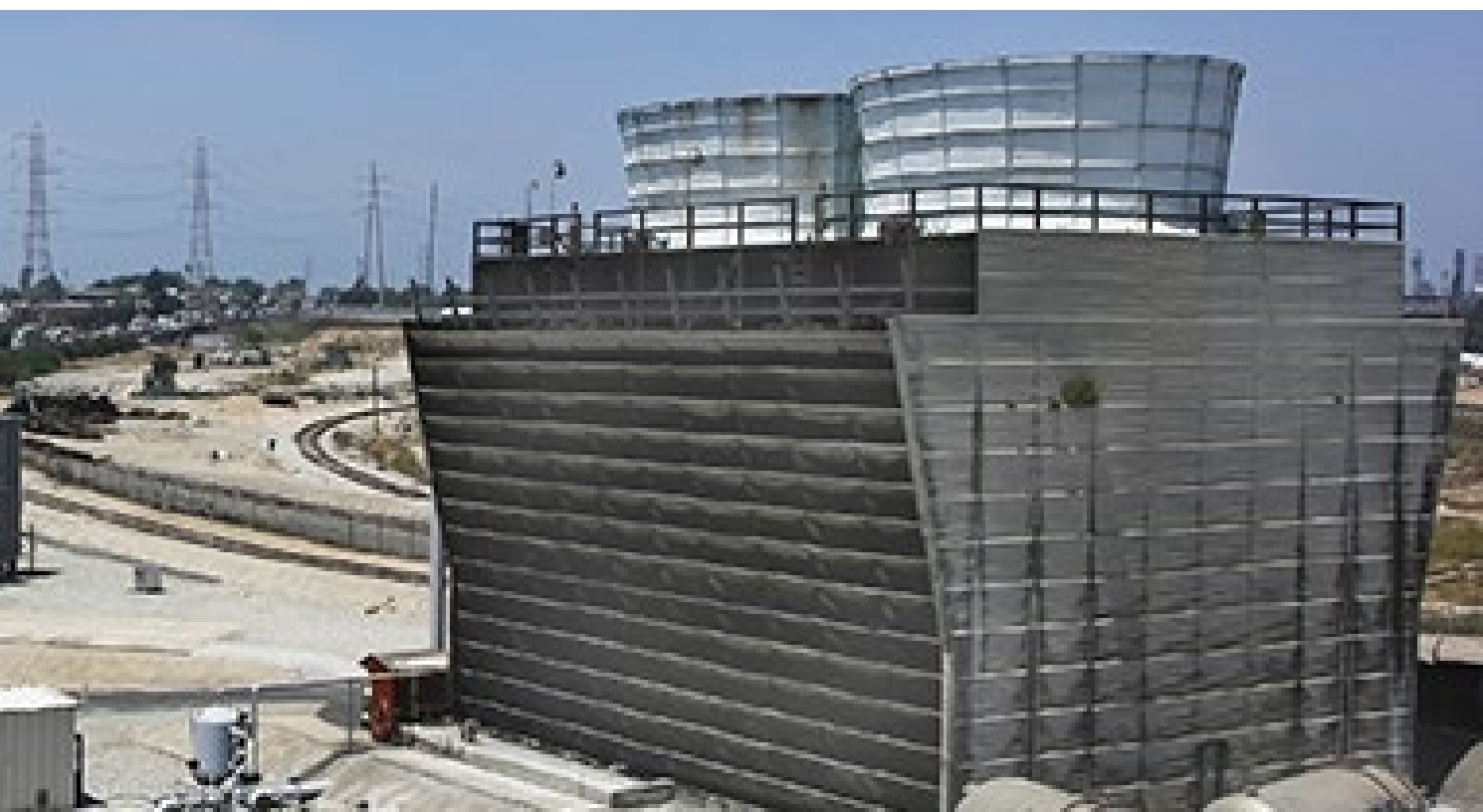
Self-sufficiency remains an elusive goal. Although China is the biggest producer of chemicals, it still suffers from a deficit between total chemical demand and its supply. In 2009, the trade deficit in chemicals was US\$54.5 billion. Current demand for chemicals used in plastics, for example, far outpaces local capacity. This deficit is expected to remain until 2020.¹

Self-sufficiency is especially tied to growth in segments such as specialty and fine chemicals. There are several sectors in which China is a net importer and has set a goal of 80 percent self-sufficiency by 2015. In new chemical

materials, the goal is to increase self-sufficiency from 56 percent in 2009 to 76 percent by 2015. The fine chemical segment is also undergoing structural adjustment and product innovation. It is expected that by 2015, China's fine chemical production value will reach RMB1.6 trillion, twice that of 2008.²

To support environmental sustainability, the 12th Five-Year Plan set a goal that by 2015, at least 20 percent of all newly constructed building spaces must meet the Chinese 'Green Building' standard. As a result, green retrofitting polymer demand will be on the rise.³

Sustainability also includes water treatment, one of the fastest-growing chemical sectors. Rising water stress and environmental concerns across China generate huge potential for water treatment chemicals. The government's initiatives in the 12th Five-Year Plan has made 'Energy Conservation and Environmental Protection' a priority. The water treatment chemicals market in China is expected to reach US\$3.3 billion by 2018.



¹ AT Kearney

² Market report of China's fine chemical industry 2012, China Import Forum

³ Green buildings in China: Aspirations versus realities, asiagreenbuildings.com, 4 June 2013

China chemicals

consolidate



Based on sales revenue over the past decade, a number of smaller companies have been slowly phased out of the Top 500 bracket.

Revenue (RMB)	Companies in 2002	Companies in 2011
20 to 34.8 billion	0	7
10 to 20 billion	0	36
5 to 10 billion	0	98
1 to 5 billion	31	359
0.5 to 1 billion	60	0
Less than 0.5 billion	409	0

Source: China Chemical Enterprise Management Association/China Chemical Intelligence Information Association, 2013

In the past decade, the effect of globalization and the government's consolidation plans for the chemical industry have had a strong impact. Based on sales revenue over the past decade, a number of smaller companies have been slowly phased out of the Top-500 bracket. In 2002, not a single company managed sales revenue higher than RMB5 billion, but by 2011, there were as many as 7,141 companies in that range. In fact, the government's efforts to consolidate the fragmented chemical sector seem to have paid off. Companies with sales revenue less than RMB1 billion numbered 460 in 2002, but now all of these companies have shut down or been acquired by larger entities.

In the same way, the industry is now dominated by fewer but larger companies. In 2002, the proportion of revenue generated by the top 500 companies was 21.6 percent of the sector's total revenue. By 2011, this shot up to 36.6 percent. In addition, the proportion of total assets of the top 500 companies increased from 22.1 percent in 2002 to 41.7 percent in 2011.

An important aspect of the consolidation process is the change in ownership patterns and the rise of privately owned companies. Understanding ownership models can be a complex process, especially with corporate diversification and cross-industry mergers and acquisitions occurring frequently.



Many large chemical companies turned into non-chemical conglomerates, even as upstream petrochemicals enterprises extended the industrial chain downstream to enter the chemical industry.

Like other industrial sectors of China, the chemical industry has various successful models of ownership. These models are either state-owned enterprises (SOEs), private-owned enterprises (POEs), foreign-funded enterprises or collective-owned, collective associates or other joint-stock enterprises. The most impressive development involves the rise and adaptability of the private sector.

Local players, particularly domestic POEs, have improved in areas in which European firms have traditionally been strong. These entities, along with SOEs, have surged ahead over the past two years in terms of production, brand recognition and marketing and sales.

The fact that private enterprises have gained in strength can also be gauged from the 10-year data of the Top 500 enterprises. The number of SOEs decreased from 279 in 2002 to 127 in 2011. In contrast, the number of POEs increased substantially from 26 in 2002 to 93 in 2011.

Increased competitiveness

The competitiveness of Chinese companies has increased over the years, linked with government policy and the transformation of the economy itself. Policy-makers have been trying to shift from an investment-driven model to a model based on raising domestic consumption and rebalancing the trade deficit through increased imports from advanced economies. At the same time, the information technology (IT) sector is growing exponentially and the middle class population is now more environmentally conscious.

These trends in the economy and changing nature of demand have affected the competitiveness of Chinese companies in positive ways. Total profits and assets have increased significantly in the past decade, as the scale of many companies went from 'large to mega'. The 2002 annual profit of Top 500 companies was recorded as RMB6.60 billion. However, by 2011, it had increased to RMB174.52 billion, an increase of over 2,500 percent. This rise was much higher than the industry-average growth rate of

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These trends in the economy and **changing nature of demand** have affected the competitiveness of **Chinese companies in positive ways.**”





These massive profit increases indicate how focusing on quality rather than volume has paid off.

12.7 times in the same period. The proportion of profit generated by these 500 enterprises within the chemical industry rose from 25.3 percent in 2002 to 37.3 percent in 2011.

These massive profit increases indicate how focusing on quality rather than volume has paid off. Top companies have restructured themselves and become more competitive. By 2011, the largest group of Top 500 firms were in the synthetic materials sector, followed by basic chemicals and then specialty companies. Meanwhile, the number of fertilizer companies, chemical pesticides, chemical mining and coatings has decreased. By 2012, the total number of specialty chemicals companies had reached

6,341, overtaking basic chemicals enterprises, which stood at 5,666.

In terms of revenue, companies producing new synthetic materials are the most profitable, accounting for more than one-fifth of sales revenue of the Top 500 companies. This segment is followed by basic chemicals, specialty chemicals and tire-makers. Significantly, the space for fertilizer companies has decreased, dropping from the front-runner to fifth position on the revenue scale.

Historical data and development trends of top Chinese enterprises reveal certain unique characteristics that make chemical enterprises strong survivors and trendsetters.

Change in industry structure (top 500 trends)

Sector	2002 Number	2011 Number	
Synthetic materials	33	103	Up
Basic chemical raw materials	81	87	Up
Specialty chemicals	49	80	Up
Tires, etc.	26	43	Up
Fertilizers	136	67	Down
Chemical pesticides	40	13	Down
Paint, printing ink, pigments, dyes	20	12	Down

Source: China Chemical Enterprise Management Association/China Chemical Intelligence Information Association, 2013

Comparison of sales revenue of the top 500 companies (expressed in RMB billion)

Sector	Sales revenue		Percentage of total revenue	
	2002	2011	2002	2011
Synthetic materials	175	515.2	10	21.6
Basic chemical raw materials	297	433.9	17	18.2
Speciality chemicals	131	379.2	7.5	15.9
Tires, etc.	146	283.9	8.4	11.9
Fertilizers	422	280.9	24.2	11.8
Chemical pesticides	126	47.7	7.2	2.0
Paint, printing ink, pigments, dyes	48	43.8	2.8	1.8

Source: China Chemical Enterprise Management Association/China Chemical Intelligence Information Association, 2013

Unique characteristics of

Chinese chemical companies

Top 30 chemical enterprise in China			
Rank – Company	Ownership	HQ	Main business
1. Sinopec	SOE	Beijing	Petroleum, petrochemical and chemical products
2. CNPC	SOE	Beijing	Oil and natural gas, chemical and petrochemical products
3. CNOOC	SOE	Beijing	Offshore energy exploration
4. Sinochem Group	SOE	Beijing	Agro-chemicals, fertilizers, chemical logistics
5. Shenhua group	SOE	Beijing	Coal mining, distribution and coal chemicals production
6. China National Chemical Corporation	SOE	Beijing	New chemical materials, specialties, basic chemicals
7. Yanchang Petroleum International Limited	SOE	Shanxi	Oil and gas, petrochemical engineering, salts and chemical engineering
8. Tianjin Bohai Chemical Industry Group Co., Ltd.	SOE	Tianjin	Vast range of chemical products, basic and specialties
9. Shanghai Huayi (Group) Company	SOE	Shanghai	Fine chemicals, new materials, fluorine chemicals
10. Chongqing Chemical & Pharmaceutical Holding (Group) Company	SOE	Chongqing	Chemicals, pharmaceuticals and salt production
11. Hubei Yihua Group Limited Liability Company	SOE	Hubei	Coal chemicals, basic chemicals and salt chemicals
12. Yuntianhua Group Co., Ltd.	SOE	Yunnan	Organic chemicals, new fibreglass materials salt and salt chemicals
13. North Huajin Chemical Industries Group Corporation	SOE	Liaoning	Petrochemical products, PVC, fertilizers, fine chemicals
14. Befar (Group) Co., Ltd.	POE	Shandong	Caustic soda, inorganic chemicals, fly ash products, salt products
15. Hengyi Petrochemical Co., Ltd.	POE	Zhejiang	Pure terephthalic acid (PTA) and polyester fibre products
16. Sichuan Hongda Co., Ltd.	POE	Sichuan	Polymetals, large number of organic chemicals including phosphate fertilizers, etc.
17. Jiangyin Chengxing Industrial Group Co., Ltd.	POE	Jiangsu	Phosphate-based chemicals, fertilizer varieties, polyesters, liquid chemical logistics
18. Shandong Jincheng Petrochemical Group	POE	Shandong	Petrochemical products

Top 30 chemical enterprise in China			
Rank – Company	Ownership	HQ	Main business
19. Lihuayi Group Co., Ltd.	POE	Shandong	Petroleum and construction material/chemicals
20. Hixih Rubber Industry Group	POE	Shandong	Rubber, tire and conveyor production
21. Jiangsu Sanfangxiang Group Co., Ltd.	POE	Jiangsu	Chemical fiber raw material and other fabric products
22. Hangzhou Zhongce Rubber Co., Ltd.	SOE	Zhejiang	Synthetic tire production
23. Shandong Chambroad Holding Co., Ltd.	POE	Shandong	Non-petroleum products and chemical trading
24. Yunnan Coal Chemical Industry Group Co., Ltd.	SOE	Yunnan	Coal mining, coal to olefins production via gasification and liquefaction process
25. Risun Holding Co., Ltd.	POE	Beijing	Chemicals and coal chemicals
26. Shandong Dongming Petrochemical Group Co., Ltd.	SOE	Shandong	Oil processing, petrochemicals, coal chemicals, chlor-alkali etc
27. Transfar Group	POE	Zhejiang	'Green chemicals' and innovative products
28. Wengfu (Group) Co., Ltd.	SOE	Guizhou	Phosphate mining and related compound fertilizers
29. Rongsheng Petrochemical Co., Ltd.	POE	Zhejiang	Petrochemicals products and polyester material
30. Kailuan Energy Chemical Co., Ltd.	SOE	Hebei	Coal mining and associated chemical products

Source: Ranking compiled by KPMG, based on sales revenue, with data inputs from China Chemical Enterprise Association and China intelligence Information Association, 2013

Scale of operations and strong product portfolio

Major Chinese companies have been able to establish vast scales of operations, conquering domestic markets and making inroads into global distribution channels. Some of these companies are scaling up and extending their industrial value chains, even while they support product quality. The top 30 companies, however, are traditional enterprises whose core business remains bulk chemicals, fertilizers and pesticides.

Sinochem is a primary example of a large-scale diversified enterprise. It is China's fourth-largest national chemical and petrochemical company, with a vast range of activity spanning energy, agriculture, chemicals, real estate and financial services. In the chemicals business, it is the biggest fertilizer supplier and distributor and has a

formidable infrastructure of chemical logistics, including tankers and shipping services. Sinochem Holdings is Sinochem's flagship fertilizer arm, whose product line includes nitrogen, phosphate and potash. Sinochem is also China's leading pesticide company with two national pesticide R&D centers and three mega production bases in Shenyang and Nantong. Sinochem has extended its operations to other Asian countries as well as Europe and America.

Some of the top 30 Chinese companies have impressive production scale. Hubei Yihua Group is the world's biggest polyol producer with an annual output of 110,000 tons, controlling 80 percent of domestic market share. It is also one of the largest fertilizer manufacturers, with production of 500 tons of urea and 2 million tons of ammonium chloride, among other products. The group is a major chlor-alkali producer, with an annual output of 1 million tons of PVC, 0.8 million tons of caustic soda and

1 million tons of calcium carbide. It is the largest mineral salt producer in Asia, with an annual 2 million tons of vacuum salt production. At least 60 percent of its markets are in Southeast Asia, Africa and South America. It also sells in North America, the Middle East, Eastern Europe and East Asia.

Hubei Yihua has more than 20 subsidiaries, among which are two public companies, Hubei Yihua Chemical Industry Co. and Hubei Shuanghuan Science and Technology Stock. The company has five joint ventures, 26 R&D centers and a number of subsidiary entity companies, as well as a joint venture in Vietnam. Yihua focuses on a variety of industries, including coal chemicals, phosphorus chemicals, salt chemicals, natural gas chemicals and mine development.

Tianjin Bohai Chemical Industry Group: strong base, large portfolio

The Tianjin Bohai Chemical Industry Group is a large state-owned enterprise, owned by the Asset Supervision and Administration Commission of Tianjin Municipal Government and has grown to a formidable scale. In 2012, it ranked 182nd among China's top 500 enterprises, owning 105 state-owned and state-held enterprises, 31 joint ventures, one state-level enterprise technological centre, 10 provincial level technology centers and seven scientific research institutes, among many others. In 2012, the company recorded operating revenue of RMB66 billion.

Challenges and solutions: Despite being a large group, Tianjin Bohai, like several non-central state-owned enterprises, faces several challenges, such as control over feedstock. Be it coal and natural gas and condensate oil – non-central state-owned enterprises lack influence. When compared to central state-owned enterprises, there is a great discrepancy in their ability to dominate internationally.

Bohai Industrial Group Chairman Zhao Lizhi said the company is dealing with these issues at various levels. According to him, the group is adjusting its product structure, industry and capital structure along with management and human resources to make the company more influential.

The state-owned enterprise is trying to better manage its feedstock supply, tapping mainly domestic coal-based sources and global gas and shale gas supplies. With the support of the Tianjin Municipal Government, the company is investing in Western China provinces of Ningxia and Inner Mongolia. It is also venturing into Russia, US and Canada, in co-operation with foreign partners.

Tianjin Bohai is focused on enhancing product and technology innovation, combining existing products with new innovations to create niche markets, working on process optimization and reducing emissions. For this, the company is spending heavily on R&D. At least three percent of its annual sales revenues have gone into its own research efforts, apart from acquiring foreign technology.

Human resources is also a major focus area for the company. With plans to extend its global ambitions, lack of international management experience often becomes a hurdle. Like most Chinese companies, until now, Tianjin Bohai's international exposure is only through imports and exports, but in order to make overseas acquisitions, the company is trying to acquire the requisite international talent.

**– Zhao Lizhi, Chairman,
Tianjin Bohai Chemical Industry Group**





Prominent domestic companies have a distinctive record of technological innovations and combine the ambitious aims of capturing new market spaces while also achieving self-sufficiency and sustainability.

Innovation through R&D

An important characteristic of Chinese companies is their ability to innovate, spend on research and incorporate technological changes into their production processes. Enterprises are spending considerable resources and capital to manufacture new chemical materials used in information technology, aviation, aerospace, energy, automotive and green construction. Such companies pose a strong challenge to foreign multinationals through their sheer ability to invest along the entire value chain.

Prominent domestic companies have a distinctive record of technological innovations and combine the ambitious aims of capturing new market spaces while also achieving self-sufficiency and sustainability. For instance, Yantai Wanhua, focused exclusively on revitalizing the national polyurethane industry through the acquisition of technology. In its earlier incorporation as Yantai Wanhua Polyurethane Co. Ltd., the company had developed independent intellectual property rights of MDI manufacturing technology and depended on independent innovation as a core driving force.

Rising Sun Holdings (Risun), another heavyweight company, along with

its subsidiary, Xu Yang Holdings, is China's largest coal chemical products manufacturer and supplier of coke, coal tar, crude benzene, methanol, crude phenol and industrial naphthalene. In order to establish its strength in a new sector, Risun used advanced technology from Germany and other patented technology from international research institutes. Headquartered in Beijing, Risun has three coal chemical industry bases: Xingtai, Dingzhou and Tangshan. A web of subsidiaries and joint ventures allows the company to produce on a large scale with a massive turnover.

Many private companies are also competing efficiently with state-owned enterprises and foreign-funded enterprises in the race to innovate. Companies like Nanjing Red Sun Group, have developed low toxicity, environmentally friendly pesticides through their own efforts. Nanjing Red Sun has 52 professional labs, 1,700 technical staff and holds independent intellectual property rights. Nanjing Red Sun manufactures nearly 168 high-tech pesticide products and is among the top 10 global pesticide companies. It has built the largest pesticide production centre in the Asia-Pacific region, with RMB6.7 billion sales in 2011.

Shanghai Huayi Group: invested in R&D

Shanghai Huayi Group is a non-central state-owned enterprise with a diversified product portfolio, strong brands and an expansionary market which extends overseas. The group has 17 major subsidiaries, 11 R&D centers and three listed companies: Shanghai Chlor-Alkali Chemical Co., Double Coin Holdings Ltd., and Shanghai 3F New Materials

Co. Its 2012 sales revenue reached RMB45 billion.

The Huayi Group has managed to build an extensive downstream product range – from steel radial tires to fine chemicals, coatings, pigments SAP, MMA, methanol, acetic acid, energy chemicals, advanced polymers like PVC, ABS, PTFE and refrigerants. Its development

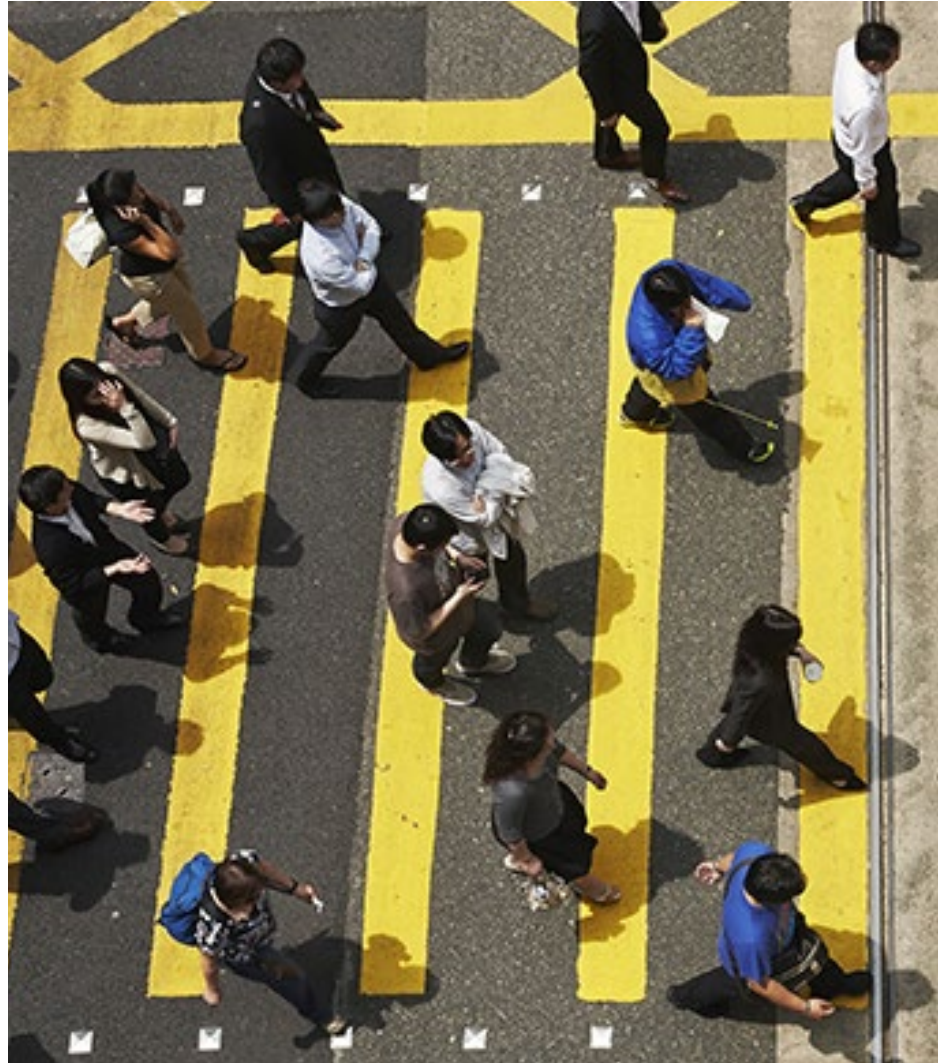
strategy revolves around three key pillars: resource, market and economic benefits, according to Chairman Liu Xunfeng.

The Group is heavily invested in R&D, with 2-to-3 percent of its annual sales revenue spent on research through its own centers, including cooperation with domestic and overseas universities and institutes.

Quality and branding

Powerful Chinese enterprises have gradually changed their prioritization from product management to brand management and are in the process of internationalizing their business. A number of companies are aggressively promoting their brands in the global marketplace and in fact have formulated unique approaches.

Shandong Linglong Group, a Top 500 company, has a well-placed strategy of focusing on quality and acquiring patents to market tires in the international market, a very competitive sector. The company manufactures tires for high-end cars for the American and European markets. It has acquired patents for the design of its heavy trucks in China, the US and Australia. It also became the first Chinese enterprise to break through the technological monopoly of western countries in the 'run flat' tire category. Before 2001, Linglong Group was an average performer in the tire industry, but its strategy of building high-value brands and building a capacity of 3.5 million tires a year catapulted it into a global company.



It has 35 joint ventures, mainly with multinationals such as BASF, Dupont, Honeywell, Michelin and AkzoNobel. According to Liu Xunfeng, the main challenge for the group is how to integrate its five core business segments.

Safety and environmental concerns are the second major challenge.

One way to meet this pressure is through consolidation and more M&As in the next 10 years. Chairman Liu stated that consumers are becoming increasingly aware of environmental issues and chemical companies need to pay more attention to their corporate social responsibility, make efforts to improve technology and reduce

pollution. One of Huayi Group's listed companies has already joined the pilot carbon emission scheme, initiated by the government.

For Huayi, the outlook for the chemical downstream sector is still optimistic because of demands due to urbanization and industrial upgrading.

Similarly, for the Hixih Rubber Industry Group, quality control is an essential strategy, which the company ensures via ventures with top Western manufacturers such as Pirelli, Goodyear and the Carlyle Group. Hixih has a vast range of products – from tires and conveyor belts to products in the environmental protection industry. Its main specialization, however, is in steel radial truck tires, car tires, conveyor belts, high-pressure hoses and automobile exhaust filters. It is now the world's largest conveyor belt manufacturer and the top tire manufacturer.

Along with quality products, Chinese companies are also stepping up quality services. Compound fertilizer industry leader Hubei New Yang Feng, also among the top 500, is an example of a company which has built a national sales team, established a nationwide sales network and developed a set of advanced marketing concepts and management models. The company has more than 400 expert sales professionals, more than 2,000 first-level agents and nearly 30,000 second-level retailers nationwide. The company has diversified in service content, including soil survey testing, fertilization knowledge dissemination and agricultural management.

Wengfu Group, a top 30 company, has a strong reputation in the international markets and its products are sold in more than 30 countries and regions. The company has spent considerable effort in 'greening' its brands. Wengfu is a traditional state-owned enterprise, integrating phosphorite mining with other fertilizer products. Dealing with hazardous materials, Wengfu is cautious about its global image and works relentlessly on proper waste utilization and the optimal use of resources at its four major production

and R&D bases in Guizhou, Gansu Jinchang, Sichuan Dazhou, and Fujian Shanghang.

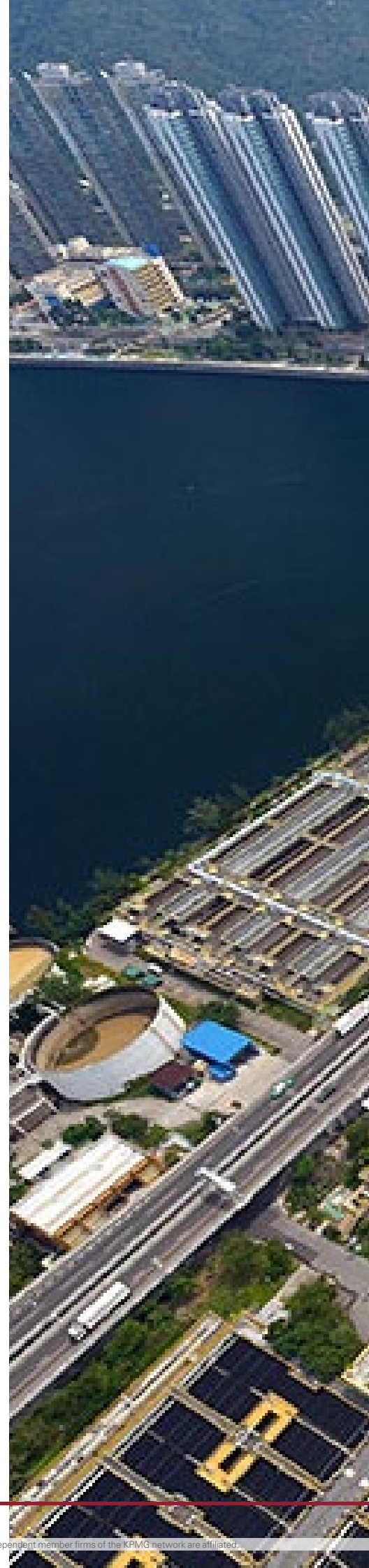
Befar Group exports to 20 countries and is the largest domestic provider of propylene oxide and trichloroethylene. It is also a leader in caustic soda production and the chlor-alkali industry. Befar is focusing on sustainability and quality by cultivating long-term customers both in China and overseas. Located in the Shandong peninsula, Befar's production units make use of the cyclic production chain, which helps position itself as an environmentally conscious company.

Internationalization and outbound investments

Growing political and financial support from the local and central government is pushing Chinese companies more than ever to go abroad. On 5 July 2013, the State Council said that the financial sector should support economic structural adjustments and industrial upgrades, partly by helping Chinese companies with foreign expansion. The Ministry of Industry and the National Development and Reform Commission (NDRC) also released guidelines to promote M&A deals among some important industries.⁴

In fact, it can be said that overseas investments have now reached a turning point. Earlier, large Chinese petrochemical companies showed a tendency to be aggressive and target big-ticket acquisitions. This trend has changed, with many considering mid-cap chemical multinational corporations for acquisitions. Although Asia remains the leading investment destination for Chinese chemical enterprises, acquisitions in Europe and North America have shown noticeable growth over the last few years.

⁴ Chinese firms on the hunt for distressed US assets, 12 July 2013, FinanceAsia





Since 2008, 1,145 outbound M&A deals have been made by Chinese companies across various industries. The total value of outbound M&A deals in 2012 was US\$141.3 billion, the highest in the last 5 years. State-owned enterprises have led most M&A deals in the energy sector, but now mid-level companies are also taking the plunge. In the chemical sector, there have been 12 outbound M&A deals between 2008 and 2012, with total deal value of US\$6.9 billion.⁵

The new 'environment and sustainability' objectives of China's 12th Five-Year Plan dovetails with

Europe's production system, making investments in advanced chemicals and technology the new top sector of activity for China.

The US\$15.1 billion acquisition of Canadian Nexen by China National Offshore Oil Corporation (CNOOC) in December 2012, was typical of the controversy that surrounds the West's discomfort with deep-pocketed Chinese government companies taking over strategic assets. In 2005, CNOOC gave up on an US\$18.5 billion bid for Unocal in the US after political opposition. In 2010, Sinochem backed

away from buying Potash Corporation of Saskatchewan for similar reasons.

Faced with various challenges during their global activities, successful Chinese state-owned enterprises have developed a strategy of reform and internationalization. Sinochem Group has changed its traditional marketing model and become more customer focused both in domestic and international markets. It conducted a complete reform process, went through a 'global resource organization' and overhauled its marketing operations.



⁴ Mergermarket Data

Zhejiang Longsheng Group: building brand overseas

Zhejiang Longsheng Group (Lonsen), one of the top 50 chemical companies in China, has a bold strategy of internationalization. In 2010, it acquired German company DyStar and gained a substantial hold of the global dyestuff market. With this acquisition, Lonsen became the world's largest textile chemical producer, controlling more than 20 percent of the global market and also contributed to improving Chinese chemical brands internationally.

Lonsen benefited highly from DyStar's valuable patents, brands, network, sales channel and technology. At the same time, DyStar saw a revival with Lonsen's capital inputs, product layout and management. After the acquisition, in order to be close to the market, DyStar's headquarters moved from Germany to Singapore and its sourcing and sales hub moved to China. Lonsen spent US\$200 million to complete the process of corporate restructuring.

According to Chief Financial Officer, Luo Bin, Lonsen's ultimate ambition is to be a leading global chemical company. For this, it is acquiring experience and talent to

conduct more outbound investments, especially in the fine chemicals segment, where large state-owned enterprises are absent. Mr. Luo feels in the next decade, sustainability will be a major focus area for Lonsen, both as a challenge and opportunity. The company will need to balance environmental protection targets and business costs. As a leader in the dyestuff industry, Lonsen tries to play a proactive role in energy saving and emission reduction by adapting recycling practices, Mr. Luo said.

The company has a strong product base, ranging from textile and construction chemicals to fine chemicals, intermediaries and inorganic chemicals. With an annual production capacity of 1 million tons, it distributes its products to more than 70 countries and regions. Through its product chain, Lonsen also follows the principles of circular economy and sustainability.

**– Luo Bin, Chief Financial Officer,
Zhejiang Longsheng Group**



Sinochem's new industrialization path supports better control over global resources and more access to the international markets. It has successfully implemented an upstream-downstream integration and fine-tuned its industrial chain management. In a nutshell, the state-owned enterprise adopted a 'merger, acquisition, cooperation' approach, while continually strengthening its primary business chain and strengthening its international operations.

Another state-owned enterprise that is going overseas in a determined manner is China BlueChemical, a

subsidiary of CNOOC. This large-scale, modernized company is engaged in the development, production and sales of mineral fertilizers and chemical products. Along with the Chinese company Guoxin, it made a strategic equity investment in Canada's Western Potash Corp this year.⁶ The alliance gives the Canadian company project financing, technical expertise in large-scale project construction and marketing channels for future potash sales. Headquartered in Beijing, China BlueChem's production facilities are located in Hainan Province, the Inner Mongolia Autonomous Region and Hubei Province.⁷

Challenges facing

the chemical industry



The World Bank estimates **7.7 percent** growth for the country in 2013, a pace which has been acknowledged as the 'new normal'.

Despite the opportunities and growth drivers available to Chinese chemical companies, both within the country and abroad, there are formidable and complex challenges ahead. The five most visible problems involve a slowing economy in China, overcapacity fears, feedstock changes, the environment and human resource management.

A slowing economy

As noted above, the Chinese economy is slowing, but in a controlled and more sustainable manner. The World Bank estimates 7.7 percent growth for the country in 2013, a pace which has been acknowledged as the 'new normal'.⁸

According to KPMG analysis, this moderate GNP growth rate will enable the Chinese chemical industry overall to maintain a healthy 9-to-11 percent growth between 2013 and 2015. This is

in contrast to the industry's breathtaking revenue growth rate of 22.3 percent (CAGR) between 2007 and 2011. By way of comparison, during this same period, the Indian market only grew at a pace of 12.8 percent (CAGR).⁹

This new normal is considered to be more sustainable, but it is not without its challenges. According to figures released by the National Development and Reform Commission, in the first six months of 2013, domestic chemical players registered modest growth. The total business revenue of the chemical industry reached RMB3.8 trillion, up 13.2 percent yoy, while profit was RMB171.71 billion, up 10.6 percent. Investment in fixed assets also went up 13.3 percent, worth RMB610.4 billion, while export volume was US\$71.3 billion, up only 3.6 percent yoy.

⁶ Western Potash Corp. receives strategic investment from China BlueChemical, 2 June 2013, Western Potash

⁷ ChemBlueChem website

⁸ World Bank cuts global outlook amid 'hesitant and uneven recovery,' Bloomberg, 13 June 2013

⁹ Economic operation of the first half of the chemical industry, National Bureau of Statistics, July 2013

Overcapacity fears

China's petrochemicals industry is growing rapidly, particularly in olefins, but it faces several challenges, primarily due to overcapacity. The demand is insufficient to absorb ongoing increases in capacities, with China currently constructing a large number of production facilities undertaken by Sinopec, PetroChina, CNOOC and other state-owned enterprises.

In 2012, petrochemicals demand growth underperformed the expansion of the wider economy and the country's domestic consumption of ethylene was estimated at 32.5 million tonnes (35.8 million tons) last year, which was a slow annual growth pace of 3.8 percent.¹⁰

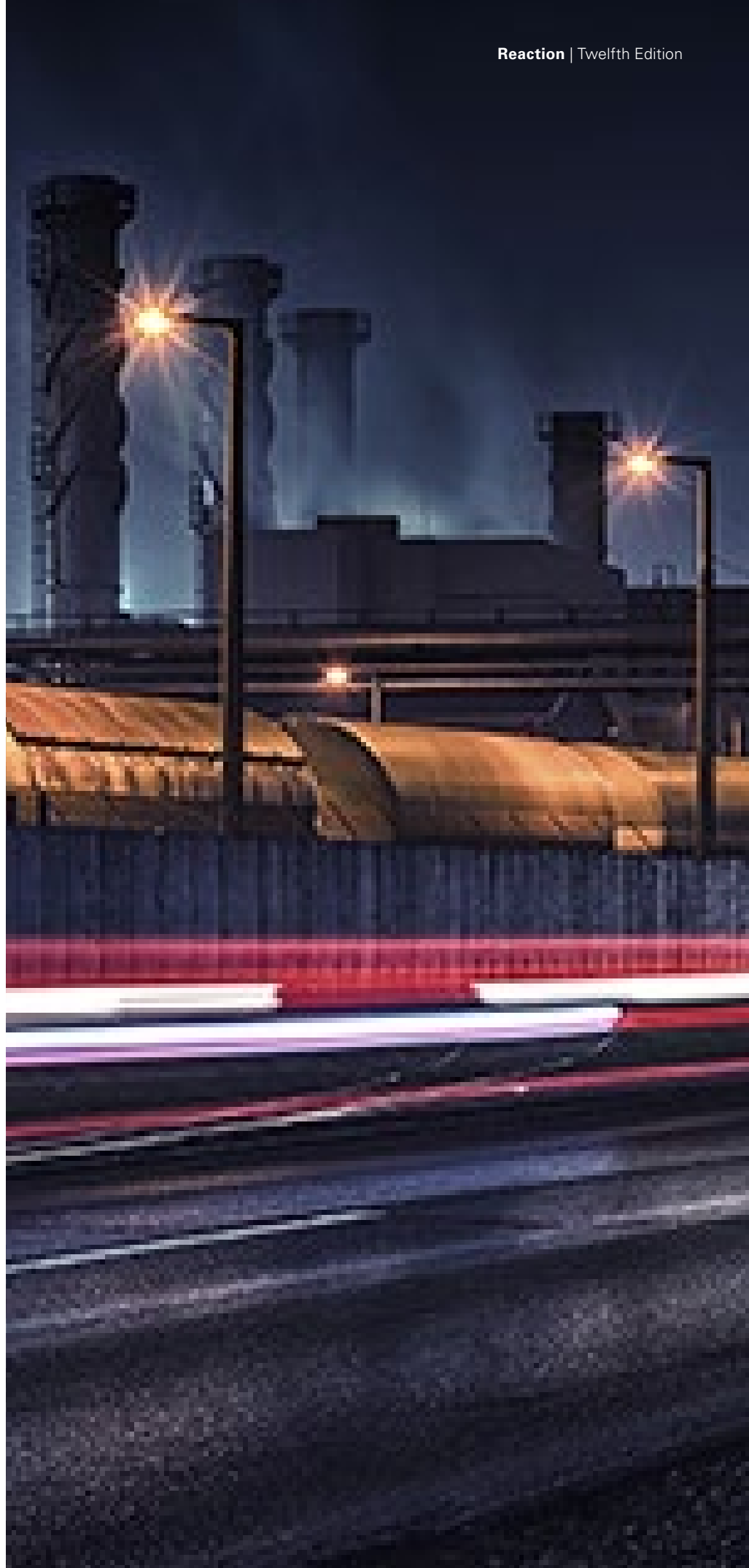
In its drive toward self-sufficiency, China had boosted its ethylene sector, making it the second-largest producer in the world. By the end of 2011, it had 30 large ethylene units with a combined capacity of 15.29 million tonnes per annum (18.9 million tons per annum), of which five units have individual capacity exceeding 1 million tonnes per annum (1.1 million tons per annum). Between 2012 and 2017, global ethylene capacity will increase 62.15 million tonnes per annum (68.5 million tons per annum), representing growth of 40 percent. Around a quarter of that increase will occur in China, with the US coming in a distant second at 12 percent.¹¹

Currently, naphtha-based units form the majority of the new enterprises being put up by state-owned enterprises. Six integrated petrochemicals complexes planned by PetroChina and Sinopec and based on conventional technology will add 4.6 million tonnes per annum (5.1 million tons per annum) of ethylene.

In July 2012, Sinopec announced plans to build a 642,000 barrels per day refinery in Jiangsu Province, the nation's largest. PetroChina Fushun Petrochemical's 800,000 tonnes per annum (881,800 tons per annum) and PetroChina Daqing Petrochemical Co.'s 600,000 tonnes per annum (661,400 tons per annum) ethylene units are ready.

¹⁰ BMI China Petrochemicals Report Q113

¹¹ Ibid.



Wuhan Petrochemical's 800,000 tonnes per annum (881,800 tons per annum) and Sichuan Pengzhou Petrochemical's 800,000 tonnes per annum (881,800 tons per annum) ethylene units are expected to be put into operation in 2013.

Complexities of feedstock change

China has been grappling with alternate sources of feedstock, but there are several challenges to overcome before making drastic changes to the nature of supply. No doubt the chemical industry is heavily exposed to global feedstock developments. And with China itself a new player in the alternative feedstock sector, the future could become increasingly complex for end user-chemical companies.

Changing the energy mix will inevitably impact chemical companies. Dramatic changes in the US energy and petrochemical sectors are a precursor to what China may face in the future. The North American shale gas bonanza has brought cheap natural gas into the market. Existing cracker capacities have switched from heavy feedstock to lighter feedstock and new gas crackers are replacing existing naphtha capacity.

While this technological change has been achieved smoothly in the US, the question is whether or not China can handle a similar feedstock shift. At present, the country leads the world in the expansion of ethylene and propylene production. In terms of feedstock, the country's crackers are heavily dependent on the refining sector and naphtha represents 75 percent of the feedstock slate. Because of this dependence, Chinese policy-makers rushed to tap the country's immense shale gas potential and harness its ample coal reserves to promote coal-to-gas technology.

The shale gas sector is just being explored, while the 'coal as feedstock' model faces significant hurdles. China is using its abundant coal resources to develop coal-to-gas and then produce synthetic natural gas through gasification, purification and methanation. The technology is well-developed and the process is relatively simple.

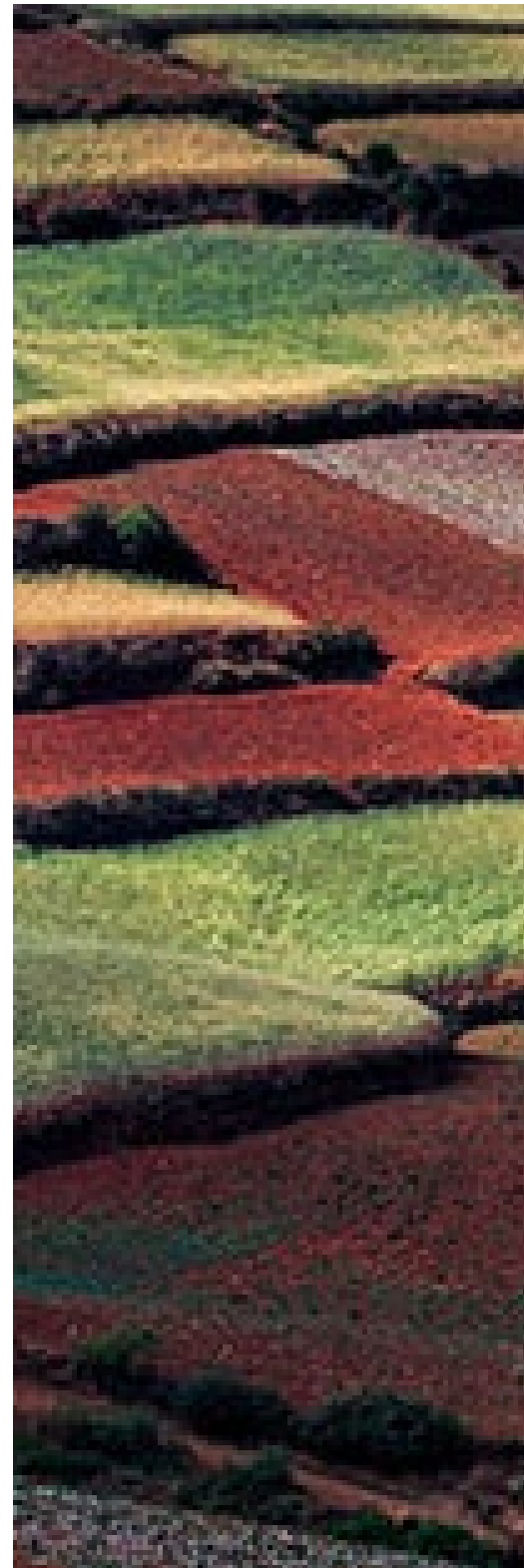
Sustainability solutions

Although leading Chinese companies are seeing sustainability as a growth driver for new markets, their primary focus remains increasing the scale of operations and new overseas markets. Industry analysts say that the growing number of Chinese acquisitions in Europe and America will trigger a greater commitment to sustainability. For instance, the experience of Chinese pesticides companies forging joint ventures in the US has resulted in greater compliance for international standards of safety.

Enterprises producing dangerous chemicals are taking steps to eliminate high risk, pollution and high energy consumption, but the question is whether the Chinese chemical industry is doing enough to change the industry paradigm.

The Chinese government has outlined its goals for sustainability – cutting carbon emissions on an ambitious scale and promoting clean energy. The country will soon carry out scientific testing to record enterprises' carbon emissions in major industries and find ways to allocate emissions quota appropriately, especially as preparations for a nationwide carbon-emissions trading market begin.

In the future, China can make a smooth transition to a cleaner economy only if chemical companies succeed in making sustainability a core business practice, deeply embedded in their cost and profit structures.





Smarter management

In the past few years, there has been a greater realization that Chinese enterprises follow management practices that are different from those of global multinationals. Many large Chinese companies remain over staffed with excessive layers of management.

A number of companies are beginning to understand the importance of standardizing corporate governance structures. In the past, cultural differences have caused hurdles in the post-integration phase of M&As, which is why top enterprises are beginning to invest in human resources and are making efforts to retain talent.

However, China has become increasingly integrated into the global supply chain and more chemical companies are planning overseas investments as a key way of taking their businesses to the next stage of development. According to a recent KPMG survey, these companies now see overseas direct investment as a channel to achieve the transformation of their business and a way of overcoming skills barriers.¹² Hence, it is essential that Chinese companies restructure internal management and human resources training in an adequate way.

In addition, Chinese companies doing business with foreign multinationals, Western research institutions and global supply chain companies need to maintain close relationships across their supply chain, understand the motivations of their trading partners and determine how best to work with them. An increase in overseas acquisitions will require a new breed of managers who can control operations in a foreign culture. This requires a new spirit of partnership, transparency and visibility.

¹² The Dream Goes On: Rethinking China's Globalization, KPMG report, 2013

Summary



In alignment with the 12th Five-Year Plan, the modern Chinese chemical industry is focused on the two pillars of self-sufficiency and sustainability. This has encouraged the development of a large number of 'local champions' that represent formidable competition to global companies. While state-owned enterprises have scaled up their operations and ambitions abroad, private companies have also consolidated their operations, becoming more competitive and profitable and restructuring their management systems. The data of the last 10 years indicate

that Chinese companies have graduated from makers of bulk chemical raw materials to upgraded products and are now keen to conquer overseas markets.

However, as the Chinese chemical industry grows bigger, it faces a number of increasingly complex challenges. From feedstock to human resource issues, every level poses its own difficulties. There is still a long way to go, but the whole world should be aware that this is an era of rapid and far-reaching transformation for China's chemical industry.

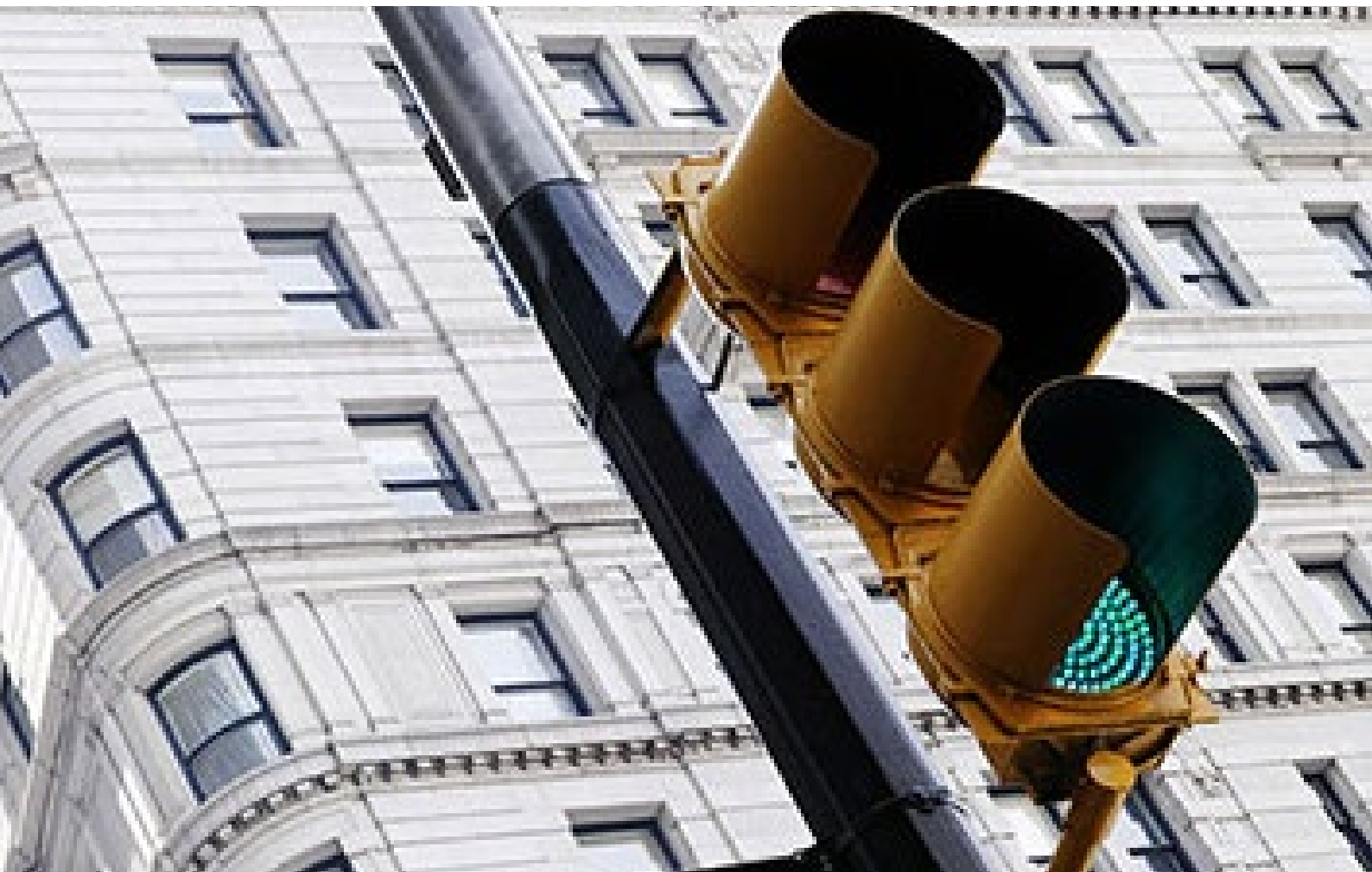


ACC Chairman's Dinner

AN ASSOCIATE MEMBER OF



KPMG in the US recently hosted a table at the ACC's Annual Chairman's Dinner, in honor of Craig O. Morrison, ACC Chairman of the Board and Chairman, President and CEO of Momentive Performance Materials Holdings LLC. It was also an opportunity to meet and have some topical discussions with members of the American chemicals community.



KPMG in Asia Pacific and the Middle East



KPMG's Global Chemicals and Performance Technologies Steering Committee recently spent time in the Asia Pacific Regions and the Middle East Regions, visiting a number of companies located throughout the regions. It was a wonderful opportunity for our leaders to hear and learn more about the current changes, challenges and developments in the Asian and Middle Eastern chemicals sectors.



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