Deutsche Bank
Markets Research

Industry

China Chemicals Tour

Date
22 March 2012

Global

Chemicals

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F.I.T.T. for investors

Shifting from "quantity" to "quality"

We visited 25 Euro, US and Chinese chemical companies. Demand is recovering slowly from CNY but confidence remains high for long-term growth. The 12th five year plan is focused on supporting in-land economies, domestic consumer demand and upgrading production quality. With heavy state investment in basic chemicals, most Western names are focused on differentiated offerings. Cost inflation remains a challenge (labour, logistics) but many names are still well positioned to deliver good profit growth. Top picks for China exposure: Linde, BASF, Lanxess, DSM, AZ (Europe) and Celanese (US).

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Fundamental, Industry, Thematic, Thought Leading (F.I.T.T.)

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Fundamental: Industry analysis post 25 Chinese, US and European meetings

Following our recent China Chemicals Tour we have made an in-depth assessment of the prospects for the chemical and industrial gas industry in the region, with a focus on the exposures of various Western companies to identify growth prospects. Near-term demand has been softer than usual but companies do not appear concerned – citing the strong political management of the economy – and most see the recent 7.5% GDP target for 2012 as conservative. All companies remain confident about the long-term future for chemical demand in the region.

Industry: Western names have to focus on differentiated product offerings

Government sponsored investment in some areas of basic chemicals (through state entities or supportive financing of locals) is accelerating, driven by a desire to monetize coal and is resulting in oversupply in some chains (mostly locals, other North Asian companies exposed here). Western companies without preferential production costs (through technology or raw material access) or a differentiated product offering will start to struggle competitively. Most Western companies have been fully aware of this trend for some time and have already been preparing by increasing local R&D to focus on differentiated product offerings.

Thematic: Increasing the focus on sustainability and quality

The 12th five year plan is increasingly looking to support in-land economies, stimulate additional domestic demand and support China's desire to upgrade its manufacturing base (shifting towards "quality" not just "quantity"). This is already stimulating another noticeable step-change in environmental focus by the state and a desire to source better quality (chemical) raw materials – these are key areas Western companies differentiate against locals. All companies are following the "Go West" strategy, however, logistic costs in-land are rising rapidly and margin management needs to be strong otherwise profit growth may fall below sales growth. Inflation remains a concern (wages, logistics, food) but it's not all bad as this is providing a strong backdrop for pricing power for chemicals able to show value-add to customers.

Thought leading: Many European (and US) names well positioned in China

Numerous names have already built strong bases in China and are ready for the in-land move, the state's desire to upgrade manufacturing quality, and the increasing domestic consumer focus. Many Europeans offer good leverage to China but of those we met **Linde, BASF, Lanxess**, **DSM** and **AZ Electronics** offer the best ways to benefit. In the US **Celanese** offers the best access. We value companies using DCF/SOTP. Risks are lower GDP, FX, and oil.

Companies Featured

BASF (BASFn.DE),EUR67.23			Buy
	2011A	2012E	2013E
DB EPS (EUR)	6.26	6.25	6.89
P/E (x)	9.1	10.7	9.8
EV/EBITA (x)	7.9	8.9	8.0
Celanese Corp (CE.N),USD45.69			**Buy**
	2011A	2012E	2013E
EPS (USD)	4.47	4.75	5.50
P/E (x)	10.0	9.6	8.3
EV/EBITDA (x)	6.8	6.3	5.3
DSM NV (DSMN.AS),EUR43.30			**Hold**
	2011A	2012E	2013E
DB EPS (EUR)	3.65	3.30	3.77
P/E (x)	10.9	13.1	11.5
EV/EBITA (x)	7.8	9.5	8.5
Linde (LING.DE),EUR130.90			**Buy**
	2011A	2012E	2013E
DB EPS (EUR)	7.63	8.77	9.83
P/E (x)	14.6	14.9	13.3
EV/EBITDA (x)	7.5	8.1	7.3
Lanxess (LXSG.DE),EUR55.69			**Buy**
	2010A	2011E	2012E
DB EPS (EUR)	4.89	6.48	4.67
P/E (x)	7.9	8.6	11.9
EV/EBITA (x)	7.6	8.1	10.0
AZ Electronic Materials (AZEM.L),GBP288.60			**Buy**
	2011A	2012E	2013E
DB EPS (USD)	0.35	0.36	0.42
P/E (x)	12.3	12.7	10.9
EV/EBITA (x)	13.3	13.4	11.0

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Investment thesis

Outlook and feedback from China Chemicals Tour

We recently spent a week visiting 25 companies in China. We met with **BASF, Bayer, Linde, Air Liquide, DSM, Clariant, Symrise, Croda, AZ Electronics, Akzo Nobel, Air Products, Hubei Sanonda, Syngenta, ICL, Celanese, Praxair, DuPont, Dow, CMAI, ChemChina, Sinopec, Yantai Wanhua, China Bluechem** and **Lanxess**. Detailed feedback on each meeting is contained in this report but we have provided a top-down summary of the key issues arising from the meetings below:

- **Demand is recovering from CNY but at a slower rate than normal.** All companies commented on the clear recovery from weakness at the end of 2011 although most noted that slower than normal recovery so far seen since CNY. All companies believe that growth will steadily accelerate through 2012.
- **12th five year plan is heavily focused on improving the quality of China's production methods and outputs.** For many Western names this is providing additional opportunities to sell products but many local manufacturers are starting to source better quality raw materials. The phrase of "quality over quantity" is being echoed by most chemical companies we met with in China.
- **"Loosening" of credit is becoming visible.** Most companies commented on the loosening of bank lending and the impact is already being seen in some areas. However, true to the 12th five year plan the government is clearly targeting the large most efficient companies to support and is pro-actively supporting consolidation (and closures) within the SMEs. This carefully managed "selective" credit loosening is cited by many as the reason for the slow recovery from CNY. Most Western names want to increasingly position their business to the largest players (MNCs and locals). This trend should accelerate the much needed consolidation of smaller less profitable enterprises.
- **China's long-term GDP growth rate may slow but the "quality" of this growth is improving.** Even if China's GDP rate slows over the next few years we still expect the state's desire to improve the "quality" of production to be disproportionately beneficial for Western chemical names with the strongest positions in more differentiated chemicals. In some areas Western companies should be able to increase market shares alongside accessing market growth as customers use better quality chemicals to improve production quality.
- **Confidence over mid-term growth remains universally high.** Pretty much all companies have strong confidence in the management of the Chinese economy. This has been a common theme every year for the past few years. Consensus view surrounding the formal 7.5% GDP target is that it will be exceeded and that this has been set conservatively ahead of political change later in the year. Nearly all companies we met with believe that a modest further revaluation of the RMB is likely in 2012 and plan accordingly.
- **Increasing the focus on local R&D.** What is very noticeable for most companies is the development of local R&D centres over the past few years. In part this seems to be companies demonstrating a strong commitment to the Chinese market but also this is a step in the direction of producing local market solutions for China. While these investments tend to be more focused on development and not pure research it is clear that companies are slowly starting to feel more confident in doing research in China – often through university collaborations – given the strong education platform in China and pro-active government support.

- **China's environmental focus should not be underestimated – a key point of differentiation for Western companies.** Over the past few years we have seen a steady increase in emphasis by the Chinese state on environmental issues. Energy efficiency is now a very big issue – supported by the 12th five year plan – with new chemical investments having to show compliance. The trend of the state on enforcing environmental regulation has also materially increased. This is for two reasons: 1) to increase the external perception of China, and 2) to improve scarce resources of energy such as gas, oil and electricity. Many of the proposed material in-land investments have significant discussions around water treatment and also population issues (some companies have experienced tougher regulations in China than in Europe and the US). Compliance by western companies remains very high but there continues to be growing feeling that local companies are also acting similarly – plant shutdowns of local players continues to occur. The opportunities here for Western companies remain immense not just in water treatment and catalysts but also in plant design and technology which can minimise energy wastage and pollution.
- **The state's investment programme is moving inland and also more directed towards the consumer.** There are two trends happening in the state's stimulus/fixed asset programme. Firstly, the programme is being directed towards the more inland regions in a bid to bridge some of the gap between wealth on the eastern seaboard regions and inland regions. Secondly, the programme is increasingly looking to stimulate domestic demand as opposed to just fixed asset investment. It is important to look for those companies able to follow the trend inland and the consumer.
- **Distribution and infrastructure build in-land will be a rate limiting step for some.** While all companies want to move more in-land many are intending to service the growth through manufacturing bases in the Eastern regions. This may prove to be wrong as the strong growth in the in-land regions in the coming 5 years is going to need locally supported product. While the focus on high-speed rail networks and airports is high, road infrastructure in-land and also distribution rail networks does not seem to be getting the same level of focus, indicating distribution costs may rise sharply in the future and logistics will become challenging. Those looking to access growth in-land also need to be looking to move production as well to mitigate distribution challenges.
- **Wage inflation remains a concern.** Wage inflation is running at 10-15% and retaining staff remains a challenge. Most Western companies are doing a good job and have staff turnover levels of low single digit per cent, below the average of high single digit. However, it is clear that local workers increasingly want to see local management in place to dispel the glass ceiling feeling.
- **Food inflation remains a general concern but it seems that the focus has waned over the past year.** Nonetheless, medium term the further stimulus of inland economies will be used to moderate this. An increasing focus on job creation in-land and land consolidation – to create larger more efficient farms – alongside the government's proactive support to 'clean-up' (rationalise and consolidate) the agchem industry should allow for improving yields long-term.
- **Constant focus on inflation provides backdrop for pricing increases in chemicals.** Inflation is not all bad as for many chemical companies the strong awareness of inflation provides a more favourable backdrop to push through price increases. Most Western companies have experienced limited difficulties in increasing prices where required – the challenge has been to focus on being able to continue to show that products are superior to local products and can justify the price premium. As some locals start to increase the quality of their production this may become a tougher trend for some in the medium term.

- **RoCE improving.** The bear case on China for many companies has been the very high capex spent in the region and the drag on group RoCE as a result. We note that several companies are already making cost of capital on their Chinese operations (some are even more profitable than group average) while nearly all companies saw ROCE improve in 2011 and expect it to further improve in 2012 and onwards despite on-going high levels of capex.
- **Auto growth to pick up in 2012 but property curbs to continue.** The growth rate of autos slowed to 13 year lows in 2011 as state stimulus programmes ended and measures to control traffic were introduced in some cities. We expect growth to return to double digit rates for 2012 and 2013 driven by tier 2 and tier 3 cities where penetration is still very low. In property we expect the state to continue the existing tightening measures in 2012 to ensure curbs on speculation and short-term investment demand, but we continue to see support for first-time homebuyers. Volume declined in the first two months of 2012 due to on-going tightening measures although some improvement was seen in February/early March helped by further prices declines and new project launches. We expect a further 5-20% home price decline this year, with larger declines in tier-1 cities, mild declines in tier-2 cities, and smallest declines tier-3/4 cities.
- **Doing business in China becoming easier.** Most companies believe that intellectual property protection has improved materially which is supporting more confident R&D investment geared towards local markets. A stronger understanding of local government and less risk of energy shortages is also noted. However, most still do not perform pure research in the region preferring to focus on product development. Confidence over the ability to "catch" offenders remains the barrier towards pure research in the region, although this attitude is steadily softening and collaborations with universities continue to rise.
- **Industrial gas growth in China could continue to be >15%** for some time to come. Returns are going up despite high capital spend. Discipline appears strong with most names focusing on only selective industrial hubs in China. Despite the rise of some local players the companies continue to be successful in focusing on Tier 1 customers and large scale investments as they differentiate on energy efficiency, technology and service.
- **China's desire to remain independent remains high.** The country wants to reduce its reliance on other countries for products and raw materials – it continues to look favourably on local manufacturing/investment into the country where new technologies can be used. Inland state investments will likely increase in petrochemicals, particularly in coal, and this may reduce any returns from basic petrochemical investments although specialist investment in more technical plastics can continue to provide opportunities for Western names as technology still offers substantial energy savings. In addition to direct state investment some favourable financing of local companies is also supporting the expansion in some areas of chemicals (polyurethanes is an example).
- **China – an increasing role in M&A**. We have seen some limited M&A by Chinese chemical companies as the preference has been to invest organically. However, we note that some entities are now keen to look to acquire distribution power in Western markets and/or technologies. We expect China to become much more active in chemicals M&A in Western markets over the next 12-24 months, looking to acquire technologies and distribution power, not just simple manufacturing capacity. Please see refer our feedback section on ChemChina (page 99) for more details.

- **Overinvestment in some basic chemicals**. The stimulus programme in 2009/10 funded significant expansion plans in basic chemicals in China. Given the scale of government commitment, some of these do not appear to have been done for economic reasons and so we see risks that some very basic chemical chains (C1 particularly and possibly some C2 chains) may suffer oversupply. Fortunately, most European names lack any real exposure to these areas (mainly exposed to the tighter C4 and parts of the C6 chains) but some Asian names are exposed (such as in Japan, Korea and Thailand). With demand for specialty polymers growing rapidly, tightness in the more valuable C4 and (parts of the) C6 chain is likely to continue. Polyurethanes is an exception in the C6 chain as the state's strong support for expansions in PU may create oversupply from 2014 onwards.
- **First move advantage has gone – probably too late for Western names to enter market.** From our discussions with companies it appears clear that much of the relationship building with the government and state owned petrochemical names has been done. If a company has not already put down an upstream investment base they may now struggle to make the investment case – the first-move advantage has gone in most areas of basic chemicals.
- **No longer the "low-cost" labour base – some migration to other Asian regions is being seen.** China as a low-cost labour destination generally holds true but we noticed for the second year in a row companies are actively discussing the migration of some customers to even lower cost labour regions (such as India, Vietnam, Bangladesh) particularly in textiles and basic manufacturing. The Chinese state is keen to create a more skilled workforce and develop consumer focused industries for domestic consumption.

In our view, China continues to present a major opportunity for many European (and US) chemical companies. Those who have moved early and built up relationships with the leading local companies are now moving the next stage of investment and increasingly tailoring product for the domestic Chinese market (to supply to growing middle class) as opposed to the re-export market. This is requiring greater participation of local workforce and greater R&D. Managing this versus RoCE has historically been the challenge but it's clear that for most names this is no longer the issue and improving returns is now a key area of support. Experience in the region is rising and we see this as a mitigated risk for most. Most companies appear confident over the government's ability to manage the economy and see the formal 7.5% GDP target as likely to be exceeded, despite political changeover risk. Inflation and social unrest remain the key risks and the greater focus on the in-land economies is going someway to mitigate this. However, while all companies are keen to "Go West" infrastructure build and logistic challenges may result in higher-than-expected cost inflation for some.

Both North American and European chemical companies are well represented in China although exposures and historical focus are larger for European names. This is typically a function of a greater desire (or need) to find growth outside of their domestic markets through the 1990s. Potential "losers" from China's desire for self sufficiency (and coal development) will be high cost basic chemical importers from other Asian regions.

On companies, many major names are developing leading positions in the region. In Europe, the most immediate names with strong investment cases for China appear to be **BASF** (volume ramp-up, early mover position in Nanjing, new investments in-land), **Linde** (very strong platform across the region in both Engineering and Gas), **Lanxess, Bayer** (leverage here is through Healthcare as there are some clear oversupply risks within their chemical business) and **AZ** (exposure in flat panels and consumer electronics). **DSM** continues to be well positioned and should benefit from their strong focus on the consumer markets. We remain impressed with the speed in which **Air Liquide** has been able to develop its position in the region.

In North America, the name with the strongest investment case based around China is **Celanese. Praxair** also displays a strong focus on profitability and returns. Celanese's strength is based on the low-cost integrated complex in Nanjing supporting their acetyls franchise. **Praxair** – like the European gas names – has done well in expanding with the tier one customer base and is strongly focused on profitability.

Figure 1: Estimated Chinese sales within the European and US chemical sector (%)

	2011 (%)	Comments
Air Liquide	5.0	Shown as a % of Gas sales. Strong growth from a small base over the past few years. Strong investment focus should now ensure this ratio increases
Air Products	4.0	Modest position in merchant gases; focused on liquid/bulk, LCD and solar PV
AkzoNobel	8.8	Focused on many areas of Chemicals and Coatings. Expanding deco stores base, ramping up the Ningbo chemicals multi-site and making local acquisitions
Arkema	11.0	Pro-forma for 2011 including the recent Chinese acquisitions
AZ Electronic Materials	8.1	Strong focus on Asia with the vast majority of group sales from the region
BASF	11.0	Significant Chinese exposure (% of sales shown based on the chemical businesses only, i.e. ex Oil & Gas)
Bayer	8.0	Growing exposure through the new Caojing facility for polycarbonate and polyurethanes. China is 16% of BMS sales
Celanese	18.0	The most China centric company in US chemicals
Clariant	6.0	Steadily growing exposure – was 3.5% in 2005 and 4.5% in 2008
Croda	3.0	Small exposure but growing in most business areas along with customers
Dow	7.0	Asset-light, import-based strategy is based on Performance businesses
DSM	16.0	Strong focus on the region through most business units
DuPont	9.0	Core competencies are aligned with key megatrends; new product focus
Givaudan	6.0	Significant Chinese exposure
Huntsman	8.0	Investing for MDI growth with new Technology Center (Minhang, 2013) and 240kt plant expansion (Caojing, 2015)
ICL	>10.0	Exposure highest in Bromine and then potash
Johnson Matthey	7.0	Growing exposure through catalysts
K+S	3.0	Relatively low exposure, mostly from the PMP division (MOP and specialities) and a smaller part comes from the Nitrogen Fertilizer Business
Lanxess	11.0	Exposure in the region across numerous businesses
Linde	9.0	Shown as a % of Gas (inc share of JVs). Strong exposure acquired from BOC
Monsanto	2.0	Limited exposure
Potash Corp	4.0	Exposure via Canpotex
PPG	8.5	One of the leading Auto OEM coatings producers in China (22% share)
Praxair	5.0	Sales in China growing 20%/yr; on-track towards $1.5B in 2016 driven by a growing project backlog
Solvay	7.0	China exposure boosted by Rhodia
Syngenta	2.0	Small Chinese focus but long-term opportunities exist
Symrise	6.0	Significant Chinese exposure
Umicore	6.0	Growth in catalysts to continue
Yara	4.0	Only NPK for fruits and vegetables

Source: Deutsche Bank estimates and company information

Valuation & risks

We value stocks using either DCF, SOTP or peer multiples. For chemical companies risks include global GDP slowdown, FX, and/or rising raw material prices. Individual strategies for acquisitions and higher capex also present some risks. For China specifically the risks are a material slowdown in GDP, greater price pressure from some local Chinese companies and cost inflation. There are additional risks associated with water and power shortage which could constrain growth as well as provide opportunity for firms in related sectors.

China: Economic Review

Deutsche Bank expects Chinese GDP growth of 8.6% in 2012 (vs. 8.3% prior) and vs Chinese government growth target of 7.5%

Our recent trip to China coincided with the Chinese government's downward revision of its GDP growth target to 7.5% versus a previous 8% target that had been in place since 2005. Through a lower growth target, China "aims to promote steady and robust economic development, keep prices stable, and guard against financial risks by keeping the total money and credit supply at an appropriate level," Chinese Premier Wen Jiaobao stated in his annual work report to the National People's Congress (NPC). Moreover and largely consistent with its 12th Five Year economic plan (announced in 2011), China continues to keep a keen focus on promoting Chinese consumer demand to lower the broader economy's dependence on export demand.

Investor concern surrounding a lower growth target is overdone. While a lower stated growth target has been cause for investor unease, we believe the concern is misplaced. We note that historically, China's actual GDP growth rates have been higher than the government's official targets. DB's Chief Economist for Greater China, Jun Ma, notes that over the course of the past decade, actual growth exceeded the government targets by an average of 2 percentage points. In 2012, DB's China Economics team expects China's growth to exceed the official target by at least 1 percentage point, or 8.6% (versus 8.3% previously). As we will discuss later, upside to China's growth target stems largely from a more robust export sector outlook.

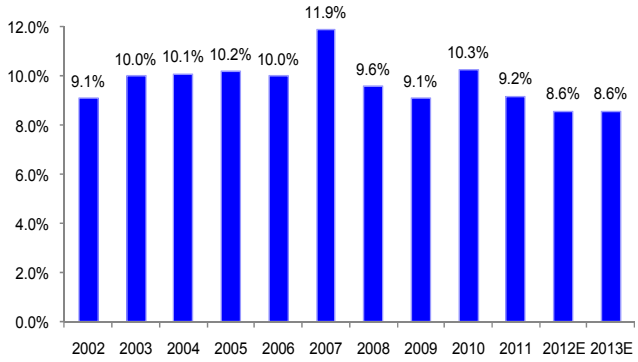
A lower growth target is likely to heighten the quality of economic expansion. While DB's forecast 8.6% GDP growth in 2012 is lower than the 9.2% growth experienced in 2011 (and 10.3% growth in 2010), Jun Ma asserts that the lower but still robust growth of 8.6%, is a healthier run-rate. In our view, the slightly lower growth rate mitigates risks that have been worrisome to investors' and the Chinese government for the better part of the last decade, namely economic overheating (inflation), asset bubbles and non-performing loans. Lower growth diminishes such risks, thereby heightening the quality of economic growth. Moreover, we note that during our prior trips to China, we have noticed an acute focus by both business and government on inflation and rising food prices. Given a more conservative economic growth target, we suspect that concerns over inflation, while still likely to exist (as they are nevertheless a focal point of the current 5 Year Plan), will be less pronounced than in prior years.

Figure 2: Summary of DB's Chinese macroeconomic forecasts, YoY %

	2010	2011	2012F	2013F
Real GDP	10.3	9.2	8.6	8.6
CPI	3.3	5.4	3.1	3.5
Broad Money (M2)	19.7	13.6	14.0	14.5
Bank Credit	19.9	15.8	15.0	14.0
Budget Surplus (% of GDP)	-1.7	-2	-1.5	-1.3
Fixed Asset Investment	23.8	23.8	17.0	17.0
Retail Sales	18.4	17.1	14.2	15.0
Industrial Production (real)	15.7	13.9	12.3	12.0
Merchandise Exports (USD)	31.3	20.3	13.0	14.0
Merchandise Imports (USD)	38.7	24.9	15	16
1-Year Deposit Rate	3.5	3.5	3.5	3.5
CNY/USD (eop)	6.59	6.3	6.14	5.93

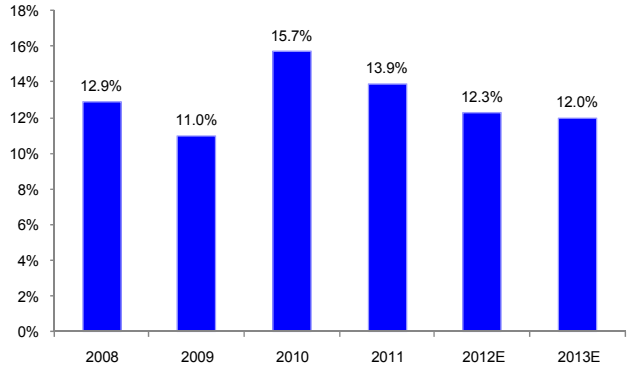
Source: Deutsche Bank, CEIC

Figure 3: China's GDP is forecasted to grow 8.6% in 2012



Source: Deutsche Bank

Figure 4: China Industrial Production Index (IPI) is forecasted to expand 12.3% in 2012



Source: Deutsche Bank

12th Five-Year Plan (FYP) sector focus

12th Five-Year Plan (FYP) focuses on slightly lower but higher, more stable quality growth. China's 12th Five-Year Plan (2011-2015) was approved in March 2011 by the National People's Congress (NPC), the top legislative body in China. The plan lays out a broad structural economic and social reform agenda that will shift the economy's emphasis from exports towards domestic consumption and inland development. Economic restructuring, social equality and sustainability are the three key themes of the 12th FYP.

Figure 5: The three key themes of China 12th FYP

Economic restructuring	Less but **stable** growth- **GDP growth of 7% p.a.** (down from 7.5% in prior plan)
	Boost **domestic consumption**, shift from investments & exports driven growth towards consumption driven growth
	Restructure & upgrade the industries to improve international competitiveness through stringent investment control (encourage/restrict/eliminate), enhancing R&D, encouraging M&A etc
	Stricter control over the new lending, investment into unsustainable fixed assets by all companies including SOEs will drop
	Develop the strategic emerging industries* and marine economy
	Promote the clean energy development (solar, wind, hydro, bio, nuclear etc)
Social equality	Reasonably distribute the income, close the gap. More contribution from SOEs to the society
	Increase the income of urban and rural residence by 7% p.a.
	Increase the urbanization by 4%
	Improve the social security system
	Support the development in less-developed regions (Western, Northeast, Central)
	Construct 36m subsidized houses
Sustainability	Control greenhouse gas emission
	Strengthen resource conservation (energy, water, land, mineral)
	Develop circular economy (reduction, reuse & recycling of the waste)
	Strengthen the environment protection (pollutants, heavy metal)

Source: Deutsche Bank, Lanxess. * see Figure 6

The ''master'' FYP is designed at the national level and is the base of the specific plan developed by every province government and industry. A number of sector 12th Five-Year Plans (FYPs) have already been published, and some other draft sector plans were released in solicitation of expert opinions. These include the FYPs for the strategic emerging industries and traditional sectors like cement, steel and textiles. Most of these sector FYPs are prepared by the NDRC, the Ministry of Industry and Information Technology (MIIT), and/or industry associations with approval from the State Council. More industry FYPs are expected to be released in early 2012.

Focus on seven strategic emerging industries should drive higher demand for high end specialty chemicals: During the 12th FYP, US$600bn will be invested by the government in 7 key industries which shall achieve 8% of total GDP by 2015 and 15% by 2020 (annual market growth of above 15-20% p.a. for these industries is expected to significantly exceed traditional industries). The strategic emerging industries will enjoy strong policy support and easier access to bank and other funding sources in the next few years. The development of these industries will require increased use of products and technologies developed by the chemical industry, in particular specialty plastics for new energy/materials, high performance synthetic rubber or silicas for green tires, catalysts for Clean Energy Vehicles, low carbon technology etc (see Figure 6).

Figure 6: China 12th 5 year plan: 7 priority industries and chemical sectors affected

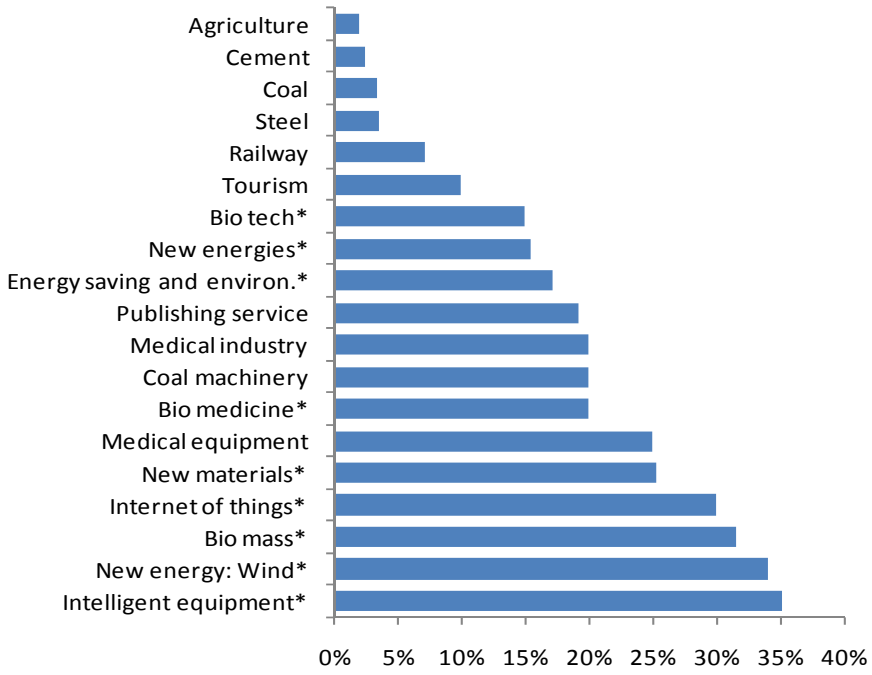
New Energy	Energy conservation & environmental protection	Clean Energy Vehicles	Biotechnology	New generation information technology	High end equipment manufacturing	New materials
11% of energy demand coming from non-fossil fuels by 2020	Energy efficiency technology	Becoming a major automotive player by 2020 with e-vehicles	US$ 1.6bn investments in the next 5 years for new drugs	Improve poor broadband infrastructure	Technological upgrade of China's manufacturing basis	Focus on R&D
Wind, solar, hydro, nuclear as main supported industries	Energy storage	10% global market share with Chinese cars in 2020	Support for innovative biotech products, high-end medical devices and patented medicines	New generation network (NGN)	Industry is shifting from low-mid-end to high-end segments	Functional materials (Rare Earth, functional ceramics, special glass, etc.
Subsidies, preferential tax, feed in tariffs and overall support of new energies	Smart Grid	5 million e-vehicles in China by 2020 targeted	One measure to improve healthcare system	Internet of things	Increasing investments in R&D	Advanced structure material (special steel, alloy, plastics)
	Increase Air & water quality	Subsidies encouraging customers to buy e-vehicles		Triple Play		High performance fibre
	Low carbon technology			Next generation FPD		Superconducting materials, nanometer
	CDM & CCS			High Performance integrated suit		
	Waste Management, recycling			Cloud Computing		
	Water treatment					
			Relevant chemical sectors:			
High performance plastics, bio-plastics (e.g. PA 11)	**Water-treatment chemicals, specialty plastics (replacing metals)**	**Rare Earth, TiO2, Lithium chemistry, technical polymers**	**Catalysts, bio feedstocks**	**High end performance materials (resins, plastics), electronics materials**	**High end performance materials (resins, plastics), electronics materials**	**Rare earth, high end semi-conductors (silicon derivatives)**

Source: Deutsche Bank, Lanxess

Traditional industries should see slower growth. The sectors that have been driven by fixed asset investment growth and are responsible for serious pollution – such as steel, cement and coal industries – will grow at a much slower pace than the overall economy in the coming years, not only for reasons related to the structural change of the economy but also because of government policies.

Industries inconsistent with sustainability objective will see consolidation. For traditional industries that are inconsistent with the national objective of energy saving and environmental protection, the government will focus its policy on promoting consolidation, while continuing to tighten policies for market entry, cutting redundant capacity, raising energy (e.g., power tariffs) prices, and applying pollution taxes. For example, the government sets specific targets for the top 20 producers' market share in the crop protection sectors to increase from 32% in 2010 to 50% in 2015 and 70% in 2020 notably by increasing entry barriers (more costly and lengthy product registration, higher capital requirements and stricter license management).

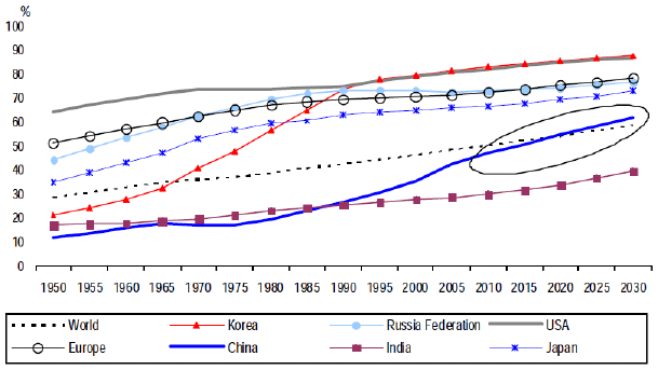
Figure 7: Annual growth of market size in, or implied by 12· Five-year Plan (CAGR)



*Source: Deutsche Bank. Mark * indicates the "strategic newly emerged industries.*
Note: Growth rates for agriculture, coal, steel and railway are based on volume numbers. Growth rates for solar and wind power refer to the generation capacity.

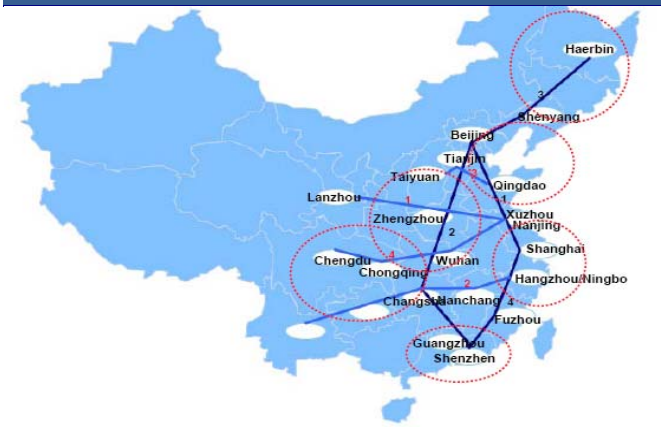
Focus on urbanization will increase opportunities for infrastructure and investment goods. China's urbanization will provide sustainable investment and become a key factor in bolstering the country's growth during the next 5 years. According to the UN, China urbanization rate is forecast to go up to 54% by 2020 from 40.5% in 2005. The quality of urbanization (improvement of urban layout and urban comprehensive capacity) is a key focus of the 12th FYP. China's high speed railway plan is part of the grand urbanization plan that is aimed to making people moving around easier.

Figure 8: China's urbanization rate compared with leading countries (1950-2030), %



Source: Lanxess, United Nations (World Urbanization Prospects: The 2009 Revision Population Database

Figure 9: China's High-speed Railway



Source: National People's Congress, Roland Berger Strategy Consultants, The Ministry of Railways

More robust exports poised to be a boon for growth near-term

DB's recent increase of its forecast for Chinese GDP growth from 8.3% to 8.6% (versus estimates ranging from 7.9% to 8.7%) in 2012 stems predominantly from an upward revision to the export growth forecast, which DB's China Economics team raised to 13% from 8% (consensus: 10%). Exports are driven by DB's expectation for 10% export volume growth in 2012. A more constructive small business outlook and less downside risk in the Chinese property market are also contributing factors to DB's relatively bullish growth outlook.

Our China Economics team has recently made a number of other changes to their annual economic forecast, including:

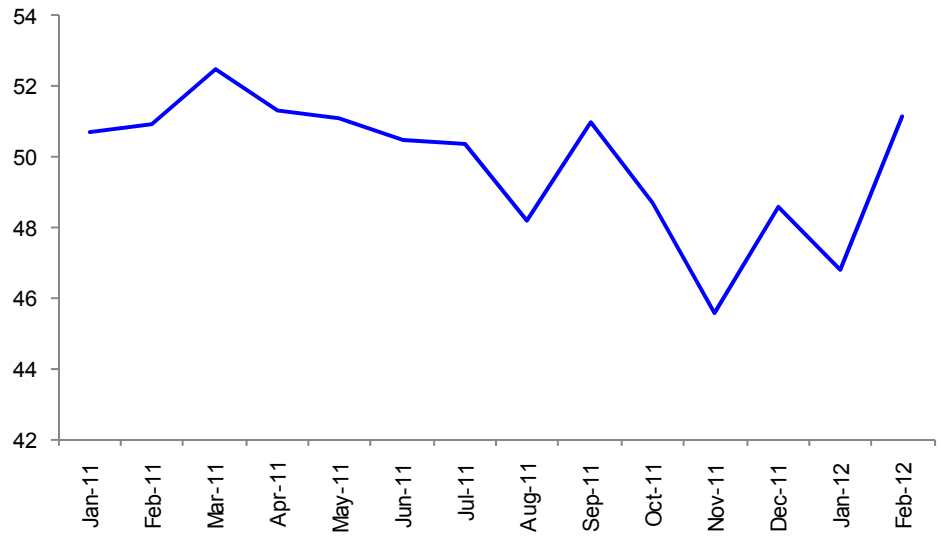
- Raising nominal import growth forecast to 15% from 9% previously to reflect an increase in raw material imports and components for export production as well as an increase in global commodity inflation.
- Raising its CPI forecast to 3.1% from 2.8% previously amid higher than expected oil prices and stronger than expected food inflation
- Raising its industrial production (on stronger exports) and retail (slightly higher inflation) forecasts
- Lowered its RMB appreciation expectation for 2012 (estimate CNY/USD of 6.14 in 2012)

Near term, higher expectations for Q1 GDP growth (7.8% versus 7% previously) are being buoyed by stronger than expected trade and small business performance. DB expects Chinese exports to outperform expectations throughout 2012, underpinned by two principal drivers:

1) Stronger than expected leading indicators from the US, Europe and Japan, which have moved into expansionary territory from a trough in November (see Figure 11).

2) An improvement in the new export orders index in the recent Chinese PMI report (see Figure 10). The export order index has risen sharply to 51.2 in February from 46.8 in January and 45.6 in November, which marked a low point in the reading.

Figure 10: New export orders index (from PMI report)



Source: NBS and Confederation of Logistics

Stronger global leading indicators: DB's proprietary G3 leading index for Chinese exports has historically shown an 85% correlation to year-over-year Chinese export growth. Given that the index average for January-February has risen to 51.2 versus 49.6 in the fourth quarter of 2011, DB's China Economics team's correlation analysis suggests that the 1.6 point rise in the leading index is indicative of a 0.7% increase in G3 GDP growth. Moreover, the rise in the leading index correlates to a 5 percentage point increase in Chinese exports, hence our revised export forecast of 13% versus 8% prior (see Figure 12).

Figure 11: Global leading indicators (manufacturing ISM or PMI)

	United States	Japan	Euroland	G3 Index
Q1 2011	59.7	46.4	57.5	57.4
Q2 2011	55.8	50.7	52	54.6
July-11	51.4	52.1	50.4	51.2
August-11	52.5	51.9	49	51.1
September-11	52.2	49.3	48.5	50.5
October-11	51.8	50.6	47.1	49.9
November-11	52.2	49.1	46.4	49.6
December-11	53.1	50.2	46.9	50.3
January-12	54.1	50.7	48.8	51.6
February-12	52.4	50.5	49	50.8

Source: Deutsche Bank, CEIC

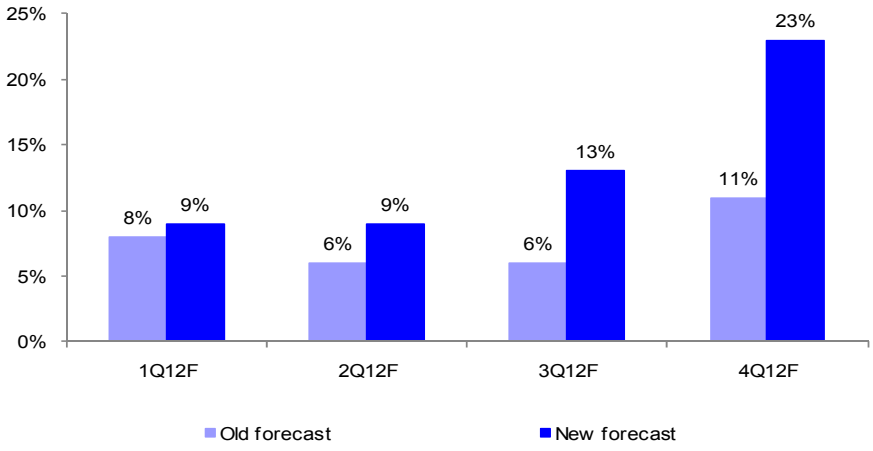
Figure 12: China export value growth forecasts (in USD terms), YoY %

	Old Forecast	New Forecast
1Q12F	8%	9%
2Q12F	6%	9%
3Q12F	6%	13%
4Q12F	11%	23%
2012 Annual	**8%**	**13%**

Source: Deutsche Bank

The trajectory of Chinese export growth will likely be back-end loaded in 2012. DB expects export orders to ramp in the back half of 2012 (13% in Q3 and 23% in Q4) due, in large part, to the quarterly G3 growth profile, which is characterized by more robust economic growth in 2H12 vs 1H12

Figure 13: China export growth (YoY %): old vs new forecasts



Source: Deutsche Bank

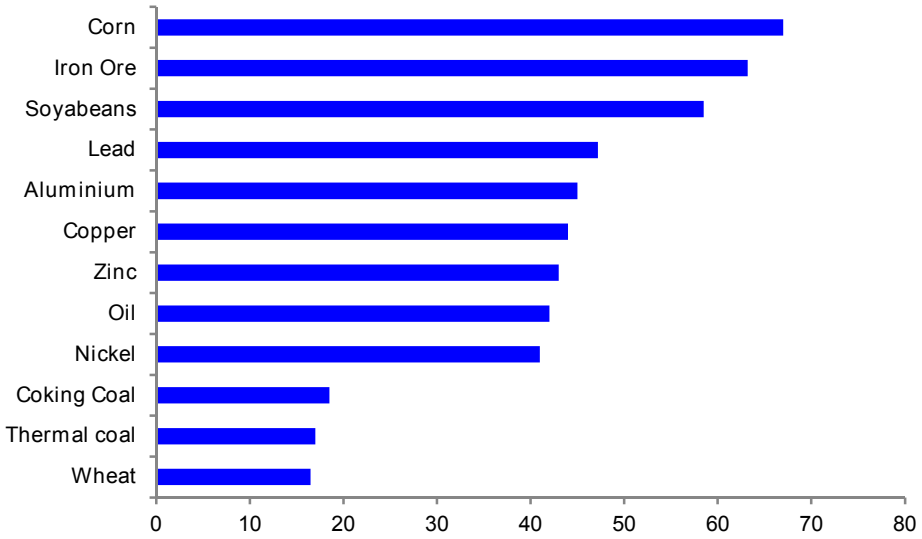
Raw material inflation has eased significantly in recent months

While inflation has been and will likely continue to be a primary focus for both business and government in China (as evidenced by the priorities of the 12th Five Year plan in 2011), DB views the current raw material environment as more benign than it has been in years past. Notably, raw material inflation has abated in recent months, declining to approximately 2% in January versus a 10-11% growth rate in the middle of 2011.

We also note that Consumer Price Index (CPI) inflation declined to 3.2% year over year in February versus 4.5% in January and below consensus of 3.5%. The government's official target was set at 4% for 2012 at the National People's Congress (NPC) earlier this month. DB's Global Economics team expects a modest increase in the CPI to 3.4% year over year in March, in part, due to pressure from energy and rising raw material prices before the reading falls to 2.5% late in Q3. DB's view is that with CPI in a range of 2.5% to 3.5%, the People's Bank of China (PBOC) will hold interest rates at 3.5% through most of 2012.

China has historically contributed a large portion of global demand growth across a broad spectrum of commodities. Given China's outsized exposure to corn demand growth, we believe that an expected record corn crop in North America should help tame food inflation in 2012. We note that food inflation has comprised as much as one-third of Chinese CPI inflation and has been a primary concern of the central government particularly in low income urban households where household food expenditure has more than doubled over the past 6 years.

Figure 14: Chinese demand contribution to world consumption growth by commodity (2012E)



Source: Deutsche Bank

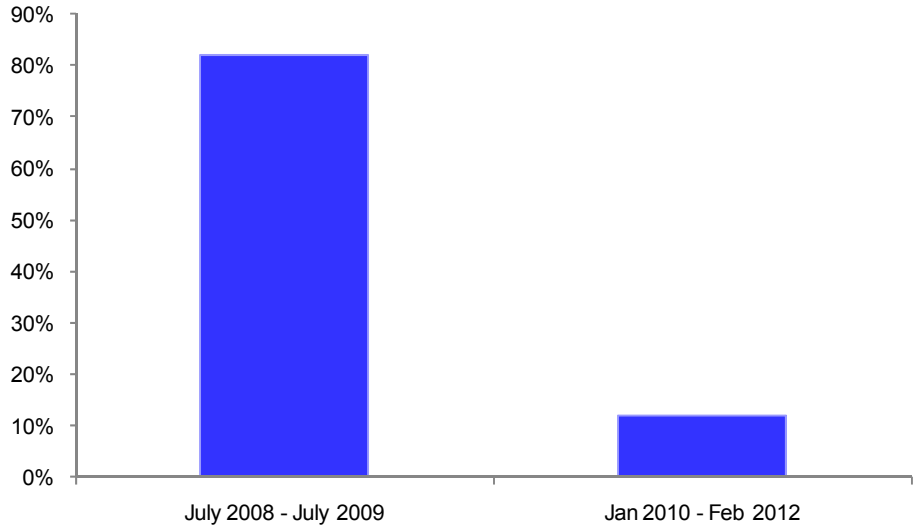
Food inflation, which remains a top government priority, is expected to rise a manageable 5% in 2012 according to Mr. Xu Xiaoping (who we hosted at our Access China Conference earlier this year) from the State Council Research Center. Mr. Xu Xiaoping believes food supply (including state reserves of agricultural commodities) will be sufficient to keep prices stable. We note that historically, the government has not been shy about endorsing policy to quell food inflation, particularly in light of the political and social pressure that results from inflationary pressure. We expect that an environment of higher food inflation would necessitate The National Reform and Development Commission (the central economic planning body in China) to enact policies such as increased grain subsidies, heightened food reserve management, and measures to lower food transportation costs. DB's China economics team expects the central government's 2012 budget expenditure on agriculture to increase 15% YoY.

The Chinese economy is more insulated from the property market than is widely perceived

While China's domestic property market has historically comprised a significant component of its economic activity and has had pronounced demand effects on related industries such as machinery, furniture, raw materials, and consumer luxury goods (due to wealth effect), we believe that the broader Chinese economy is currently more insulated from property market weakness than investors perceive. Real estate fixed asset investment (FAI) accounts for approximately one-fourth of total FAI, and total FAI is about half of the overall economy. DB estimates a 15-20% deceleration in nominal real estate FAI in 2012, equating to a one percentage point decrease in GDP growth. We believe this will ultimately be offset by investment in infrastructure and public housing as well as accommodative fiscal and monetary policy to help spur loan growth.

Our view that the Chinese economy is less exposed to property market fluctuations than investors perceive stems largely from our Chinese economist's study which highlighted a marked decline in correlation between manufacturing PMI and real estate PMI in the periods 2010-2012 (current cycle) and 2008-2009. In the current cycle, the correlation between manufacturing PMI and real estate PMI has been a marginal 0.12 versus 0.81 for the period July 2008-June 2009. In the previous cycle, the high correlation between manufacturing PMI and real estate PMI stemmed from export declines (due to a collapse in global growth) and inventory destocking.

Figure 15: Correlation between Chinese real estate PMI and manufacturing PMI



Source: Deutsche Bank calculation based on data from NBS and Confederation of Logistics.

The decoupling of the correlation between real estate PMI and manufacturing PMI in the current cycle stems from a more resilient export sector and a much better inventory performance than in prior cycles. As previously mentioned, the export sector is performing relatively well with the new export orders index tracking over 51 in February (versus 29 in November 2008). Strength in inventories is evidenced by the PMI's raw materials inventory index which has remained stable over the past two quarters at approximately 50 (versus 39.5 in November 2008). Hence, despite undoubtedly weak readings in the real estate PMI (39 in January 2012), which are on par with the lows of the 2008-2009 cycle, the Chinese manufacturing sector is in a much more stable position as a whole than in the previous cycle, making an economic hard landing scenario unlikely.

Investments in infrastructure and public housing should help offset a slowdown in real estate investment. While many believe the current environment in the Chinese property market to be tenuous, we are encouraged by a number of factors such as government support of infrastructure and public housing, which will likely help to offset potential weakness in real estate FAI. Government assurance for funding of ongoing infrastructure projects is likely to buoy transport FAI growth, which DB expects to recover to 5-7% in 2012 versus 1.8% last year. The Chinese government is supporting the funding of ongoing infrastructure projects through:

1) A 25% increase in the local bond issuance quota to RMB 250 billion in 2012 versus RMB 200 billion in 2011.

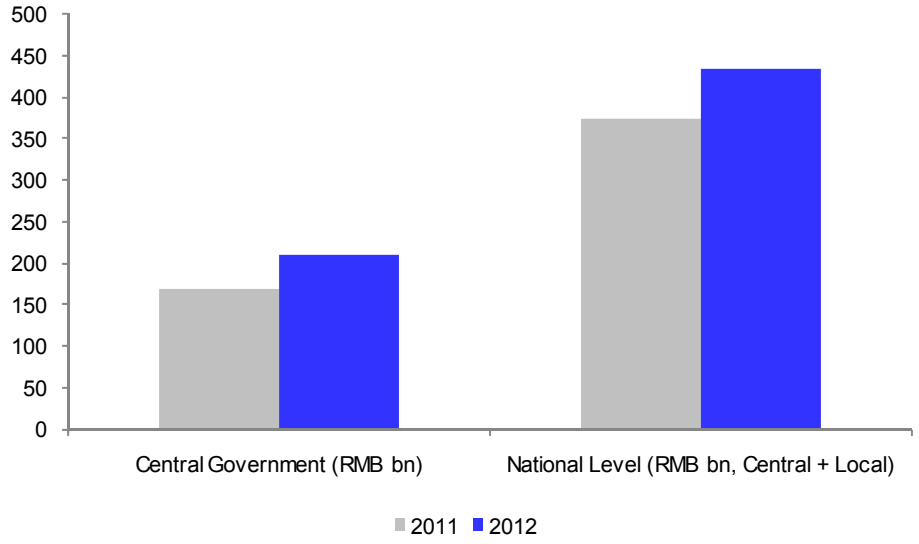
2) The rollover of some Local Government Financing Vehicle loans (LGFV) (already rolled over RMB 300-400 billion at year-end 2011)

3) An estimated 7% increase in new lending to RMB 8 trillion in 2012 versus RMB 7.5 trillion in 2011.

Spending on public housing is poised to rise in 2012. DB's China Economics team expects 2012 to be a peak year of public housing during the current 12th Five Year Plan. The Chinese government has announced plans to start 7 million units and complete 5 million units by year-end. Furthermore, construction is continuing on the 10 million units that were started in 2011. According to the 2012 budget announced at the most recent National People's Congress (NPC) meeting, the Chinese Central Government will allocate ~RMB 212 billion to public housing this year versus RMB 172.1 billion in 2011, up 23% year over year. Total government (central & local) spending is expected to increase to RMB 440 billion versus RMB 382 billion in 2011, up 15% year over year.

Moreover, the rhetoric from the Chinese government in its outlook statement is supportive of this view as it indicated an aim to "ensure the supply of ordinary commodity housing," implying that the financing policies for some developers may loosen later in the year in order to sustain growth.

Figure 16: Chinese government spending on public housing is poised to increase in 2012 versus 2011 (RMB billion)



Source: NDRC

Central Bank policy is likely to be supportive of housing and mitigates the likelihood of an economic hard landing. To the end of ensuring ample financing in support of the housing market, the People's Bank of China (PBOC) lowered the required reserve ratio (RRR) by 50 basis points in mid-February. The move lowers the RRR for large banks to 20.5% and the RRR for small banks to 18.5%. It also liberates approximately RBM 420 billion of deposits immediately available for lending.

DB's Global economics team cited a number of factors that prompted the policy action by the PBOC:

1) Tight liquidity conditions in the inter-bank market

2) A consensus expectation for lower CPI inflation over the coming months. We note that CPI inflation declined to 3.2% year over year in February versus 4.5% in January and below expectations of 3.5%. We expect inflation to tick up modestly to 3.4% in March due pressure from energy prices before declining to 2.5% in Q3.

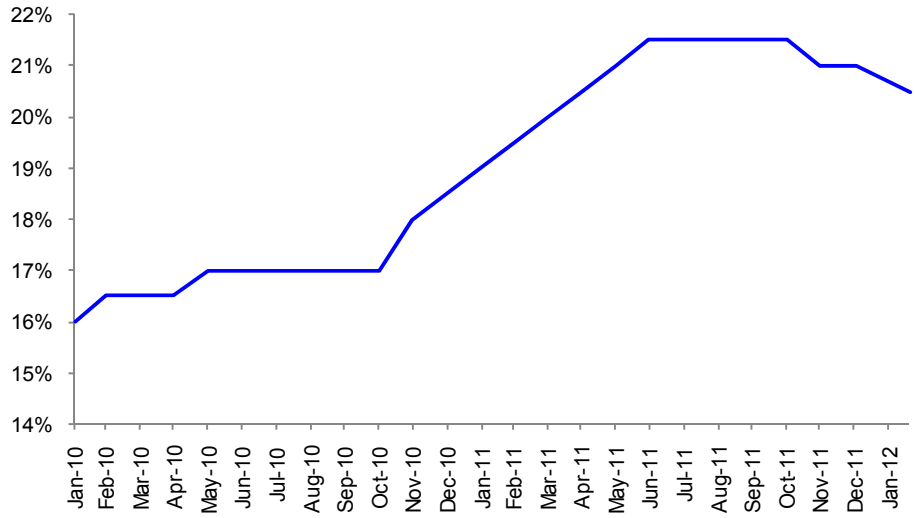
3) Stagnant year to date loan growth, which has been constrained by slow deposit growth. New RMB lending of RMB 710 billion came in modestly below expectations (consensus of RMB 750 billion) in February. Despite lending coming in below consensus in February, we are encouraged by a marked RMB 1.6 trillion increase in deposits, following six consecutive months of declines.

4) Relatively weak net capital inflows.

5) The need to roll over LGFV loans in 2012

Looking forward, DB's Economics team expects two more RRR cuts over the coming six-month period, aimed at supporting bank loan growth. Furthermore, the central government is also reported to be tolerating a gradual easing of property policies at the local level (e.g. LGFV loan rollovers).

Figure 17: Deutsche Bank expects two more RRR cuts in 2012 after rates were reduced 50bps to 20.5% in February



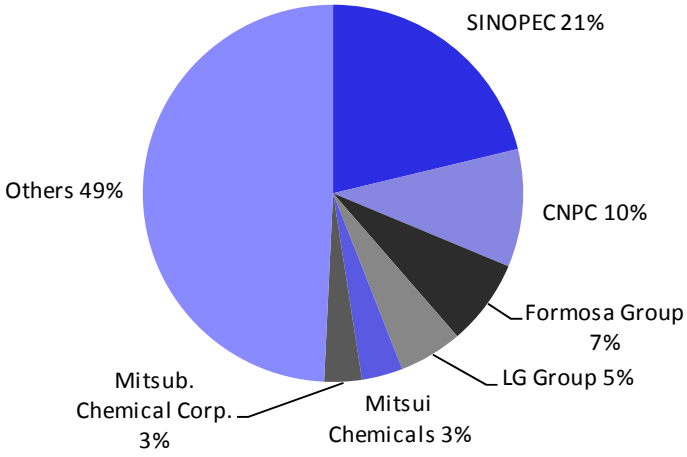
Source: Bloomberg Finance LP

Petrochemicals in China

Ethylene and acetic acid capacity growth continues

China is a massive petrochemical market. China is an increasingly large player in global petrochemicals. Strong demand has been driven by government directed infrastructure spending, a burgeoning middle class with rising disposable incomes, expanding construction of residential housing, and re-export industry growth. In 2011, China accounted for 32% of global chemical demand (PE, PP, MEG, butadiene, PTA, styrene, phenol, PVC and methanol combined), up from 24% in 2006. Since 2006, the Chinese market has accounted for 88% of global chemical demand growth. On a volume basis, Chinese demand for ethylene, the largest building block chemical, increased from 9.2mt in 2006 to nearly 15mt in 2011, or 12% of global ethylene demand. From a supply standpoint, China is also a major chemical player within Northeast Asia where SINOPEC and CNPC (China National Petroleum Corporation) have become the leading producers of ethylene with a combined 31% of the region's production capacity.

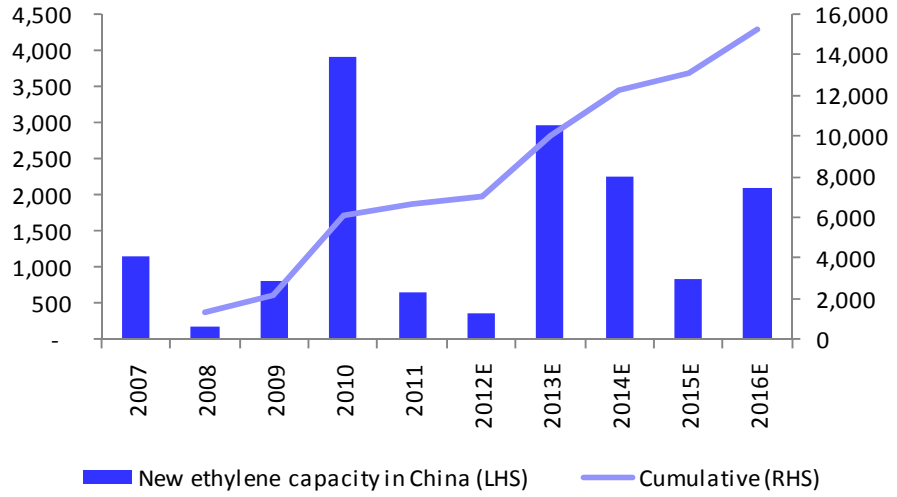
Figure 18: Top ethylene producers in Northeast Asia, 2012



Source: IHS Chemical

China is adding ethylene capacity at a rapid pace. The proliferation of ethylene capacity additions in China scheduled to come on line thru 2016 is a key focus of the region's petrochemical industry. Driving this new capacity is China's national effort to maintain a rapid pace of industrialization as well as the promotion of economic development at the provincial level. In an effort to meet rising chemical and plastics demand, 5.5 mt of ethylene capacity was added in China in 2007-11, an increase of 55% and comprising 25% of global ethylene capacity additions in that time frame. Looking ahead, several new projects are being built as local governments race to build new ethylene capacity with the aim of promoting local economic development. Liaoning, Heilong, Chengdu, Wuhan, Jinshan, and Zhanjiang are locations planning to invest in ethylene and ethylene derivative complexes over the next 3 years. Collectively, greenfield projects account for over 9 million metric tons of ethylene capacity through 2016, equivalent to 6.1% of 2011 global ethylene capacity (of 147 mt). By 2016, we estimate that China will have more than doubled its ethylene capacity from 2009 levels to 24 mt. This implies a global ethylene capacity market share for China of 13.8% in 2016 versus 8.4% in 2009.

Figure 19: Ethylene capacity additions in China ('000 mt)



Source: IHS Chemical

Figure 20: Large-scale ethylene projects scheduled to start-up in China 2012-15 ('000s mt)

Project name/location	Group/parent	Capacity (ktpa)	Completion
Liaoning	Fushun PC	800	Q2 12
Chengdu	Sichuan PC	800	Q1 12
Heilong	Daqing PC	600	Q1 13
Wuhan	Wuhan PC	800	Q1 13
Jinshan	Shanghai PC	600	Q1 14
Zhanjiang	Sinopec/Kuwait Petroleum	1,000	Q1 15
East China	Petrochina	1,000	2016
Hainan	Hainan JV	1,000	2016
Guangdong	CNOOC/Shell	1,000	2016
Qingdao	Qingdao PC	1,000	2016
Dalian	Dalian PC	1,000	2016
Total		**9,600**	

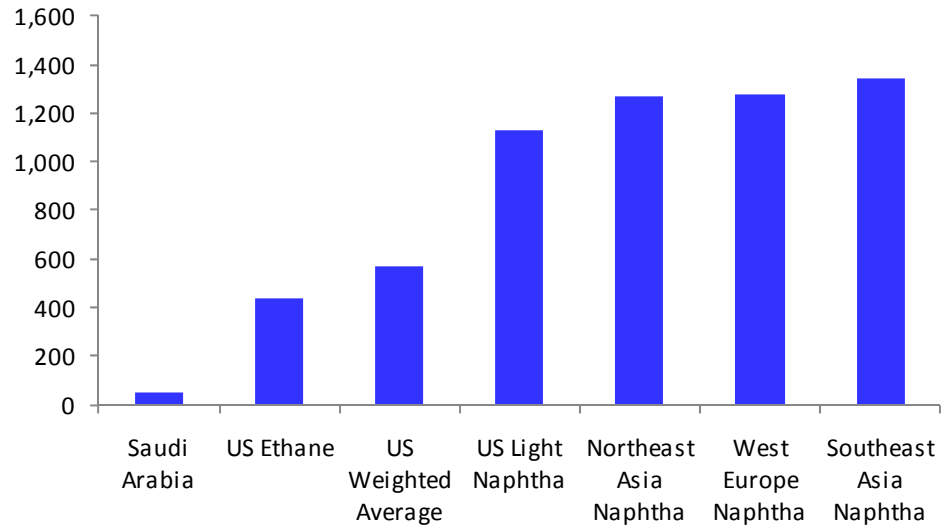
Source: IHS

China ethylene capacity is relatively high on the global cost curve. Due to rapid economic growth and limited domestic oil and gas resources (only 2% of China's energy resources consist of oil and gas, vs 96% for coal), China has been unable to supply its rising demand for ethylene and ethylene derivatives from internal sources, making the country a key export market for chemical producers in the Middle East and North America. China's relatively high cost structure based on imported naphtha is also a consideration as ethylene production in China is based on crude oil feedstocks (naphtha), whereas in the Persian Gulf and North America it is primarily based on low cost natural gas liquids such as ethane. In February 2012, ethylene production costs in China were 190% higher than ethane-based production in the US Gulf Coast and 250% more costly than ethane-based production in Saudi Arabia.

Ethylene operating rates in China likely to move higher in 2012, the Year of the Dragon. Over the past 5 years, ethylene operating rates in China have declined from 100% (or greater) to 89% due to increasing capacity. Ethylene producers we have spoken with, including Dow, believe a small amount of capacity in the Northeast Asia region (~100-120 thousand mt) will be forced to shut down in 2012-2013 due to rising naphtha based costs and intense competition from Middle East imports. These rationalizations, likely consisting of older, smaller, and less efficient plants in Taiwan and Korea, should also modestly boost ethylene operating rates in China. Despite China's recently lowered nominal GDP growth target (7.5%), we expect Chinese ethylene demand to grow 8% in 2012, following a 4% increase in 2011, with derivative demand led by ethylene oxide up 31%, ethylene dichloride up 15%, and ethylbenzene up 12%. As a result, we expect ethylene operating rates in China to increase to 95% this year. Owing to the rapid growth in ethylene capacity in China, the rest of Asia and the Middle East over the last several years coupled with the high cost of imported naphtha, we expect ethylene profitability in the region to remain challenging in 2012 with most ethylene crackers operating at breakeven or at modest losses.

Despite heavy investment, China will likely remain a chemicals importer for the foreseeable future. There are 11 large-scale ethylene crackers scheduled to start up in China by 2016. In addition, there are 6 coal-to-olefins projects. Despite this large amount of investment (by both Western and Chinese companies), we believe imports will continue to satisfy 25%-30% of China's chemical needs through 2015 (vs 35% today). We estimate this will translate into China chemical import demand growth of 5-6% per annum. For the Asia region, we estimate net equivalent imports of ethylene and ethylene derivatives will increase from approximately 9 million mt in 2011 to 11 million mt by 2015 with the primary driver of this growth being China. China will thus remain a primary destination for ethylene derivative exports from the Middle East and, to a lesser extent, the US (due to the region's ethane-based cost advantage vs naphtha). The same holds true for propylene and its derivatives, as China currently imports ~30% of its polypropylene requirements.

Figure 21: China is high on the global ethylene cost curve (production cost $/mt as of February 2012)



Source: IHS Chemical

The trend of inland investments continues. New chemical industry investments in China continue to be made in the interior provinces. This represents a shift from past years when investments in China were focused in the eastern industrial and heavily populated coastal regions of the country. The shift is being driven by the central government's agenda of balancing urban/coastal and rural/interior incomes, the region's plentiful coal reserves, and the government's desire for greater chemical self-sufficiency. With crude oil hovering around $125/bbl, coal-to-olefin projects in the coal-rich inland provinces are cost competitive with vs naphtha-based olefins production. While some investments continue to be envisaged as joint ventures with Western chemical companies, the majority are being conceived as 100%-owned Chinese companies with heavy state planning and financial backing.

Coal-to-chemicals projects in the interior provinces are advancing. Several major coal-based chemical projects are under development in China's interior provinces where roughly 77% of China's coal reserves are located. Large investments in coal-to-chemicals are being motivated by a number of factors: 1) the Chinese government's desire to reduce the country's reliance on imported crude oil amid rising oil prices; 2) China's desire to make efficient use of its vast bituminous coal reserves (the second largest in the world behind the US); 3) Lower feedstock costs (IHS Chemical estimates that the production cost in the coal-rich inland China provinces for a ton of light olefin is nearly 25% below the production cost from naphtha); and 4) China's desire to become more self sufficient in basic chemicals.

Most projects under development today are making use of coal-based feedstocks to manufacture polyolefins through methanol-to-olefins (MTO) processes, in contrast to a past emphasis on strictly PVC and methanol. The MTO projects being developed in China are expected to be highly cost competitive with naphtha-based olefins production throughout the region due to low coal prices. Even after factoring in freight costs to the East Coast, production costs for MTO are lower than costs for naphtha-based resins. The primary constraints associated with coal-to-chemicals projects are high capital costs and high water consumption needs which are subject to environmental restrictions. Three major coal-to-olefins projects started up last year in Central China (each 500kt – combined 1 million mt), with several others receiving the green light from China's National Development and Reform Commission. We expect two MTO projects to begin commercial production in 2013 (combined 1.3 million mt) and three in 2014 (combined 2.1 million mt). The vast majority of China's MTO projects are located in coal-rich Shanxi, Shaanxi, Inner Mongolia in the North Central and Xinjiang in the Northwest regions of the country. Not surprisingly, coal prices in these provinces are significantly lower than market prices in the east and south of China (coal prices on the East Coast are roughly 50% higher than in Xinjiang due to transportation costs).

Shenhua/Dow methanol-to-olefins project appears to be making slow progress. The largest of the MTO projects in China is a $10 billion complex in the Shaanxi province being developed by Dow Chemical and the Shenhua Group, China's largest coal company. Discussions with Dow during our trip to China indicate the project is making slow progress with the feasibility study and project approval process still under way. We believe the project has taken on less urgency for Dow since it announced (in 2011) the massive Sadara Chemical JV in Saudi Arabia. We believe the timing of Dow's MTO project with Shenhua has been pushed out toward the end of the decade (2018-2020), after the completion of Sadara Chemical.

Figure 22: Major coal to olefin projects in China ('000s of m.t.)

Project name	Type	Capacity (ktpa)	Completion
Shenhua Baotou	Methanol to Olefins	600	Q3 10
Datang Int'l	Methanol to Propylene	500	Q2 11
Shenhua Ningmei	Methanol to Propylene	500	Q3 11
Zhongyuan PC (Sinopec)	Methanol to Olefins	163	Q3 11
Yulin Energy & Chemical	Methanol to Olefins	600	Q2 13
Pucheng Clean Energy	Methanol to Olefins	680	Q3 13
Shaanxi Yanchang	Methanol to Olefins	900	Mid 14
Zhejiang Tiansheng	Methanol to Olefins	600	Q1 14
Yankuang Group	Methanol to Olefins	600	Mid 14
Shenhua/Dow JV	Methanol to Olefins	N/A	2018+
Total		**5,143**	

Source: IHS Chemical

China is a growth engine for acetyls. With one-third of global demand for acetyls in automotive, construction and polyester applications, China is the key global growth region for the acetic acid industry. Celanese indicated to us that it is seeing volumes pick up again in China following the Chinese New Year, and that the broader Chinese economy seems to be healthy and robust. Acetic acid demand in China has grown at a 15% annual pace over the past 5 years. With demand growing at 1.5x-2x GDP growth rates, we believe acetyls demand in China is poised to grow in excess of 10% in 2012. The pricing outlook for 2012 is flattish (current prices are ~RMB3,000/mt) due to high inventory levels and market oversupply.

Low cost acetic acid producers are able to run their plants at higher rates. China has experienced a wave of acetic acid capacity additions due to robust long term downstream demand prospects. With most of China's new capacity based on methanol carbonylation technology, the rapid expansion of acetic acid capacity has been the means for producers to take advantage of an oversupplied methanol market. However, local Chinese producers have primarily built standalone acetic acid plants with no matching downstream derivative capacity. That has led to overcapacity and 60-70% operating rates in 2011. With demand increasing 10%-plus and acetic acid capacity in China increasing by 20% to 9.9 million mt this year, we expect operating rates to decline further to ~50% in 2012.

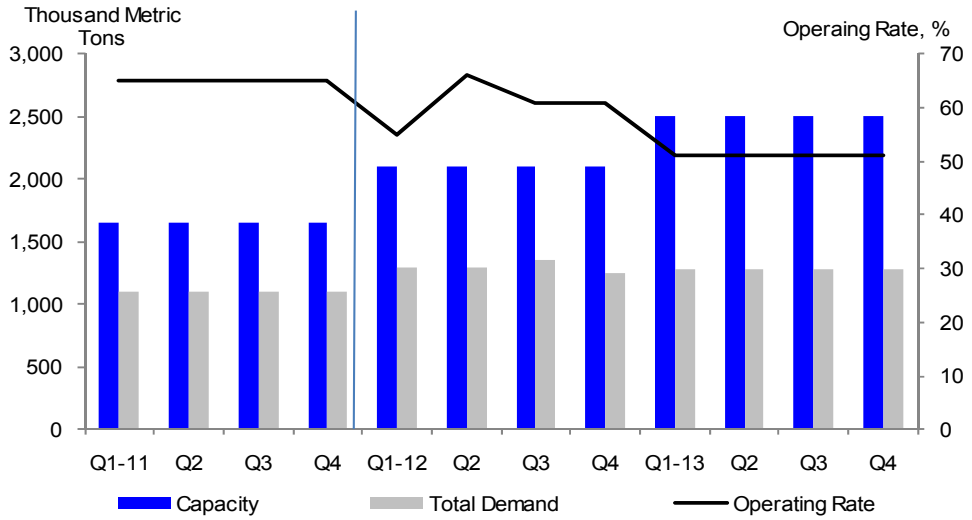
However, we believe apparently low operating rates in China must be viewed in the context of a highly differentiated cost curve. Typically, the higher cost ethanol or ethylene-based acetic acid producers in China are forced to run their plants at reduced rates during times of high feedstock and power costs. During our China trip in February, average operating rates were approximately 65% of nameplate capacity. But while the higher cost producers such as Hebei Gas Chemical and Yangchang Petroleum ran their plants at 50% rates, lower cost producers such as BP and Celanese were running their units (both in Nanjing) at about 80%. In 2012-13, we expect some non-integrated merchant acetic acid capacity in China to be shut down, reflecting lack of competitive technology and disadvantaged feedstocks. We believe Celanese, in our view the lowest cost producer in China, is well positioned to benefit from any capacity rationalization.

Figure 23: Top 10 acetic acid producers in China

Rank	Owner	Capacity (-000 m.t.)	Share
1	Shanghai Huayi	1,300	13%
2	Jiangsu Sopo	1,250	13%
3	Celanese	1,200	12%
4	BP	625	6%
5	SINOPEC	606	6%
6	Zhongxin Jiantao Chem	500	5%
7	Cathay Coal	425	4%
8	Yankuang Group	425	4%
9	Henan Shunda	400	4%
10	Hualu Hengsheng	350	4%
	Totals	**7,080**	**71%**

Source: IHS Chemical

Figure 24: Projected acetic acid supply/demand and operating rates in China, 2011-2013F



Source: IHS Chemical

Figure 25: 2012 acetic acid capacity additions in China ('000s m.t.)

Project name/location	Group/parent	Capacity (ktpa)	Completion
Wuwei, Anhui	Shanghai Wujing	500	Q1 12
Sichuan Guangxing	Yangtze River	650	Q3 12
Zaozhuang, Shandong	Yankuang Cathay	500	Q3 12
Total		**1,650**	

Source: IHS Chemical

Oversupply building in MDI PU. BASF, Bayer and Yantai all have strong plans for further expansion in MDI in the future. While we see this product as a high growth product we fear that oversupply in this market is going to occur in the coming few years and that unless we see material capacity rationalisation margins will be under pressure for some time. Bayer's low-cost production site will help offset some of this as will BASF's in-land strategy (their 400kt investment is in the Chongqing region and getting product from the sea regions in-land is not going to be easy) we note that Yantai is benefitting from low-cost finance (please see the feedback section following our meeting with Yantai). With the three largest global players (these three account for 60% global market share) all committed to expanding heavily we see risk of MDI profitability weakening medium term.

Figure 26: Planned MDI polyurethane expansions in China

Company	Plant location	Year of start-up	Size (kt)	As a % of 2011 global MDI PU capacity
BASF	Chongqing	2014/2015	400	6.5%
Yantai	Ningbo	2014	300	4.9%
Yantai	Yantai	2014	400*	6.5%
Bayer	Caojing	2015/2016	700	11.3%
Total			**1,800**	**29.2%**

*Source: Deutsche Bank estimates. * closure of a 200kt plant and will be replaced by a 600kt plant*

Industrial gases summary

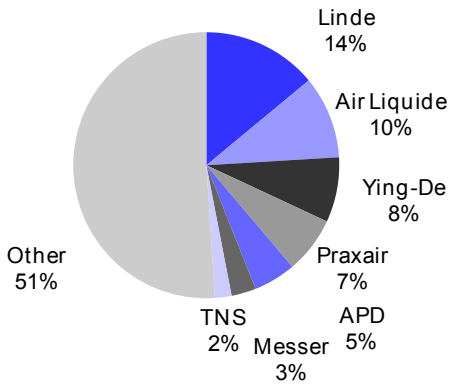
We met with Air Liquide, Linde, Air Products and Praxair in China. The feedback on the individual meetings is continued in the company sections (page 43 onwards) but below we have provided a summary of the key issues for the industrial gases industry within China.

Disciplined growth continues

Strong growth continues. All of the major gas names are focusing heavily on China, although some names are still playing catch-up (Air Products, no longer Air Liquide). The consensus opinion from the industrial gases companies is that the China region should continue to offer 15-20% annual growth for the foreseeable future and all names commented on their very strong order books (despite slightly softer industrial demand trends recently seen in the region). Competition on a contract-by-contract basis remains high but investment discipline seems to persist – each company feels that investment opportunities remain high and that given the large number of industrial basins in the region there is still room for everyone. No single company is present across all of the major hubs within China although some appear slightly stronger (Linde). All of the gas companies were clear in stating that both 2010 and 2011 were years of RoCE progression and despite strong capex plans RoCE is expected to continue to increase.

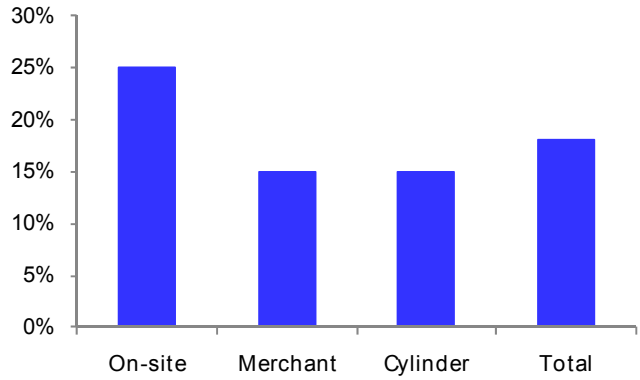
Strategies appear similar – focusing on niche strengths. Linde (through the acquisition of BOC in 2006), ahead of Air Liquide and Praxair while Air Products remains 4th is how the league table for the international companies reads in China based upon current market position. Linde appears to have developed profitable relationships fastest (and capitalised on the historically strong Engineering presence) but all four names now have similar strategies in China and are looking to target the best customers (refining/petrochemical) selectively piggybacking profitable projects and building local barriers to entry to gain economies of scale. The expansion of some companies into merchant and now cylinders into selected industrial hubs is also noted. Linde seems to have the most diverse customer relationships, Praxair has a slightly larger steel bias, APD still has a high electronics focus. Air Liquide is showing the fastest rate of improvement and has built a very strong asset base in a relatively short period of time – with the CEO still targeting a number one position in the region its clear the group's deep pockets mean it can commit more to region than many others.

Figure 27: 2011E China industrial gas market share



Source: Deutsche Bank estimates, company data, Spiritus Consulting

Figure 28: Long-term growth rates by gas distribution

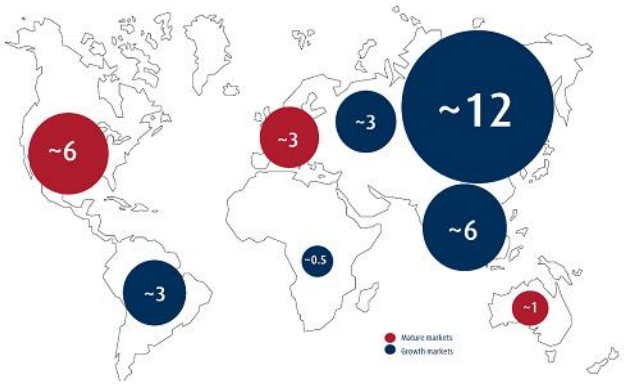


Source: Deutsche Bank estimates

Following our meetings with all major western players (please see later for individual company sections) we note twelve points in respect of China's industrial gas market:

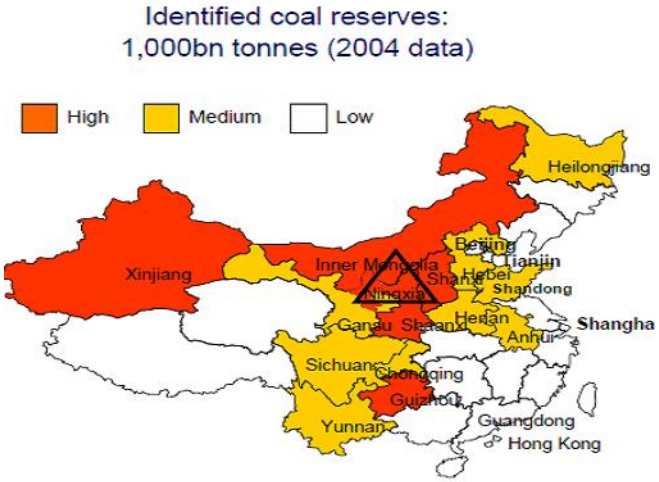
Point 1: Strong growth rates continue within China – outlook remains strong. From all the gas companies the message appears the same – current gas demand is at a record level. Despite some modest demand slowdown seen at the end of 2011 (due to macro) order books remain very strong for new large on-site investments and 2012 looks likely to be a record year for the number of on-sites coming on-stream. China's gas intensity (usage per capita) remains materially below mature Western economies highlighting the strong long-term growth potential.

Figure 29: Forecast growth (in Euro bn) of the industrial gases market in different regions (ex decaptivisation)



Source: Linde

Figure 30: China's coal reserves are huge and offer lots of potential for gas demand



Source: Air Liquide

Point 2: Contract bidding remains competitive; the focus on customer relationships remains high. Large on-site contracts with international majors remain fiercely contested, due to their lower risk and strategic nature. However, we see no sign of any price cutting or breakdown in RoCE discipline. In many cases the ability to offer a lower price to the customer is a function of using better technology or innovation for other product streams within the gas chains rather than offering the same solution for a lower price. 'Soft' criteria such as customer relationships, local government access and regional knowledge are increasingly critical in contract bidding – this is further supporting gas companies' desires to move quickly into new regions to create early barriers to entry. All of the major players appear keen to focus on China but it is increasingly clear that most names prefer to focus on specific regions and/or industry groups. Most believe their ability to bid on more contracts is still constrained by their own sales/engineering capacity (and less so by capex budgets).

Point 3: Outsourcing by customers still provides some "long-term" potential. Currently, approximately 80-85% of the Chinese gas market remains under captive production. As technologies evolve and customer plants require updating and enlarging we expect outsourcing to continue and drive additional growth opportunities for gas companies. The 12th five year plan appears to encourage outsourcing through the focus on upgrading production and a stronger focus on "quality". The cultural trend within China to "own your own assets" may persist but companies seem more upbeat on the potential for de-captivation than over the past few years. In 2011 we have seen a steady flow of "de-captivation" investments (Linde and Air Liquide seem to be more active in this area) and we see as likely to be a growing trend in 2012 and 2013. By product, outsourcing appears more focused on oxygen/nitrogen.

Point 4: New on-site investments are moving in-land. In line with many other industrial companies there is a growing awareness that the incremental material investment for the industry will come from the inland regions – where a greater proportion of the state's investment programme is being spent. Key for many names is to pick the region where a large hub can be developed as opposed to an isolated chemical investment. We note recent announcements (e.g. Praxair and Linde working with BASF in Chongqing) supporting this trend.

Point 5: Confidence over improving ROCE. Gas companies have often been criticised for spending too much money in China which is materially diluting ROCE (and margins). However, we note that the Western majors all experienced improving ROCE in 2011 and expect it to further improve annually despite on-going high levels of capex spend in the region. This is a key point as China should now start to be a source of improving ROCE for all companies. The same appears true for margins as the infrastructure build-out has been done by most companies

Point 6: The focus on merchant and cylinder is increasing. The focus over the past few years by the Western companies has been to invest in on-site facilities and to move early to dominate future industrial hubs. We note an increasing tone from companies towards expansion into both cylinders and merchant in regions where they already have a strong on-site footprint. Given that "locals" tend to compete more in cylinders and merchant this does raise some risks for Western companies, but this is mitigated by the fact that the expansions are only targeted to selective regions where they already have scale. Some companies are now building free standing merchant units but customer contract terms (duration, pricing terms) are comparable to contracts in other regions.

Point 7: On-site pricing terms often linked to the ability to leverage off-take credits. We suspect that one of the key areas of difference in pricing that any company can offer a customer in a new on-site may be the assumption of the off-take (piggy backing) credits that may come in the future from the development of industrial hubs/other customers. Assumptions around this off-take may differ from company-to-company but over the past 10 years of visiting the region we have noted that a key bone of contention between companies was often the assumptions for the liquid credits. Interestingly, as demand in the merchant market has often been much higher than most conservative multinationals would have predicted this has resulted in better returns than expected and pricing trends. If a company has a particularly strong view over the development basin its higher assumptions on off-take credits may allow it to become more competitive on pricing which we do not see as ill-discipline.

Point 8: 'Local' Chinese gas companies slowly closing the gap but still not competitive in large-scale investments. There are numerous smaller local industrial gas players which have, historically, caused problems for the major players through constant price cutting and ill-disciplined investment. While these players remain highly competitive in smaller plain vanilla gas plant offerings, all of the majors noted that many local players are showing improved discipline. Local players continue to compete in the on-site business but for most the size of their competitive offering remains materially below that of a Western company (world-scale on-site plants now available up to 3000tpd compared to locals offering around 1000tpd) ensuring that for the larger investments Western companies continue to dominate. As China increases its focus on environmental issues and energy consumption the use of more expensive Western plants often recoup the cost in higher operating efficiencies. Aside from Ying-De we note as increasing awareness of the engineering company Hangyang (which currently manufactures a large proportion of gas plants used in China) which is publically looking to become more involved in the outsourced industrial gases industry. This could be a longer-term threat if they are able to scale up technology but at the moment this is not the case.

Point 9: Ying-De beginning to be seen as a credible competitor. Over the past few years some of the global gas names have been unwilling to accept Ying-De as a credible competitor due to the small size and lack of track record. However, it is now clear that the attitude towards Ying-De is changing. While none of the companies saw Ying-De as able to compete on their basis of quality and full-scale there was a clear message from some that Ying-De has become a much more disciplined operator. We remain of the opinion that the consolidation of Ying-De appears likely over the medium term as it offers one of the Western names a one-off opportunity to step increase their presence in China and access some industrial zones.

Point 10: Coal-based investments offer potential but it's not the only opportunity in China. The development of China's abundant coal reserves will happen as China strives for energy self-sufficiency. All of the four major gas names are interested in working with coal-based investments and over the past 18 months we are now beginning to see some large investments being signed. This area presents material opportunities but the key issue here remains the ability of any company to leverage investments around the main coal site in order to maximise returns. Coal development may also provide some longer-term opportunities surrounding the management of CO2 emissions, but at the moment this does not seem to be a focus area.

Point 11: The state is not supporting a national champion in industrial gases; the need for environmental solutions should not be underestimated. Unlike other areas of chemicals there is no state-owned national industrial gas champion. From discussions with companies and customers it appears that the technology that the international names are offering is seen as a key driver of energy efficiency and also to help meet new stricter environmental standards, which as we mentioned earlier in the note is very key for the state to continue to focus upon.

Point 12: Reliable energy supplies – no problems experienced with 'brown-outs'. Fears over the lack of sustainable supply of electricity have been an issue for gas companies in the past but the proliferation of 'brown-outs' has been very low in the past few years. Companies feel that they have been successful in explaining to local governments the requirement for continuous energy supply, particularly if the gas product services are integrated into chemical/refining facilities.

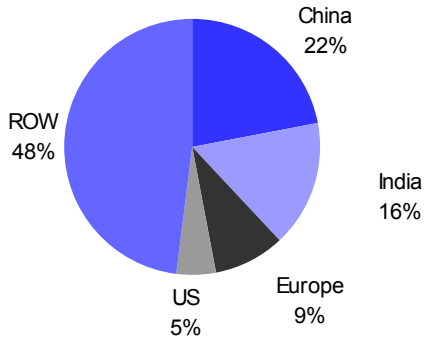
China agriculture outlook

We met with numerous companies exposed to the agriculture chain in China, including Bayer, Syngenta, DuPont, Dow, Hubei Sanonda, BASF and China BlueChem. The feedback on the individual meetings is contained on pages 43 to 124 but below we have provided a summary of the key issues for agriculture in China.

Long-term potential – strong government support

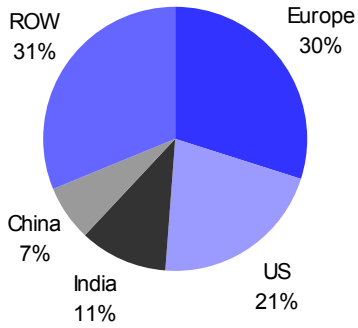
Population growth underpins the long-term demand in the region for agriculture. China's problems are clear in that they remain short of food. At the moment, China accounts for approximately 22% of the world's population (1.3bn) yet only possesses 7% of the world's arable land. This alone is a major headache for the country but added to the growing desire in the region for higher quality food (meat, fruit etc) and safer foods then the long-term squeeze on supply is only likely to continue. Besides, agriculture will remain a key element for improving rural prosperity in China especially given the fact that nearly half of Chinese population stays in villages. Food security remains the number 1 priority for agricultural policy with 95% self-sufficiency targeted for grains.

Figure 31: China is 22% of world population



Source: Syngenta

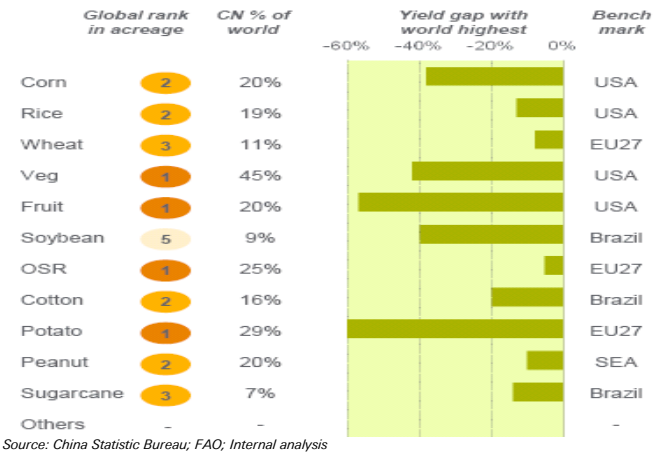
Figure 32: World's arable land



Source: Syngenta

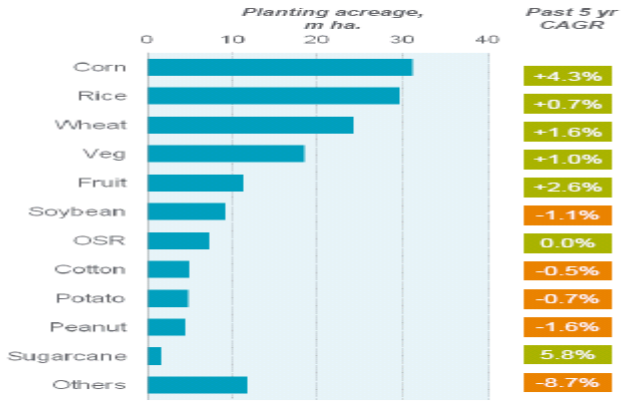
China is a huge and diversified agricultural market. China is a huge and diversified agricultural market with a large area under cultivation for all key crops, fruits and vegetables. However the yield gap remains significant vs. the developed world especially for crops like corn, soybean and vegetables and fruits indicating significant potential benefits for adopting better agricultural practices e.g. high quality seeds, using the right agrochemicals insecticides/fungicides etc. In China, the area under cultivation is the highest for corn, rice, wheat, vegetables and fruits and lowest for sugarcane, peanut and potato. In the last five years area acreage has increased for sugarcane, corn, fruits, and vegetables (in that order) whilst it has declined for peanut, soybean, potato and cotton.

Figure 33: Global positioning



Source: China Statistic Bureau; FAO; Internal analysis

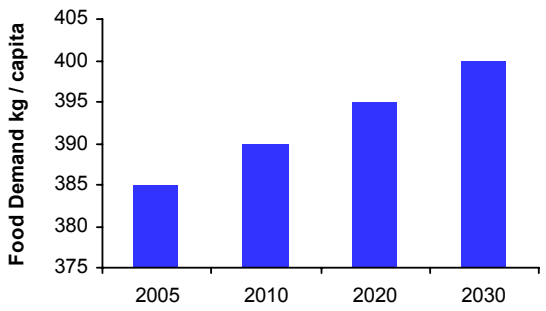
Figure 34: China crop structure



Source: China Statistic Bureau; FAO; Internal analysis

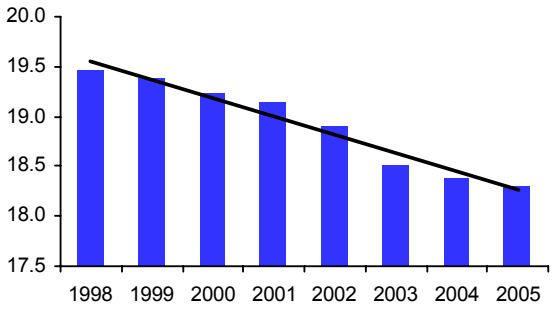
However resource constraints pose challenges for China agriculture development. Resource constraints remain the key issue for the Chinese agricultural sector. Despite the pressure on food supply, cultivated land in China is undergoing a steady decline due in part to urbanisation but also migration of the workforce over the past decade to the cities. In addition to lower than world average per capita availability of land and fresh water, intense competition for labour (due to migration to cities) and capital investment are the key challenges for the sector.

Figure 35: Food demand is increasing



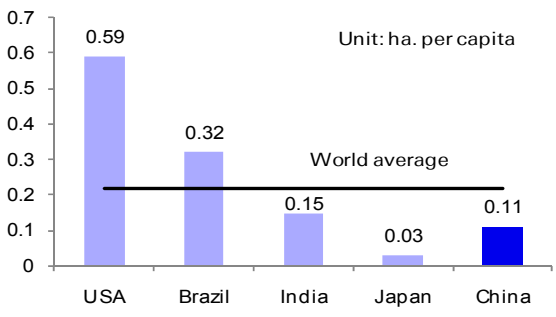
Source: Syngenta

Figure 36: Total cultivated land area has been declining



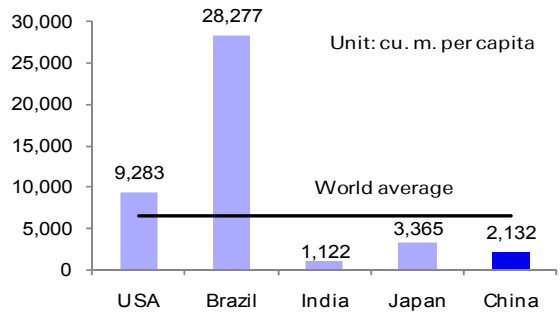
Source: Syngenta. Scale is 100mioMu

Figure 37: Arable land per capita < 50% of world average



Source : Syngenta, Deutsche Bank

Figure 38: Fresh water per capita < 30% of world average



Source : Syngenta, Deutsche Bank

Figure 39: Labour force flow to cities

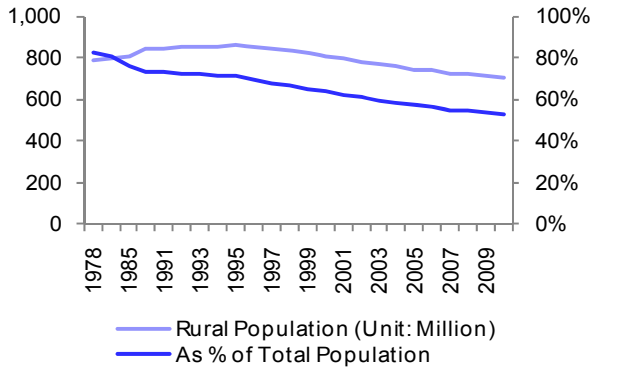
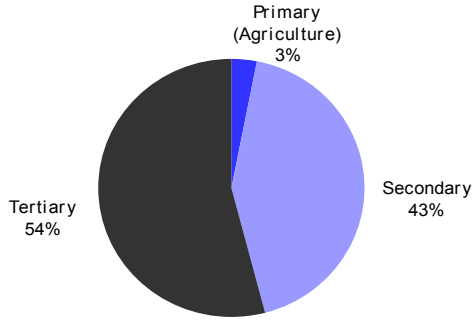


Figure 40: Capital investment not attracted to the agricultural sector



Source (ALL): Syngenta, Deutsche Bank

Therefore, 4 themes in agriculture are expected. In order to guarantee self-sufficiency, the government has to ensure that planting area stabilises and crop yields increase. The 4 key levers are the following:

1) Strong government intervention

- Set a government 'red line' target for arable land protection: min 120m Ha
- Maintain grain import quotas (< 5% of domestic consumption)
- Establish national reserve system and minimum purchase price supports
- Limit industrial use of corn (bio-fuel) through license management and supply restriction

2) More profitable farming

- Continue ag. subsidies (~ 3.3% of ag. GDP)
- Higher agricultural product prices due to resource scarcity (7.4% annual price increase in past 7 years)

3) More professional farming organisation

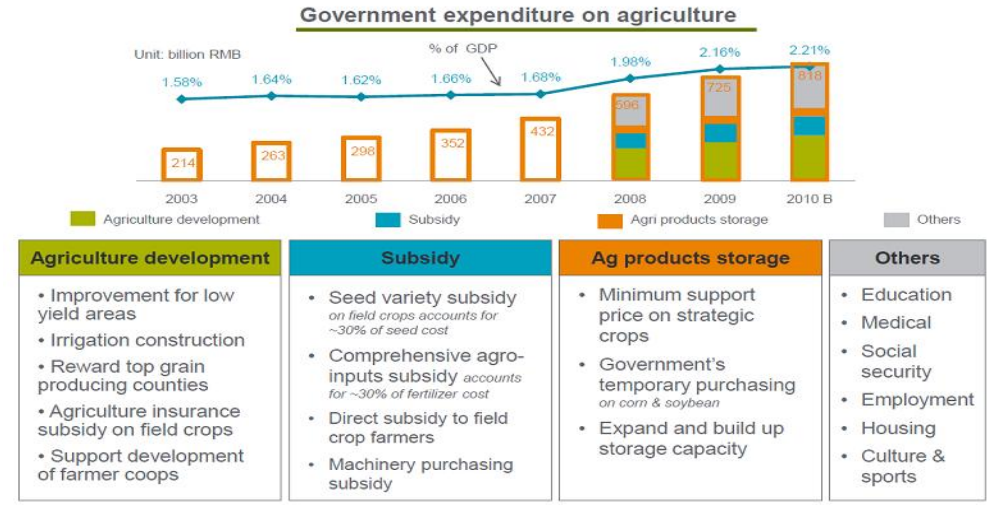
- Encourage ABC[1] and Co-op development
- Support land transfer and moderate consolidation
- Professional service provider (e.g. YPR[2] Farm-to-supermarket)

4) Ag modernisation through technology

- High yield seeds and GM technology
- Mechanization (60% mechanization target in twelfth 5 yr. plan)
- Intensification of ag. inputs (e.g. CP upgrading)
- Irrigation (~450 billion CNY by government)

Government subsidies continue to target doubling average farm incomes by 2020. As part of the stimulus programme the government is keen to support inland economies which are heavily weighted towards agriculture. Therefore, supporting farm incomes not only supports self-sufficiency but also creates wealth inland and partially helps answer the problems of the wealth gap between the inland regions and the Eastern seaboard regions. Government spending on agriculture in China has been increasing steadily in recent years as shown in Figure 41.

Figure 41: China agriculture has seen a steady increase in government spending



Source: Ministry of Finance of China, Syngenta

More specifically, the state is supporting farmers through four measures:

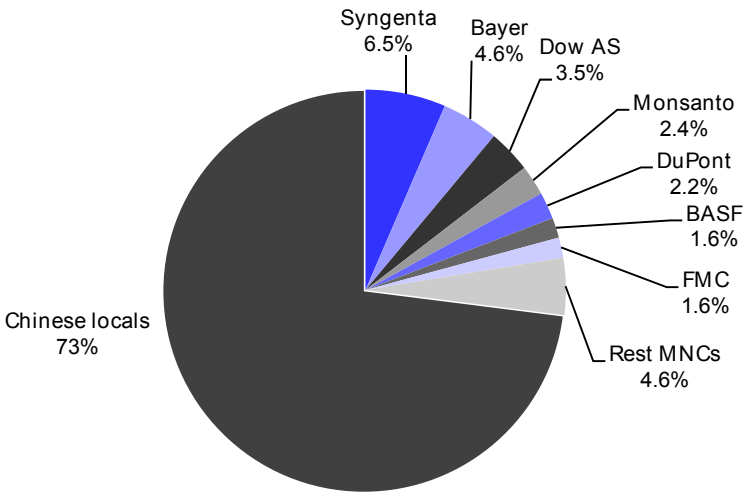
- Active fixed asset investment in inland infrastructure, such as water control/irrigation, distribution etc.
- Price support mechanisms which guarantee a minimum price for rice and other crops – less relevant today given strong rise in soft commodity prices but this does provide confidence that prices will not drop to levels that are uneconomic for investment, incentivizing farmers to invest for the long-term.
- Subsidies through the upgrading of machinery, such as the efforts to replace old motorised machinery thereby improving efficiency and maximising yield.
- Subsidies to support inland economies through the stimulus of consumer demand (subsidies given for white good purchasing etc) to further support household wealth for farmers.

Land consolidation is starting to occur. Key to improving the efficiency of farming in the region is the consolidation of small holding into larger more efficient farms. While the government in promoting this trend (and is now supporting land leasing in some areas) it remains a very slow process. Until the inland economies can support jobs other than farming this process is likely to be slow and inhibit the widespread adoption of more sophisticated agrochemical products.

Crop Protection and Seeds – consolidation happening

Crop protection market ($3.5bn) is currently focused on lower value generics. The crop protection market is highly fragmented in China. With a 6.5% market share, Syngenta is the leading player, followed by Bayer, Dow, Monsanto, DuPont and BASF. R&D companies account for c30% of the market with Chinese locals accounting for the remaining. Generic agrochemicals are the largest part of the market; which is understandable given low farm incomes and often low levels of farmer education. There are around 500 active ingredient manufacturers in the region and over 2500 local formulators of agrochemical product. The market is expected to grow at 6% p.a. and should represent 20% of the world CP market in the long term.

Figure 42: Syngenta is the largest player in crop protection with 6.5% market share

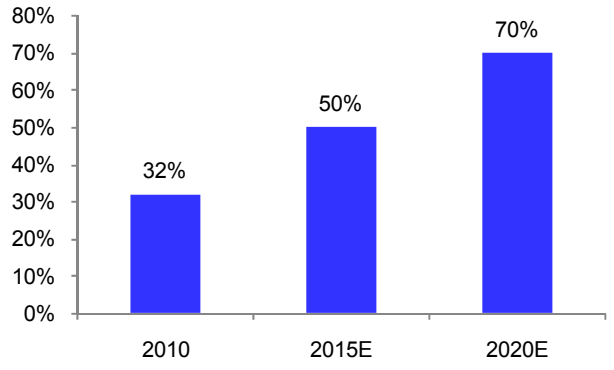


Source: Syngenta, Deutsche Bank estimates

Seeds market ($4.5bn) growing at 8-10% per annum. The Chinese seeds market, estimated at $4.5bn, is highly fragmented and complex. The market is currently dominated by crops like corn, rice and vegetables. The Chinese seeds market is characterized by low innovation, price competition, weak IP protection and FDI (foreign direct investment) restrictions. The market is growing at rate of 8-10% and enjoys strong government support. Given the market potential, foreign companies need to adapt to China rather than the other way round.

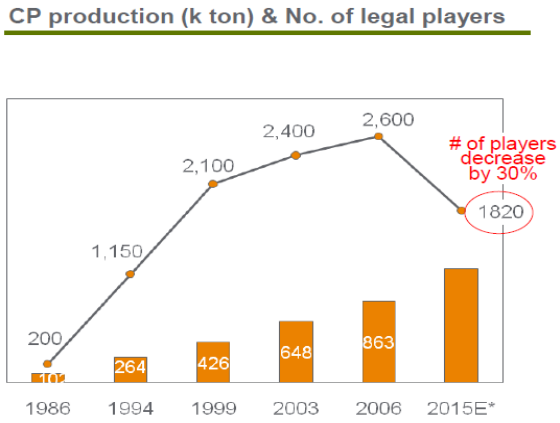
CP market consolidation to continue, R&D encouraged. The government is actively encouraging consolidation of the domestic agrochemicals industry in a bid to improve efficiency and increase local R&D. We estimate that there are currently over 2000 agrochemical companies and the government is targeting a sharp reduction of this over the next 10 years. The Government's Crop Protection 2020 industry guidance targets reducing the number of players by 30% and increasing entry barriers (more costly and lengthy product registration, higher capital requirements and stricter license management). Consolidated R&D efforts are expected to result in greater local market solutions being developed. Currently most Chinese companies that have R&D centres are not producing research compounds with the majority being spent on process improvement/product copying. Most Chinese crop protection companies are investing less than 1% sales in R&D compared to multinationals at 8%. These steps will benefit the multinational players with strong technology and higher standards of health, food and environment safety.

Figure 43: Top 20 concentration rate target of CP companies



Source: Deutsche Bank, Syngenta, China CP 12· Five Year Plan, Government long-term guidance on pesticide industry

Figure 44: The number of local players is expected to fall



Source: Syngenta

Regional regulation is increasing. A common problem over the past decade for agrochemical producers has been the protection of their IP and products alongside quality control. It is clear as with many end-users the government is increasingly enforcing these rules. Syngenta management noted that while their rates of litigation against copying/theft have not decreased in the last few years, their ability to enforce rulings has increased sharply.

Seeds should be strongly driven by government intention for modernization. Seeds is a strategic, fundamental and core element in China agriculture. The government's intention is to build a modern seed industry with indigenous, innovation capability to safeguard food security. The key policy drivers with their expected time frame for full effect are the following:

- Higher barriers to drive industry consolidation (1-3 years for full effect)
- Stricter regulation enforcement, e.g. license management, fighting product copying (3-5 years)
- Promote indigenous breeding by seeds companies (5-10 years)
- Pursue GM biotech in long term (long term)

Seeds more complicated and difficult to penetrate but big potential. The Seeds market is highly fragmented and also highly complicated driven by the government's desire to encourage ''local champions''. FDI (Foreign Direct Investment) restrictions force foreign companies to invest in Seeds only through JVs with a minority ownership (49-51). R&D has to be integrated at the JV level implying significant IP risk. However, the market potential is very significant (Syngenta sees it doubling in 15 years with 8-10% CAGR) and foreign companies have to adapt to this environment. Historically, seeds R&D has been done at the public institute level. However, with the government's policy now encouraging companies to have their own R&D, public institutes should progressively withdraw from the sector. In addition, several observers expect Chinese authorities to approve the GM option soon.

China automotive outlook

The automotive sector remains a material end-user for the chemicals industry and within China is a key driver of growth. In this section below we have looked in detail at the automotive market in China. The text below is provided in conjunction with our Chinese autos analyst Vincent Ha (vincent.ha@db.com, 852 2203 6247).

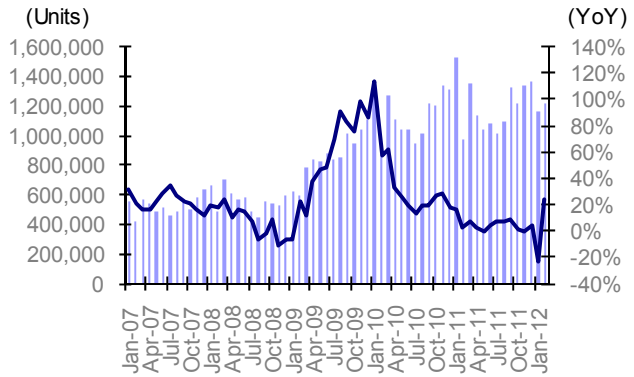
Sales momentum slowed considerably in 2011

In 2011, China Passenger Vehicle (PV) sales grew by 5% (at 13-year-lows) year-on-year to 14.47m units following 33% growth in sales in 2010 and 53% growth in sales in 2009. While the 2009 and 2010 sales boom was triggered by the government's stimulus package, sales momentum slowed considerably in 2011 due to following reasons:

- The removal of the stimulus policy, such as the purchase tax cut and rural subsidies that stimulated demand for the price-sensitive local brand/mini-car segments
- The impact of Beijing's new car ownership restriction, which we estimate took about 3ppt off incremental growth

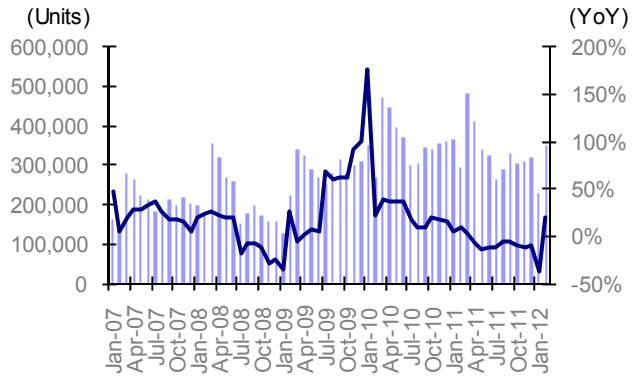
For the CV (commercial vehicle) segment, 2011 sales were 4.03m units, down 6% year-on-year. This was mainly because of the decline in sales of heavy-duty trucks (HDTs) due to the weak growth in fixed-asset investment and export activities, both of which are among the drivers of HDT demand. In addition, mini-truck demand also declined after the expiry of rural vehicle purchase subsidies.

Figure 45: China monthly passenger vehicle sales trend



Source: CAAM

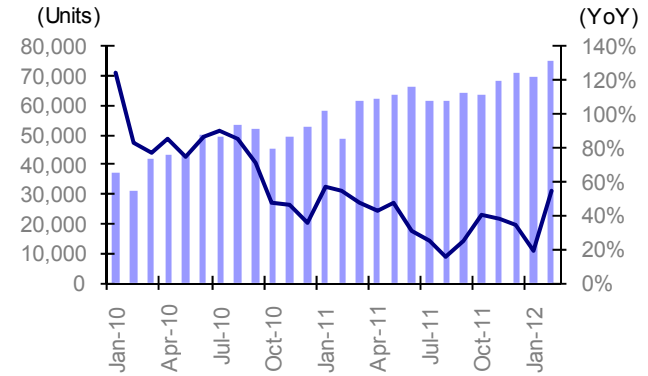
Figure 46: China monthly commercial vehicle sales trend



Source: CAAM

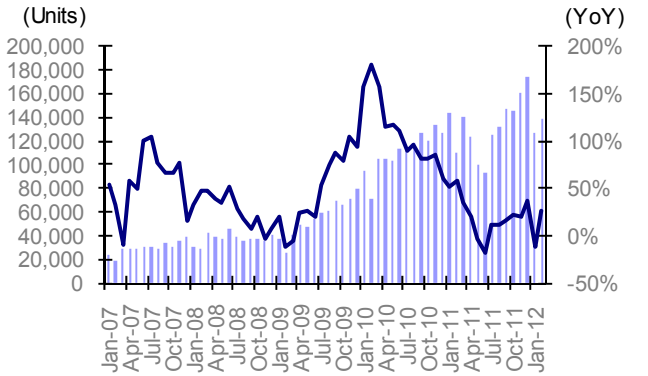
Despite the slow growth in overall PV sales, there are some bright spots. The luxury car segment continued to grow strongly, given the increasing desire to upgrade and the underpenetrated nature of luxury car sales as a percentage of total PV sales in China. In addition there is strong growth in the SUV segment, given the Mainland Chinese preference for size and the increasing demand for differentiation from buying sedans, which are more common.

Figure 47: Monthly sales of three German's luxury auto brands in China



Source: Company data

Figure 48: China monthly SUV sales trend



Source: CAAM

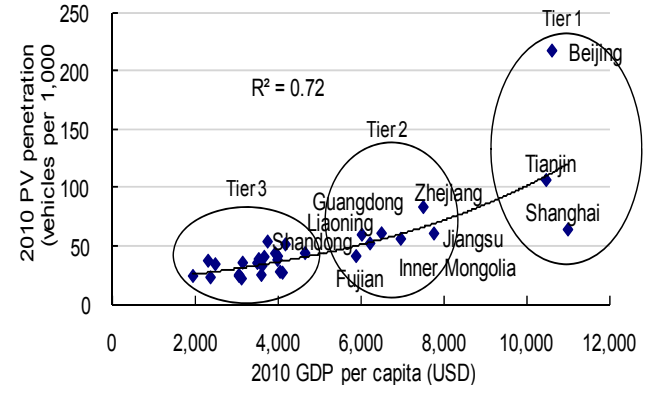
After speaking with auto dealers, we note that although inventory levels are, in general, higher than those of 2010, they are nowhere close to the 2004/05 and 2008 down-cycles. Therefore, a negative surprise in PV sales is still unlikely, in our view.

Long-term PV demand growth story still intact

In 2011, there was market concern on whether major cities' potential car ownership growth control measures (e.g. new license plate auctioning in Shanghai and new license plate lottery in Beijing) would hinder further China auto sales growth. We believe this is unlikely.

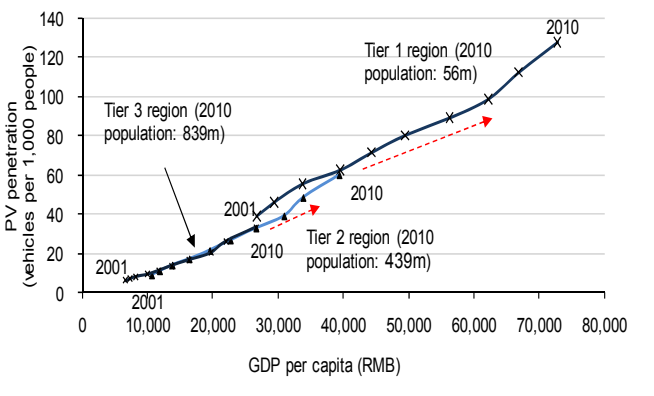
There was a significant new PV registration decline in Beijing in 2011 vs. 2010 and overall Tier 1 regions' new car registrations in 2011 were estimated to be about 54.5% of 2010's level. However, the pace of new car registration in Tier 2 and Tier 3 regions was still healthy. Given that future auto demand growth in China will be fueled by the Tier 2 and Tier 3 regions, which have high population base, lower current penetration and faster-than-national average economic growth, we think that continued demand resilience in those regions will provide a solid base for growth.

Figure 49: Categorization of China's auto market



Source: CEIC, Deutsche Bank

Figure 50: PV penetration growth in China



Source: CEIC, Deutsche Bank

Figure 51: China new car registration trend by regions						
(Units)	2008	2009	2010	2011E	YoY %	2010 penetration (%)
Tier 1	770,793	1,052,218	1,418,914	773,935	-45%	12.8
Tier 2	2,381,812	3,742,622	4,857,268	4,847,017	0%	6.0
Tier 3	2,902,213	5,453,714	6,270,709	7,075,568	13%	3.3
Total	6,054,818	10,248,554	12,546,891	12,696,520	1%	4.6

Source: China Statistical Yearbook, CEIC, Deutsche Bank

Industry utilization will decline though margins largely unaffected

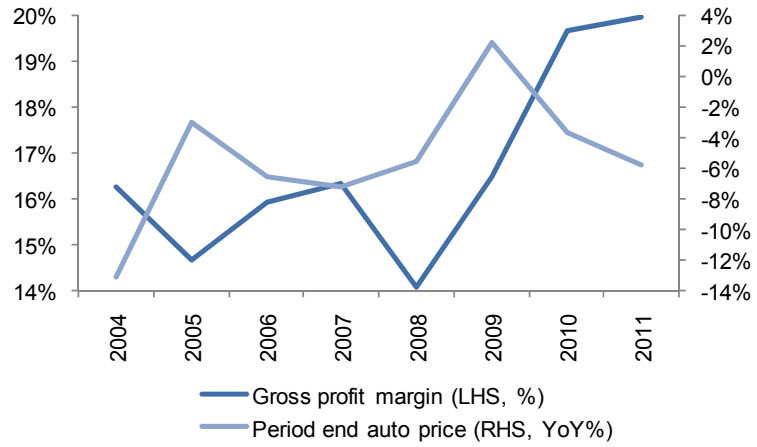
Apart from questions on demand growth, another key investor worry is overcapacity in the PV segment. With the exponential growth of China PV sales in 2009/10 and the consequent tightness in capacity, auto manufacturers have made plans to expand their production capability in China in the past couple of years. As it takes about two years to set up new facilities, we should see a wave of new capacity additions through 2012. We estimate that by the end of 2012 China's PV capacity will be expanded by about 19% vs. year-end 2011 to about 20.8m units. Since we only forecast 2012 PV sales growth to be 10.4%, we should see a reduction in production utilization from about 90% or more in 2009-2011, back to the 80% level in 2012-13E.

Even though lower sector utilization would imply lower sector margins due to less efficient use of the auto manufacturing fixed assets (i.e. higher unit fixed costs), we do not expect the margin pressure to be excessive, given 1) 80% is still a healthy level for auto production in a developing market with growth potential and 2) a still-healthy utilization level is unlikely to trigger a widespread price war. Indeed, when we spoke with major auto manufacturers, we did not come across any intention of across-the-board model price cuts. This is because they understand that it is not likely to result in sustainable growth, while negatively affecting margins in the long run.

Figure 52: China passenger vehicle production capacity estimate				
(Units)	2010	2011E	2012E	2013E
Shanghai Auto	2,800,000	3,420,000	4,060,000	4,860,000
First Auto	2,350,000	2,620,000	3,170,000	3,520,000
Dongfeng Motor (including parent company's capacities)	2,000,000	2,348,000	2,920,000	3,450,000
Changan Auto	2,635,000	2,635,000	2,815,000	2,965,000
Beijing Auto	690,000	890,000	1,290,000	1,590,000
Guangzhou Auto	940,000	1,340,000	1,480,000	1,760,000
Chery	850,000	900,000	900,000	1,100,000
BYD	700,000	900,000	900,000	1,000,000
Geely Auto (excluding Volvo)	560,000	680,000	730,000	900,000
Great Wall Motor	300,000	400,000	650,000	650,000
Market share of the above companies	92%	93%	91%	91%
Yearend PV capacities of the above companies (m units)	**13.83**	**16.13**	**18.92**	**21.80**
Implied yearend PV segment capacity (m units)	**15.00**	**17.43**	**20.79**	**23.95**
YoY%	24%	16%	19%	15%
Implied PV segment utilization (%)*	**101%**	**89%**	**84%**	**80%**

** Average capacities were used instead of yearend capacity, Source: Company data, Deutsche Bank*

Figure 53: Gross profit margin for major Chinese auto companies vs. auto price trend

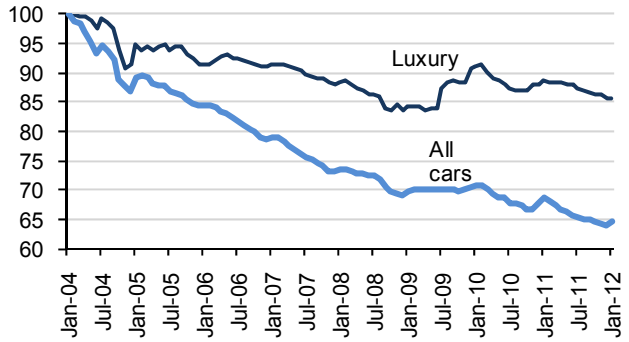


Source: CAAM, Cheshi.com

Luxury auto market still likely to outpace industry average

We attribute the slower luxury car sales growth rate in 2H11E to 1) a higher base in 2H10 and 2) capacity constraints at local production facilities in and outside China. We expect growth of the luxury segment to outperform the growth of the mass market segment (but the gap will narrow due to the increasing base scale) because of 1) new capacities installed for JVs such as BMW and 2) launches of new models. Whilst there has been some discounting of pricing, we note it has been small (-3.5% YoY) and in line with the general downward trend of recent years.

Figure 54: Auto price index



Source: Cheshi.com

Figure 55: Examples of 2012E new luxury models

FAW Audi
New generation A6L mid-size sedan
New Q3 compact SUV
Brilliance BMW
New generation 3-series compact sedan
New X1 compact SUV
Beijing Benz
New GLK compact SUV

Source: Company data, Deutsche Bank

Bottom line: double-digit growth should re-emerge

Overall, we expect China vehicle sales growth to return to the double-digit level in 2012/13E after a weak 2011 affected by stimulus removal and slower macro growth. Having said that, the high base in 1Q11 implies 1Q12 year-on-year growth (the spillover of last-minute buying at year-end 2010 before favorable policy expirations) and possibly 2Q12E year-on-year growth will still be depressed before picking up in 2H12 with stronger macro support. We also note that as the Chinese government will have a top-leadership change toward the end of 2012, any major disappointments in vehicle sales in 2H12 and 2013, which are among the macro indicators that the market will pay attention to, are unlikely, in our view.

Figure 56: Deutsche Bank's China vehicle sales volume forecast

(m units)	2009	2010	2011	2012E	2013E	Remarks
Total passenger vehicles (PV)	**10.33**	**13.76**	**14.47**	**15.98**	**17.82**	**We think that demand for local brand cars troughed in 2H11 and that should help to ensure YoY sedan growth re-acceleration. MPV sales have outperformed in 2010/11 on low base so that growth is likely to normalize in 2012/13E. We also expect SUV sales outperformance to continue with increasing demand and a desire to differentiate from a typical sedan. Lastly, we think that demand for mini-cars troughed in 2011 and that long term demand should still be supported by rural economic development.**
YoY%	52.9%	33.2%	5.2%	10.4%	11.5%	
Trucks	2.96	3.86	3.54	3.84	4.20	We expect overall truck sales to improve on better macro-economic backdrop and potential loosening in the credit environment.
YoY%	32.1%	30.5%	-8.2%	8.3%	9.4%	
Buses	0.35	0.44	0.49	0.54	0.58	Buses sales growth should remain stable with increasing demand for passenger transport on highways and for public transportation in cities.
YoY%	3.9%	25.1%	10.1%	10.2%	8.5%	
Total commercial vehicles (CV)	**3.31**	**4.30**	**4.03**	**4.38**	**4.78**	
YoY%	28.4%	29.9%	-6.3%	8.6%	9.3%	
Aggregate vehicles sales	**13.64**	**18.06**	**18.51**	**20.36**	**22.60**	
YoY%	46.1%	32.4%	2.5%	10.0%	11.0%	

Source: China Association of Automobile Manufacturers (CAAM), Deutsche Bank

Early 2012 trends support our view of weakness in Q1 12

China's January 2012 PV sales were down 23.8% year-on-year on a tough base due to a weaker macro environment, rising gasoline prices and negative impact from Chinese New Year holidays. However, sales rebounded in February (+24.7% YoY) helped mainly by the low base for last February when production was suspended because of Lunar New Year holidays. Combined sales for the first two months were down 4.9% year-on-year. The bright spots in the Jan-Feb data were the increase in Luxury car sales (sales of three German's luxury auto brands in China increased 35.4% year-on-year) and SUV sales (+4.6%). This is broadly in line with our view of a tougher Q1 12 impacted by macro weakness and tough base impact with any meaningful recovery expected only in H2 12.

European companies

(Tim Jones, Head of Deutsche Bank European Chemicals Research and co-ordinator for Deutsche Bank Global Chemicals Research, Martin Dunwoodie and Virginie Boucher-Ferte)

Air Liquide (Hold, Target: Euro 98): Developing a strong platform

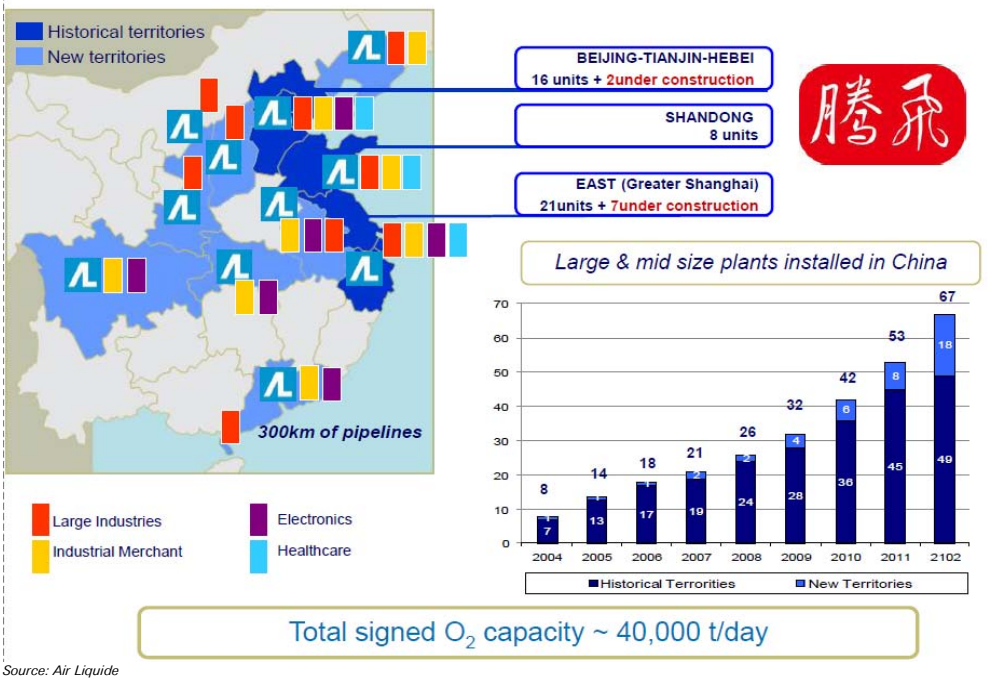
We met with Remi Charachon, President & CEO of Air Liquide China, Remi has been with Air Liquide for 26 years with the last 8 years spent in China. Air Liquide has been in China for the past 20 years but its expansion in the region has historically been restricted by the company's conservatism in the type of business it would sign and its stronger focus within Asia towards Japan and other regions with electronics exposure. This changed sharply in the mid 2000s and over the past few years the company has been building a strong long-term asset base. AL states they are No1 in China although given their sales in the region they appear to be No 2 (behind Linde). AL employs over 4,000 people in China.

While the company's current exposure to the Chinese market is lower than its nearest European peer (Linde) it is above its US peers (Praxair and Air Products) and there is a very clear emphasis on (profitable) growth coming from the Air Liquide head office; management in the region has been catching up quickly and has already managed to sign-up new investments at a faster rate than peers. AL remains less keen than some peers to enter into JVs preferring the 100% wholly owned strategy.

AL delivered China sales of approximately Euro 650m in 2011 (5% of sales) and we expect the business to see a further 15-20% growth in 2012. AL provides no data on country profitability but given the ramp-up nature of this business we assume that China is below group levels of profitability (but it is profitable at the EBIT level). 2011 was a record year for signing new plants and as of the end of 2011 the cumulative investment decisions made in China amounted to >Euro 1.5bn. Importantly, RoCE in the region improved in 2011 and despite plans for continued high capex management expects it to continue to improve. As with its peers, management believes it is constrained by physical engineering/sales capacity for on-sites ensuring they remain selective in what they bid for.

Near term they have seen a pick-up in volumes since CNY as seen by peers. Some plant delays were seen last year but this was due to permitting delays and other similar one-offs rather than any structural problems.

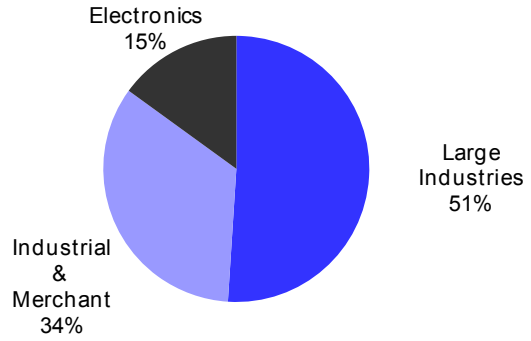
Figure 57: AL has decided on >Euro 1.5bn of investments in China as of the end of 2011



Source: Air Liquide

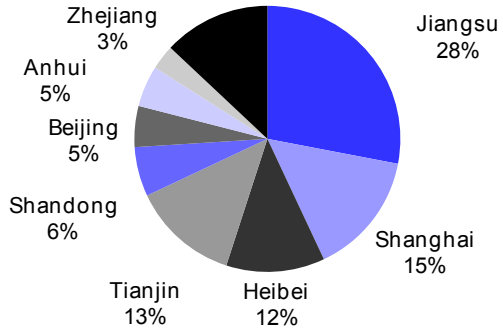
The China business has a diversified product portfolio. As shown below the China business has a good split between Large Industries, Industrial Merchant and Electronic. Within Large Industries the focus is on chemicals (45%) and metals (55%) with only limited current sales in the oil & gas business. The outsourcing of hydrogen is at an embryonic stage in China, but clearly offers some longer-term opportunities. The customer base is 2/3 locals and 1/3 international.

Figure 58: Air Liquide's China sales by business area (2010)



Source: Air Liquide

Figure 59: Air Liquide's China sales by region (2011)



Source: Air Liquide

AL's China focus is on three key 'basins' in the Eastern and Northern regions of China. AL is focusing on Beijing-Tianjin (where a chemical park is being developed and Air Liquide has already put down over 160km of pipeline), Shandong and then Greater Shanghai (including Caojing/SCIP). We note that compared to previous meetings the emphasis on Tianjin is now lower with the company clearly confident that the China investment story is much more than just investing in the Tianjin region (which we estimate has taken around Euro 300-500m in investment alone). We would not preclude AL building further pipelines in regions to further cement local barriers to entry. Like others AL is now also moving in-land and this is expected to be a key area of focus.

Figure 60: A summary of the historic investments that Air Liquide has made in China

Source: Air Liquide

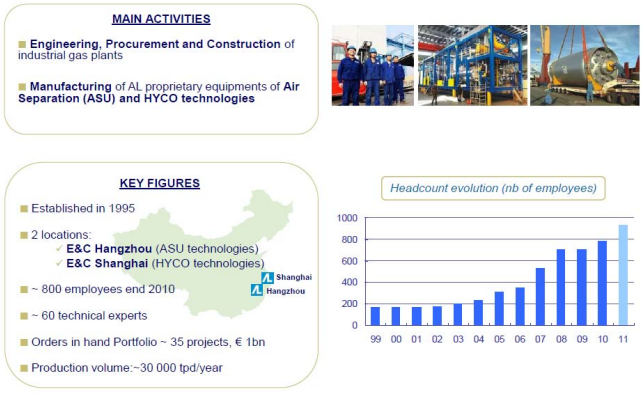
New on-site investments are starting to move in-land. In line with many other industrial companies there is a growing awareness that the incremental material investment for the industry will come from the in-land regions. Key is to pick the right "hubs" but mgmt is keen to further expand into coal (so long as they can ensure that it creates a basin of investment for them to enable them to maximise returns). They will continue to offer plant-only sales where there is no ability to create a local hub.

Looking to expand in all areas of gases. AL's recent wins have been focused on chemicals but also increasingly in the coal industry. The company is also active in the electronics area. Coal-to-chemicals is of big interest to AL and we would expect further investments in this area near term. We would expect AL to further leverage their expertise in hydrogen (syngas) where profitability can often be more supportive although we note that outsourcing of hydrogen does seem to be slower in the region than in other areas of gases.

Outsourcing by customers still provides longer-term potential. Currently, approximately 80-85% of the Chinese gas market remains under captive production. As technologies evolve and customer plants require updating and enlarging we expect outsourcing (also called de-captivation) to continue and drive additional growth opportunities for gas companies. Outsourcing seems to be encouraged by the 12th five year Plan as part of the upgrading of production and improvement on efficiency. The cultural trend within China to "own your own assets" persists but nonetheless the selective sale of customer plants and/or new over-the-fence agreements is still occurring. Those with the best "customer relationships" continue to benefit most from this trend. Air Liquide (and Linde) appear to have been more successful in outsourcing/de-captivation than peers over the past 12-18 months.

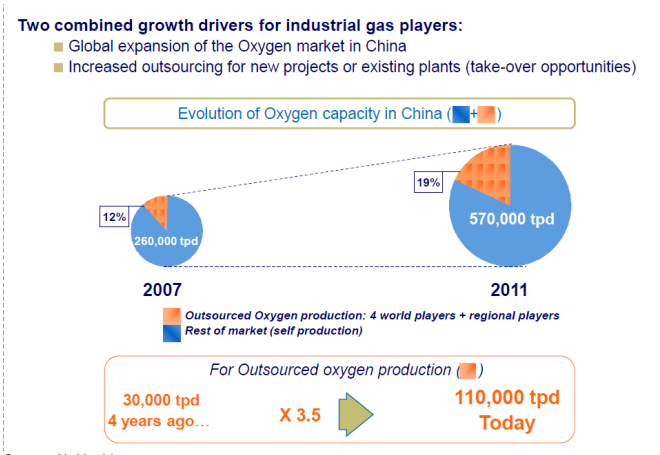
By product we note that outsourcing in the more basic oxygen and nitrogen areas seems to be exceeding that of the hydrogen market. As noted in Figure 62, the growth in the oxygen market in the region has been strong over the past four years but that the proportion of the market that is now outsourced has increased to 19% by 2011 from 10% in 2004 and 12% in 2007.

Figure 61: Increasing the focus on local engineering



Source: Air Liquide

Figure 62: Oxygen outsourcing will continue



Source: Air Liquide

Engineering facility remains key to the company's growing success in the region. AL – like some other majors – has invested in its own engineering facility within China (at Hangzhou). This gives the company significant cost and local knowledge advantage. While cost reductions of up to 25% are attractive the greater success has been the reduced manufacturing lead-times to build which have been strong positives for the local customer base. Air Liquide is now exporting product from China to the rest of the world which is direct evidence of the strength of this engineering business.

Assessing our meetings over the past few years it is clear that the focus on being able to also offering Engineering competence (locally) is becoming much more important in winning on-site business. Management noted that they are able to offer extensive technology to customers, helped by the Lurgi Engineering business.

Contract bidding remains competitive; the focus on customer relationships remains high. Management noted that large on-site contracts with international majors remain competitive but that they continue to see strong investment discipline from the global players with very little evidence of "trophy" contracts being bid for. "Soft" criteria such as customer relationships, local government access and regional knowledge are increasingly critical in contract bidding – this is further supporting gas companies' desires to move quickly into new regions to create early barriers to entry. Interestingly management noted that merchant gas pricing have been broadly stable in many of the major hubs within China which is further tangible evidence of generally disciplined behaviour even in the more commoditised merchant gas market.

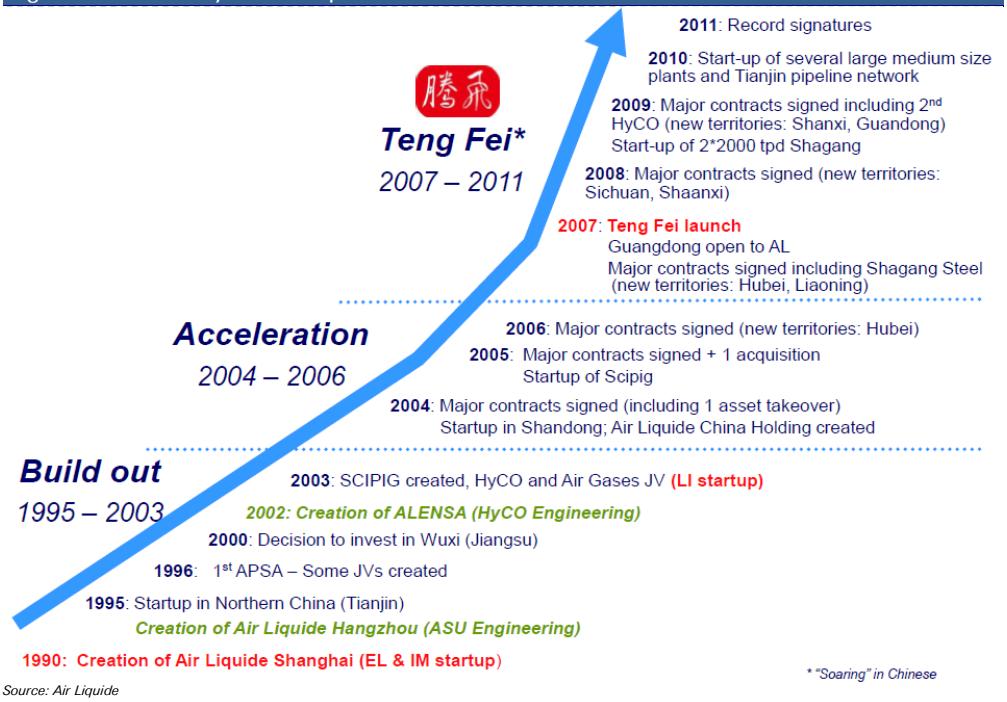
'Local' gas companies slowly closing the gap but Western names still have a heavily differentiated offering. Management noted that there are a growing number of local industrial gas players but that their focus tends to be in the cylinder and merchant markets. In recent years one or two larger local players (Ying-De is the main one) have started to become more competitive in the on-site bidding process but that their offering tends to be based around weaker engineering so is only really competitive for the smaller plants (much less so for large plants) as they cannot offer the scale of energy efficiency that the main players can offer – with smaller plants generally not offering the same potential for "hub" development this has not resulted in material competition for Air Liquide. Air Liquide can build world-scale plants up to 3000tpd compared to locals offering around 1000tpd competitively with some discussion of a possible 2000tpd offering from some locals although quality control/efficiency issues have been noted. For the larger investments, it appears that the Western companies continue to dominate and remain successful in being able to differentiate their offerings.

Investment discipline improved, despite the high desire to grow. AL is sometimes criticised for its 'longer-term' view in investments and expansions but in China we are confident that the company is acting in a disciplined manner with regard to contract terms and commitments. Tianjin has been a heavy site for investment – we estimate around Euro 300-500m alone – and while the RoCE on the pipeline investment in the Tianjin region may take longer to come to fruition (they have built 160km of pipeline already for oxygen, nitrogen and hydrogen) the long-term logic and strategy behind this investment is clear.

On-site pricing terms can often be linked to off-take credits. We suspect that one of the key areas of difference in pricing that any company can offer a customer in a new on-site may be the assumption of the off-take (piggy backing) credits that may come in the future from the development of either industrial hubs and other customers. Assumptions around this off-take may differ from company-to-company but we see no evidence that Air Liquide's assumptions in this area are necessarily more aggressive than for other companies. Clearly, if a company has a particularly strong view over the development basin its higher assumptions on off-take credits may allow it to become more competitive on pricing. We do not see this as ill-discipline in the industry.

The Teng Fei programme was launched in 2007 which is seen as the growth part of the group-wide ALMA programme. It is also worth noting that the group-wide cost cutting programme (ALMA) has been implemented in China since 2008 (echoing the group-wide focus on the cost base). A key focus for the programme is to strengthen the integration between the Engineering and the Gas business.

Figure 63: A history of Air Liquide in China



Source: Air Liquide

AkzoNobel (Buy, Target: Euro 51): Increasing focus on the margin

We met with Lin Liangqi, President AkzoNobel China and BU Director AkzoNobel Deco Paints China and North Asia, Mike Cash sBU Director AkzoNobel Powder Coatings Asia, Steve Hunt sBU Director AkzoNobel Functional Chemicals, Felix Jiang Business Development Director, Finance Director (interim) AkzoNobel China and Jonathan Atack, Director of Investor Relations.

AkzoNobel started in China in the early 1980s and now has 29 sites in the region and over 7,400 employees. Sales in 2011 grew 11% to Euro 1.38bn (8.8% of group sales) with a medium-term target of $3bn (Euro 2.2bn) in place. EBIT was Euro 124m in 2011 indicating a 9.0% margin. In China, Decorative Coatings, Performance Coatings and Chemicals are all represented. The group aims to remain a leader in sustainability which is aligned well with China's new 5 year plan focusing on the quality of growth as well as quantity.

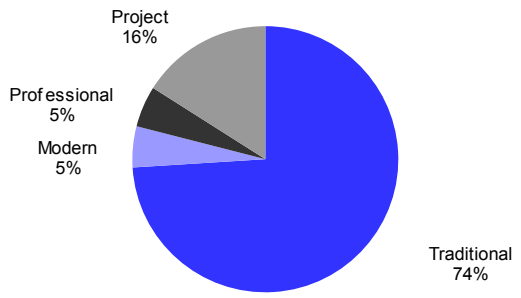
Figure 64: AkzoNobel products and market positions in China

Business Area	Business Unit	Sub Business Unit	Manufacturing sites (main land China)	Market leadership position
Decorative Paints	Deco China	N/A	3	2
Performance Coatings	Automotive & Aerospace Coatings	CR, Aerospace's Coating	2	1
	Industrial Coatings	Coil, Specialty & Packaging Coating	3	1
	Marine and Protective Coatings	Marine Coatings, Protective Coatings	2	1
	Powder Coatings	Interpon & Resicoat	6	1
	Wood Finishes and Adhesives		3	1
Specialty Chemicals	Functional Chemicals	PA, EA/EO, Chelates, Cellulosic & Additives, XTP	6	1- Sulfur, polysulphides, organic peroxides 2- Chelates, EA, Metal alkyls, PA
	Industrial Chemicals	MCA	1	1
	Pulp & Paper Chemicals	N/A	2	3
	Surface Chemistry	Personal Care & Surfactants	1	1- Industrial Agricultural 2- Home & Personal Care

Source: AkzoNobel

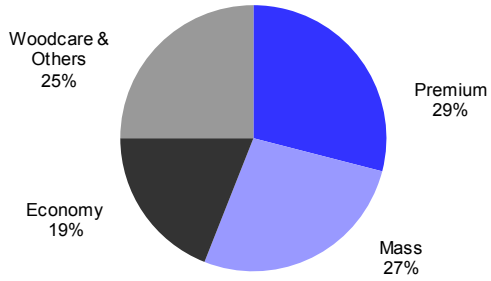
Deco coatings: Building a leading position. Decorative paints generated revenues of E437m in 2011 and has four factories in Greater China (three in China and one in Taiwan) and employs over 1,600 people. The company continues to strengthen its market position in Decorative Coatings in China and has been gaining market share being the number 2 with a market share of 13-14%, behind Nippon Paint which has 17-18%. The majority of sales are through the 'Traditional' channel which is small scale outlets selling to both consumers and professionals (Figure 65). By segment there is a fairly even split between, premium, mass, economy and woodcare (Figure 66). AkzoNobel estimates the market size of decorative coatings in China at some E3.5bn. The project market has been strong, driven by infrastructure investment, whilst retail has slightly stagnated because of real estate macro controls designed to cool the property market.

Figure 65: Revenue by channel



Source: AkzoNobel

Figure 66: Revenue by segment

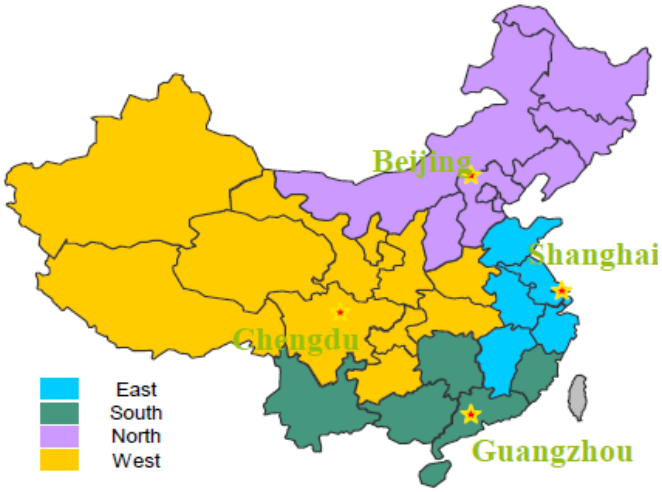


Source: AkzoNobel

Strategy in China is to dominate the Tier 1 cities and stretch down into lower Tiers. The strategy in China is to sell the best quality paint in the major cities with Dulux the premium brand where innovation takes place, and 'stretch down' into the mid-tier cities using better value brands. AkzoNobel is expanding its distributor network but maintaining a controlled distribution channel, so the different brands remain separate and distinct in each market segment. AkzoNobel dominant in the tier 1 cities, slightly behind in tier 2 cities and behind in tier 3 cities. Management is confident further market share gains can be achieved with their strategy to move into the tier 2 and tier 3 cities. Dulux is the premium brand, Levis the brand in the professional channel, Dulux Pro the brand for the project channel and Maxilite the economy brand.

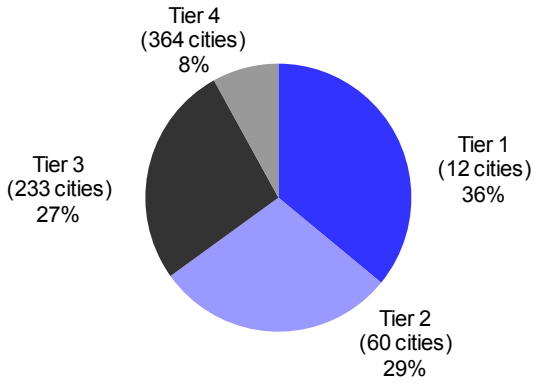
Geographic coverage is extensive across regions and city tiers. AkzoNobel has a regional headquarters in each of China's four main regions (Figure 67). The highest growth is expected in the west and this is where they are increasing capacity and investing in distribution and people. Figure 68 shows that the business is still biased towards Tier 1 cities with only 8% of revenue coming from Tier 4 cities.

Figure 67: Geographic coverage



Source: AkzoNobel

Figure 68: Revenue by city tier



Source: AkzoNobel

The core of the channel strategy is the network of controlled stores. These are franchise stores branded as the Dulux Decorator Center. There are 250 stores today which they want to increase to 400 by 2016. Other types of store include Colour Solutions Stores and Image Solutions Stores (still franchise stores). In total AkzoNobel has over 4000 stores today and plans to increase that to around 7000 by 2016.

Redecoration is still not well developed. Presently there is still not much redecoration occurring in China with the vast majority of painting being done on new builds. AkzoNobel is trying to stimulate the redecoration segment of the market with communicating aimed at educating the market and also services designed to make repainting as easy as possible such as their Easy Paint service. This service operates via a hotline where the customer calls and arranges a site visit and consultation resulting in a quote and advice on colours etc. The painter comes out and moves and covers all furniture, does the painting and then cleans and returns the furniture providing a complete, hassle free redecorating service.

Pricing being increased in 2012 to cover higher raw materials costs. Rising raw materials costs are an issue (titanium dioxide and resins) but management is confident these will be passed on given the strong brand position AkzoNobel has and customer awareness of rising input costs. In 2011 there were two main rounds of price increases, in April and September. The April increase was more successful with September less so with competitors not following. In addition AkzoNobel is using its scale in purchasing to mitigate the effect of increased costs and has also instituted the Performance Improvement Programme in China.

Performance Coatings has strong market positions across all its segments in China, these being Powder Coatings, Automotive and Aerospace Coatings, Industrial Coatings, Wood Finishes and Adhesives and Powder Coatings.

- **Powder Coatings is a good growth story in the region.** No sales numbers are provided but we estimate Powder Coatings is >10% of AkzoNobel's China business – it currently employees over 15% of the China workforce and is the market leader with 9% market share. It is benefiting strongly from the move west and the development of infrastructures (railways, airports and construction equipment), urbanisation (building activity, household fittings and appliances) and environmental regulations (drive for eco-efficient paints).
- **A&AC hold strong market positions.** The market size of auto refinishes is around $400m and expected to grow to $1bn by 2016 (AkzoNobel has a 30% market share). The market is still fragmented with over 200 auto refinishes producers all the top players are trying to consolidate their market position. AkzoNobel's acquisition of Changzhou Prime Automotive Co Ltd in September 2010 was a good example of this consolidation and a good basis for leveraging growth and expanding west. There is a move inland in this segment with expansion into tier 3 and 4 cities.
- **Marine & Protective.** Akzonobel has a 21% market share in the China new build marine market and 21% in the maintenance and repair market. The new build market is expected to soften due to global oversupply. In protective coatings AkzoNobel has about 10% market share, with the majority of players in the market being medium sized local players and hundreds of smaller competitors.
- **Industrial Coatings.** AkzoNobel has a 16% market share in Special Plastics with the end market focused on tablets, e-books and paint film on metals. Packaging Coatings experienced good growth in 2011 and has a market share of just under 20%. In coil coatings AkzoNobel has an 8% market share with no one player dominating the market.

- **Wood Finishes and Adhesives.** AkzoNobel is the leader in China with 30% market share. Historically activities have been focused on the premium export market but this has been shifting more recently to the domestic market in China.

Specialty Chemicals benefiting from the expansion at Ningbo. The Ningbo expansion is progressing well with two-thirds of the E370m investment already spent. Figure 69 shows the status of the various parts of the expansion:

Figure 69: Progress on the Ningbo Specialty Chemicals multi-site

Plant	Status	Utilization 2011
Infra+ waste water	Complete	
Chelates	Complete	25%
Ethylene Amines	Complete	65%
XTP	Q1 2012	
Bermocoll	2013	
DCP	2014	
Total		

Source: AkzoNobel, Planned: waste water extension, metal alkyls, SC ethoxylation, MPP

Management commented that the first two months in Specialty Chemicals has been better than expected with growth year on year. By business unit in China:

- **Functional Chemicals.** This has a cost leadership position and technology advantages over local competitors. It is benefiting from the start up of the Ningbo site with a number of products expanding capacity
- **Industrial Chemicals has a leading position in the Chinese market** in monochloroacetic acid (MCA) used in pharma, dyes and herbicides (it is the precursor for glyphosate). AkzoNobel is the lowest cost producer with scale and technology advantages.
- **Pulp & Paper Chemicals.** AkzoNobel has the number 3 position in China with 12% market share, behind BASF and Kemira. The largest and fastest paper machines are in China and the market will overtake the North American market in terms of size around 2015.
- **Surface Chemistry has the number 1 position in China** with this strengthened by the acquisition of Boxing Oleochemicals in January 2012. This gives local production for customer with minimal reliance on imports.

China is now focused on cost efficiencies as well as growth. AkzoNobel's global Performance Improvement Programme is being rolled out to China as well as the rest of the globe. This is to respond to changes in raw materials, optimise assets and revamp the cost base to be ahead of the curve for raw materials. As part of this 'one AkzoNobel' is being created with shared resources between businesses. There will be a reduction in the number of SKU's with management indicating the current 64 warehouses in China can probably be halved.

AZ Electronic Materials (Buy, Target 350p) – Focused on Asia

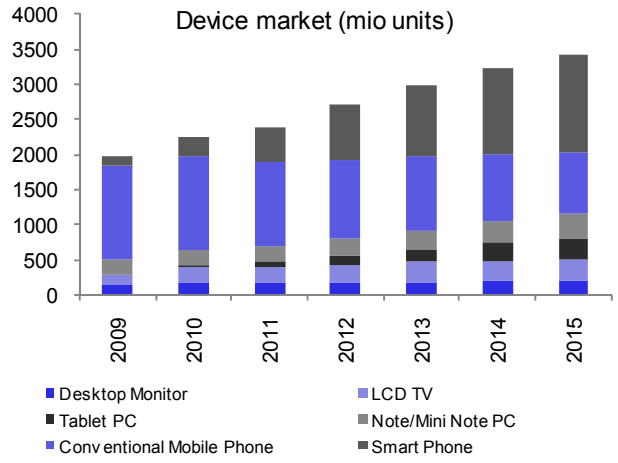
We met with Rico Wiedenbruch, Managing Director Optronics and President, AZ China and Majid Nazir, Head of Investor Relations. Rico has been with AZ since 2004 and Managing Director of Optronics since October 2011. He is based in Japan. AZ is a global producer and supplier of specialty chemical materials used in the electronics market (manufacture of integrated circuits and flat panel displays) with 80% of sales coming from Asia.

AZ's Suzhou factory was established in January 2004 and has been in commission since 2005. The plant manufactures FPD (flat panel display) photoresists by diluting concentrates imported from AZ Taiwan, Korea and Japan. It also manufactures EBR (edge bead removal) solvents for the Chinese market and trades products manufactured by other AZ sites. There is a global support network with:

- Application support from Japan, Korea and Taiwan
- R&D centres of excellence in Japan, Korea and the US
- Sales and marketing support from the base country

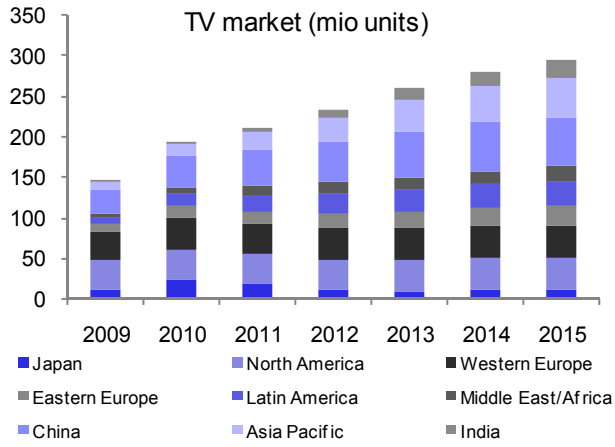
Developments in device and TV markets are important for AZ. Forecasts for the end markets which drive AZ's business are show in Figure 70 and Figure 71, these being device market (millions of units) which drives IC manufacture and also the TV market (millions of units) which drives Optronics.

Figure 70: Development of the device market



Source: AZ Electronic Materials, DisplaySearch

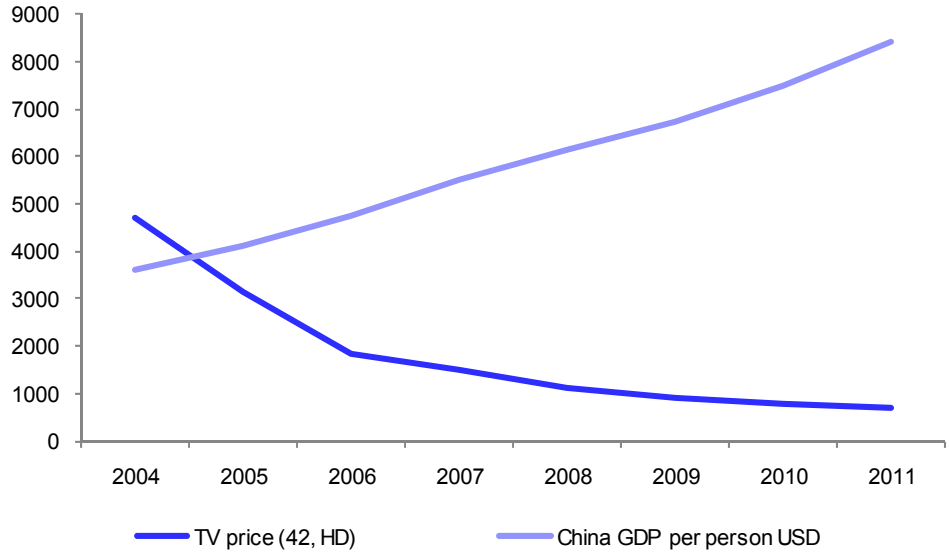
Figure 71: Development of the TV market



Source: AZ Electronic Materials, DisplaySearch

China is leading this growth with disposable income rising rapidly and TV prices decreasing dramatically to make TV's far more affordable within China. China is now the largest market for TV's and there is a strong drive to have the newest latest devices. Figure 72 shows the development of GDP per capita in China and also the development of the price of TV's

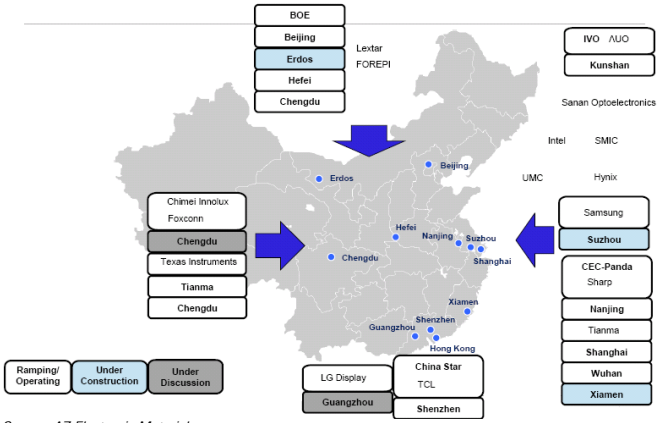
Figure 72: Increasing affordability of TV's in China



Source: AZ Electronic Materials

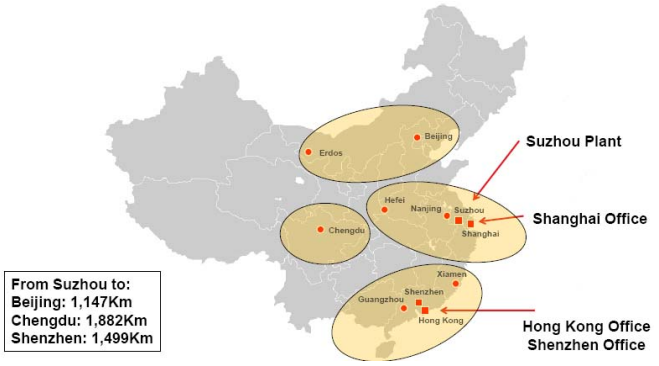
Customers based mainly in the east but moving inland. Figure 73 shows the locations of AZ main customers in China with the majority still based in the east of the country close to the coast. However there are a number of locations further inland to the west where customers have sites and are planning new operations. Figure 74 shows AZ's sites in China which again are predominantly in the east near the coast

Figure 73: Locations of customers in China



Source: AZ Electronic Materials

Figure 74: AZ's footprint in China



Source: AZ Electronic Materials

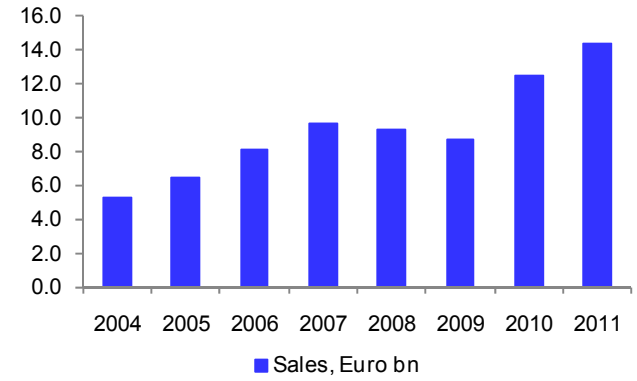
BASF (Buy, Target: Euro 75). Leveraging its early move advantage

We met with Dr Brudermuller (Vice Chairman of BASF) and Dr Kothrade (President of BASF-YPC Co Ltd). We visited the Nanjing site where BASF has its main integrated Verbund facility. Nanjing is 3-4 hours drive from Shanghai but the new fast speed train link has cut this journey time to just over one hour.

Asia is already the largest market for the chemicals industry (accounting for 41% of total global demand in 2010) but BASF expects this to continue to increase with demand in the region accounting for 50% of global demand by 2020. BASF's Asian sales have grown by an average rate of 15% per annum since 2004 with EBITDA growing at the same rate despite the heavy investments in the region. Asia accounted for 23% of BASF group sales (ex Oil & Gas) and 17% of EBITDA. BASF has upgraded its targets for Asia with sales now targeted at Euro 29bn by 2020 from Euro 20bn previously. Sales in 2011 were Euro 14.4bn so this target implies 8% growth per annum (which is 2% points above the average 6% growth a year they expect for Asia) which does imply a slowdown from the rate of growth seen in the past few years but we suspect this may be BASF's inherent conservatism. 2011 saw strong top-line growth but EBITDA did decline due to the combined impacts of the weaker global economy in Q4 but also some increased investments expenses for the current expansions (such as Chongqing, China and Kuantan, Malaysia).

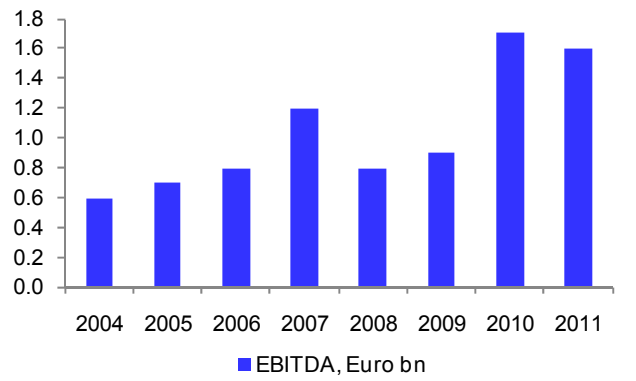
BASF is targeting 70% of sales to be made locally (currently at 60%). The company already earns a strong premium on its cost of capital in the region. The company estimates in the highly fragmented Asian market they have approximately 9% share and are the largest chemical company.

Figure 75: BASF's Asian sales have grown by an average rate of 15.3% per annum since 2004



Source: BASF

Figure 76: BASF's Asian EBITDA has grown by an average rate of 14.7% per annum since 2004



Source: BASF

Strong track record in China. BASF has been in China since 1885 and sales in 2011 were approximately Euro 6.5bn (up by approximately 20% year-on-year). In 2011, China accounted for 11% of BASF group sales (ex Oil & Gas). While no EBIT numbers are released on a country level we estimate profitability in China in 2011 was not far from group average (and we note that China achieved cost of capital in 2011). Sales in China have grown by an average of 20% per annum since 2003. Management stated that demand so far in 2012 has shown steady recovery from the weakness seen in December but that the normal recovery post Lunar New Year has been somewhat slower than seen in previous years (although it is still early days). The cracker in Nanjing is currently running at 90% but is loss making due to the high feedstock prices. BASF expects sales growth in China in Q1 (year-on-year). Management notes the "loosening" of credit in China but this is happening more slowly than in 2009 with SMEs still feeling pressured. BASF's strategy remains to focus more on larger MNCs/local companies.

Strong investment focus on the Asian and Chinese regions. BASF remains committed to the region and has already created a strong R&D network across the Asian region to capitalise on developing products for the local markets. BASF already has 9 R&D centres in the region. Capex remains high with the company having spent Euro 4bn in the region from 1992 to 2001 and then a further Euro 6bn from 2002 to 2011 – around 50% of this has been invested in China. Management is now planning Euro 3bn of capital spend 2012-2016 (around 30% of capex for the chemical businesses). Major investments in the region over the past 20 years have been Kauntan (Malaysia), Nanjing (China) and Caojing (China) with the three large planned investments being Nanjing (expansion), Kuantan (world-scale specialties plant) and Chongqing (an MDI plant in 2014). Feasibility studies for the construction of a world-scale specialties plant in Malaysia and a further expansion of the Nanjing site are currently underway. Despite on-going strong investment regional management expects to continue to target to earn a premium on its cost of capital through this build-up period.

Figure 77: BASF has a strong production network in Asia and China

Key facts

- Customers in >15 countries
- More than 17,000 employees
- 130 production sites
- 9 R&D and technical development sites with total headcount of 700 staff
- ~60% local production
- Sales: €14.4 billion

All figures as of December 2011

Source: BASF

Strong positioning in China supported by first-move advantage. BASF has undoubtedly outmanoeuvred some of the competition through its early participation in China. This has allowed it to successfully capitalise on some of its strong relationships with both Chinese officials and local companies (such as Sinopec – see page 96 for feedback on our Sinopec meeting). This 'intangible' strength of BASF should not be underestimated in China and should continue to ensure that BASF is able to construct on-time, have better access to competitive raw materials, and experience a lower risk of delays. We believe BASF – relative to most peers – offers lower-risk leverage to China.

Shifting the focus closer to the consumer and starting to move in-land. BASF management believes (we agree) that the straight bulk chemical markets are becoming more competitive and will continue to do so in the coming years and that large-scale upstream investments (that are not integrated into downstream specialty products) make limited economic sense. This view is underpinned by the large planned expansions of Chinese ethylene crackers over the next few years, alongside the planned expansions in Middle Eastern crackers and now planned expansions in North America on the back of shale gas. Instead, BASF will focus on developing more value-added products that are back integrated into current manufacturing (such as specialty plastics, specialty chemicals, catalysts, etc) and have high barriers to entry (either through capital, technology or customer relationship). As a result, management sees little reason to invest in another large integrated petrochemicals site (as seen in Nanjing) and has no intention of expanding into coal to chemicals.

A Euro 860m investment starting to be made in-land at Chongqing. BASF is planning an MDI facility in 2014 at Chongqing which is a big move into the inland regions where we expect government stimulus to continue to be invested. Interestingly, BASF is not involved in the basic chemical lines in this industrial area, but focusing on MDI which is a higher barrier-to-entry product. Total investment will be Euro 860m and it will provide 400kt of crude MDI (6.5% of world capacity). We note that the level of scrutiny by local and national government on energy efficiency, water treatment and pollution controls should not be underestimated which has caused a modest delay to this plant but BASF is confident this will come on-stream in 2014. Clearly this is a bold investment – as was Nanjing – and while the visibility on the ROCE for the investment may be quite low we see this as BASF's benchmark investment to provide the group with access to the strong growth potential in the Western China region.

Oversupply building in MDI PU. BASF, Bayer and Yantai all have strong plans for further expansion in MDI in the future. While we see this product as a high growth product we fear that oversupply in this market is going to occur in the coming few years and that unless we see material capacity rationalisation margins will be under pressure for some time. Bayer's low-cost production site will help offset some of this as will BASF's in-land strategy (their 400kt investment is in the Chongqing region and getting product from the sea regions in-land is not going to be easy) we note that Yantai is benefitting from low-cost finance (please see the feedback section following our meeting with Yantai). With the three largest global players (these three account for 60% global market share) all committed to expanding heavily we see risk of MDI profitability weakening medium term.

Figure 78: Planned MDI polyurethane expansions in China

Company	Plant location	Year of start-up	Size (kt)	As a % of 2011 global MDI PU capacity
BASF	Chongqing	2014/2015	400	6.5%
Yantai	Ningbo	2014	300	4.9%
Yantai	Yantai	2014	400*	6.5%
Bayer	Caojing	2015/2016	700	11.3%
Total			**1,800**	**29.2%**

*Source: Deutsche Bank estimates. * closure of a 200kt plant and will be replaced by a 600kt plant*

Current main investments in China are at Nanjing and Caojing. The company's major investment (50:50) in the region is with Sinopec at YPC (Nanjing) which started up in June 2005. This site is BASF's third largest investment globally (behind Ludwigshafen and Antwerp) and this site serves mostly local customers (80% of the output is sold to customers within 400km). BASF's other major investment is at Caojing (in the Shanghai Chemical Industry Park ('SCIP')) near Shanghai although operations here have proved more problematic. The 100% owned THF (plastics) unit came on-stream in early 2005 but due to the lack of economic viability was dismantled in 2006 and then came back on-stream in 2007 using a different raw material. In addition the $1bn (joint-ventured with Huntsman) Polyurethanes MDI unit that came on-stream in H2 06 did have teething troubles through 2007 although it has been running fine for the past five years.

Reliable partners at Nanjing, good access to raw materials. To date the China Nanjing investment has operated very smoothly. BASF has been able to ensure reliable feedstock from local refineries (Jinling, YPC), good port access at Nanjing and also access to the West-East natural gas pipeline (sponsored by Petrochina and the Chinese government). This seems to have been a model JV story so far with BASF clearly having developed some very strong local relationships along the way. We note that in our feedback from our discussions with Sinopec they specifically flagged how well this JV is performing.

Figure 79: Nanjing site expansion currently underway

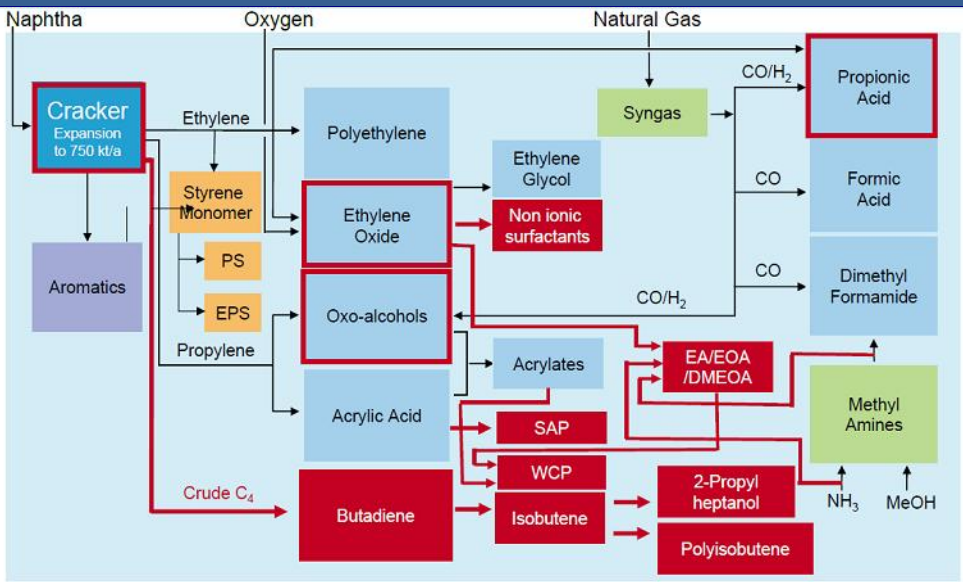
Key facts

- 50/50 joint venture with Sinopec (BASF-YPC)
- ~ $4.5 billion total investment
- Capacity: ~ 3 million metric tons of total production/year
- Commercial start-up in 2005 with steam cracker and 9 plants
- First expansion completed end of 2011
- Feasibility studies for further expansion under way

Source: BASF

Part 1 of the Nanjing expansion programme completed. The Nanjing site continues to operate at a very high level – we estimate current utilisation rates above 95% – and is indicative of the fact that the Chinese region remains short of basic chemicals and remains a strong importer. As shown in Figure 80 the site has been expanded with a cracker enlargement to 740kt (from 600kt) and several other product chains added. The total cost is $1.2bn. BASF has also de-bottlenecked (e.g. acrylic acid by 30% from 160kt to 200-210kt) cheaply. BASF is also now starting to move downstream on its own with some investments in the water treatment area (flocculants) being done on a 100% owned basis due to start up later in 2012 – these products not only serve the very high growth water treatment market but increasingly push BASF's product suite towards the Chinese domestic consumer.

Figure 80: The expansion of the Nanjing site will result in some new product lines being added to the Verbund network



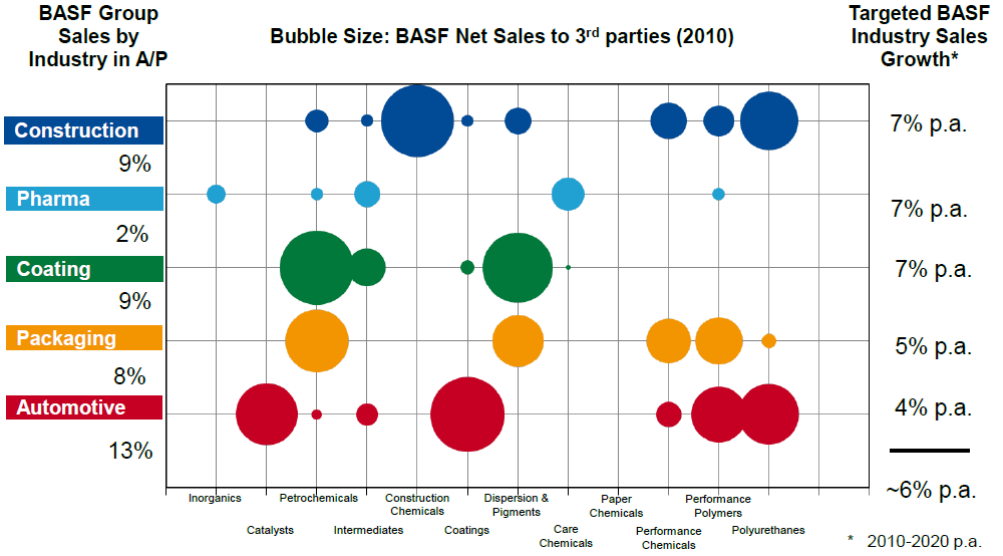
Source: BASF. New product lines shown in dark shading

Part 2 of the Nanjing expansion programme is in the planning stage. Management is also undergoing feasibility studies (to be completed by 2012) for the downstream expansion of the Nanjing site. Most of these investments will still be done jointly with Sinopec (highlighting the on-going strength of the relationship) with investments in HPPO, acrylic acid, butyl acrylate, styrene and surfactants are all being assessed. The estimated cost of this investment is approximately $1bn.

Malaysia is now back in focus. BASF has a Verbund site in Malaysia (at Kuantan) as a JV with Petronas (60/40 in BASF's favour) that started-up in 2001. While the Asian focus in the past few years has been in China it is also clear that BASF has big plans for the Malaysia activities and signed a MOU with Petronas (in Dec 2010) to look into a new world-scale specialties chemicals plant.

New customer focus groups developed. Management expects the strongest growth in specialties and intermediates (not basic chemicals) as these products will be increasingly used to provide product for the Chinese market as opposed to exports – this is supported by a growing 'middle class' in China. The requirement to have local production (and R&D) supporting more tailored products is also increasing which remains central to BASF's strategy in leveraging its local production base. Central to this is the new initiative based on five customer target groups (Figure 81) and the commitment to increasing investment in local market product development.

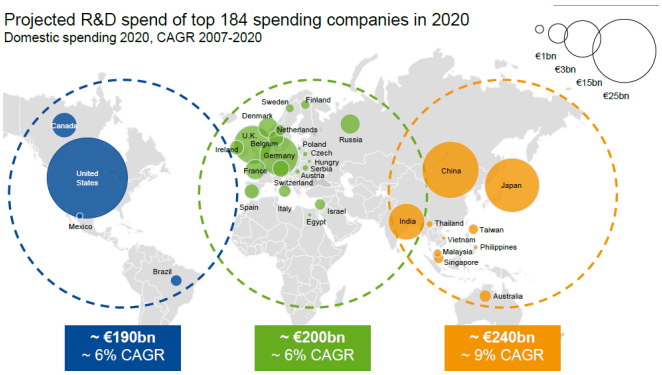
Figure 81: The five industry target groups



Source: BASF

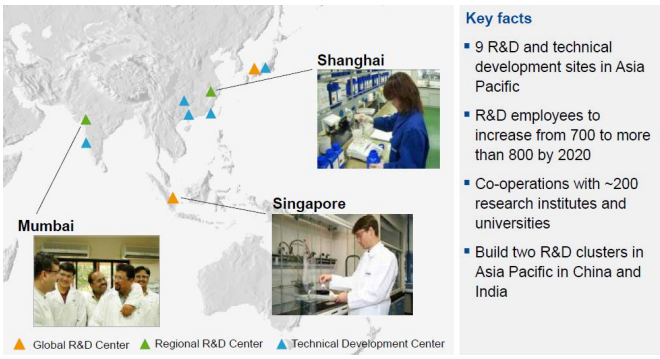
Management is increasing the focus on "local" R&D. Alongside the large asset investments in the region BASF is now also accelerating local R&D investments in Asia and is ensuring that its business is well positioned to capture the expected boom in customer R&D in the region that is predicted over the next 10 years (see Figure 82). BASF already has R&D centres in Asia and is now planning to open a new integrated R&D centre in Shanghai in H2 2012 with 450 scientific professionals and fully integrated into the group's global R&D initiatives. The question mark remains over the amount of pure research done in the region – as opposed to product development – but this is a clear strong commitment to the region

Figure 82: R&D spending in Asia expected to boom



Source: BASF

Figure 83: BASF's R&D centres in Asia



Source: Deutsche Bank

Management has experienced limited issues in relation to employee turnover, engineering access and power outages. The current employee turnover rate for BASF in China is running at approximately 2% per annum which we see as well below the 10%+ industry average. Wage inflation is running at around 10% per annum. A strong local brand name and an active policy to increase the level of "locals" in senior management positions are helping in this regard. 95% of BASF's Asian employees are "locals" while 60% of Asian management are "locals". Management has re-iterated its previous comments that they continue to see very limited problems with access to construction in China and feel that their strong track record in the region and strong JV relationships continues to support a greater ability to get things done in the region. Finally, BASF has experienced no issues with energy shortages ('brown-outs') at their plants but with a policy of maintaining back-up generators at all main sites the risk of disruption remains low.

Improving recognition of intellectual property within China. Lower recognition of intellectual property has historically been a problem in China and a key factor preventing many companies (particularly more downstream names) making material technology based investments into China. However, BASF has experienced very limited problems in this area and see three key issues in supporting this trend: 1) credible JV partners (like Sinopec) do not pose any threat in respect of intellectual property due to their own reputational risk, 2) Chinese officials are acutely aware that this remains a key stumbling block for many Western companies to invest in the region which has already resulted in a step-change in the legal awareness of intellectual property within the region, and 3) Chinese state entities are increasingly looking to develop their own R&D so are also pushing for more protection – we note that the majority of all legal patent disputes in the region are now between Chinese companies.

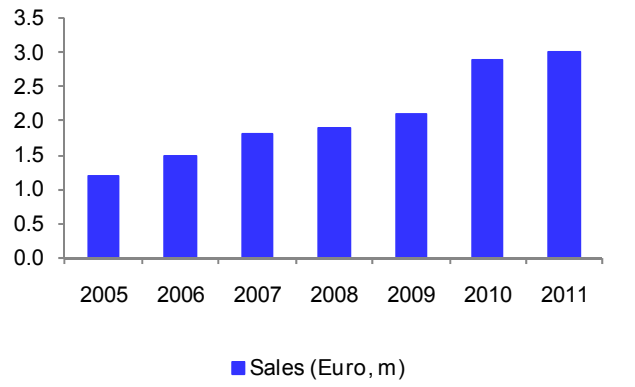
Cost cutting and restructuring continues in the Asian and Chinese businesses. While Asia and China remain key growth regions for BASF we were pleased to note that the group-wide focus on cost management and capital efficiency are also being implemented in these regions. The NEXT programme (operational excellence) is being implemented across the region with targeted Euro 150m of benefits already achieved by 2011 (compared to the original Euro 80m target). Nanjing alone has seen Euro 25m of savings in the past 12m being achieved with an estimated one year payback on cost.

Bayer (Buy, Target: Euro 61): Bold medium-term expansion plans in MaterialScience designed to dominate PU and PC markets

We met with Johannes Dietsch (President of Bayer Greater China Group/Chairman of Bayer China), Dr. Klaus Schaefer (Senior Country Representative Bayer MaterialScience China), Dr. Michael Baum (Chief Financial Officer China/Deputy General Manager of Bayer China) and Dr. Roland Stegmueller (Vice President of Bayer MaterialScience China/General Site Manager of Bayer Integrated Site Shanghai). We visited them at the Shanghai Chemical Industrial Park (SCIP) one hour outside Shanghai which houses Bayer's state-of-the-art polyurethane and polycarbonate facilities.

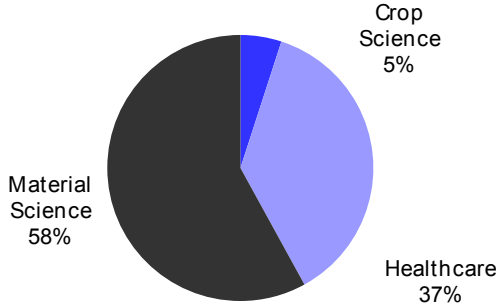
China is Bayer's 3rd largest market with 2011 group sales in China up 4% year-on-year (ex FX) to Euro 2.957bn (this equates to 8% of total company sales). Average sales growth in the region for the past five years has been 16%. In 2011 MaterialScience generated sales of Euro 1.7bn. Bayer is now the largest Healthcare company in China – 2011 sales increased by 18% year-on-year to Euro 1.1bn and currently employs over 5,000 people. The CropScience business is currently small (Euro 140-150m sales in 2011) but there remains some strong longer-term potential. Bayer employs 10,924 in China across all business units and sees this expanding through the next 12-18m (mostly Healthcare). Management see their portfolio as well positioned to benefit from the top-down trends within China with BMS benefitting from the expansion of cars, construction and railways. China is the 3rd largest Healthcare market in the world – the growth potential here is clear. BCS should also benefit by the on-going desire to increase crop yields within China.

Figure 84: Bayer sales in China – strong growth record with 16% CAGR since 2005



Source: Bayer

Figure 85: China sales by business unit



Source: Bayer

Targeting to double sales in China by 2015. Management is targeting to increase its sales in China from the current level of Euro 3bn to Euro 6bn by 2015 which implies a CAGR of 19%. This is a very bold expansion programme. By division Healthcare is expected to go from Euro 1.1bn to 2.5bn with CropScience moving from 0.1bn to 0.3bn and MaterialScience going from Euro 1.7bn to Euro 3.0bn. It is interesting to note that there are no formal targets for either profitability or ROCE (other than to earn cost of capital) particularly within MaterialScience, which highlights to us the long-term view Bayer may be taking on these investments in the region.

Our meeting focused on the MaterialScience business and in 2011 BMS generated 16% of its sales in China which is a decline from the 18% seen in 2010 and due to some de-stocking in the region through the 2011 period.

Current demand has shown some recovery from the weakness in December (due to pressure in the Western world) and since Lunar New Year demand has slowly recovered. The facilities for PU/PC are operating at relatively high rates although TDI capacities are being exported due to some oversupply in China following the start-up of their large 250kt facility in 2011. Future de-bottlenecking is possible at low-cost with a 10% capacity uplift possible.

Bayer is basing its China strategy for MaterialScience at the impressive SCIP Park at Caojing, south of Shanghai. The company has built world-scale facilities for its MaterialScience division in the area of Polycarbonate and Polyurethanes (both MDI and TDI). This is a dominant world-scale facility with state-of-the-art low-cost production. The company announced just over a year ago Phase II of the expansion programme and is now able to expand current facilities for relatively low investment. It is clear that Bayer is building the dominant position within this key global market. This park offers proximity to fast growth customer industries, strong local business partners for gases, and other chemicals (Chlorine) and also excellent infrastructure and distribution alongside reliable energy supplies. This site is the company's largest single investment outside of Germany. We estimate that China has accounted for over 50% of MaterialScience capex over the past three years and likely to remain at this level for the next few years. Bayer has no plans to invest in-land as they feel that the cost advantage at the current site more than offsets any arguments to start to investment in-land.

Figure 86: The SCIP park and the Bayer site

- Proximity to fast growing customer industries
- Strategic local business partners
  - Additional external chlorine supply
  - Supply of industrial gases (H_2, O_2, CO, N_2) via pipeline
  - Tank farm services
- Excellent infrastructure
  - Feedstock availability to efficiently operate world-scale facilities
  - Raw materials delivered by ship, truck and pipeline
  - Proximity to major domestic and international transport routes
- Proximity to competitors allows temporary volume transfer agreements (e.g. MDI, TDI)
- Reliable energy supply

Source: Bayer

2016 expansion programme recently announced. Bayer has already invested just below Euro 2bn in SCIP with Euro 1bn (to 2016) earmarked for the next expansion phase. The 250kt (11% of world capacity) TDI plant came on-stream through mid 2011. Bayer is also planning an additional 650kt of MDI (11% of world capacity) by 2016 with approximately 150kt coming on-stream in 2013 with the remainder in 2015, subject to demand trends. With BASF and Huntsman also expanding around the same time there is some clear risk of oversupply building but we suspect that the addition of further low-cost capacity will encourage some players to consolidate (and close) high cost facilities. Interestingly management believes that the cost to build the 650kt of MDI is around the same as the cost to build the original 350kt plant highlighting the economies of scale that this site now provides. 300kt of PC (7% of world capacity) is also planned by 2016 (200kt in 2014, 100kt in 2016). All of these are "nameplate" capacity numbers and management is also indicating that some "de-bottlenecking" could add up to 10% to some capacity numbers over the next two years. It is worth noting that these facilities are very flexible with utilisation/supply/shutdowns able to be adjusted in a few days emphasising Bayer's increased flexibility in managing its cost base.

Figure 87: Summary of capacities at the BMS Caojing site

Key Site Facts

- Bayer premises: 1.5 square km
- Employees: > 1,000 FTE
- CapEx: approx. €2.1bn
- All PCS and PUR production lines in world-scale format
  - PCS: 200 kt/a
  - MDI: 350 kt/a
  - TDI: 250 kt/a
  - HDI: 30 kt/a
- State-of-the-art technologies in place
- Further expansion plans underway

Source: Bayer

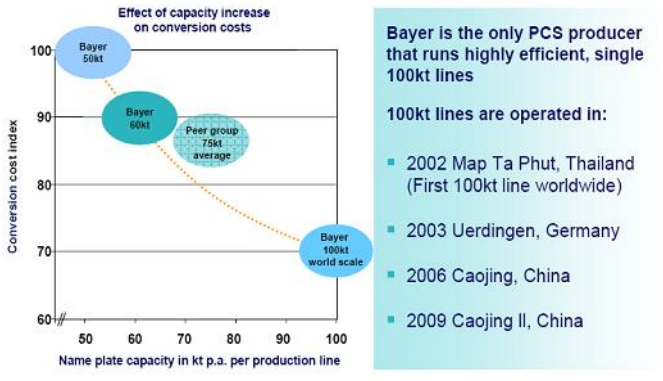
Chinese market offers the strongest growth for both PU and PC. Normalised demand growth is likely to be at least 8-10% per annum in both PU and PC. It is worth noting that the Chinese in-land stimulus package provides strong opportunities for the products that Bayer is producing at this site as it is focused on construction. China is currently the largest global market for PC (accounting for 30% of world demand) and management expects it to be the largest global market for PU soon (it already accounts for 20% of world demand).

Low-cost production potential in China will increase the pressure on competitors. As highlighted in Figure 88 and Figure 89, Bayer has strong technology in its new facilities which should provide it with strong cost advantage over the average of its polycarbonate and polyurethane competitors. In addition, with the site physically located to the largest growth market there is also advantage here in distribution. Bayer evidently is giving its competitors challenges. We expect this low-cost production to result in some further rationalisation of TDI PU and possibly MDI PU capacity in the global market over the next few years.

Figure 88: State-of-the-art technology leads to improved cost position in MDI and TDI polyurethane production

Source: Bayer

Figure 89: World-scale Polycarbonate facilities offer strong cost advantage to Bayer



Source: Bayer

Oversupply building in MDI PU. BASF, Bayer and Yantai all have strong plans for further expansion in MDI in the future. While we see this product as a high growth product we fear that oversupply in this market is going to occur in the coming few years and that unless we see material capacity rationalisation margins will be under pressure for some time. Bayer's low-cost production site will help offset some of this as will BASF's in-land strategy (their 400kt investment is in the Chongqing region and getting product from the sea regions in-land is not going to be easy) we note that Yantai is benefitting from low-cost finance (please see the feedback section following our meeting with Yantai). With the three largest global players (these three account for 60% global market share) all committed to expanding heavily we see material risks that profitability in the MDI market weakens over the next few years.

Figure 90: Planned MDI polyurethane expansions in China

Company	Plant location	Year of start-up	Size (kt)	As a % of 2011 global MDI PU capacity
BASF	Chongqing	2014/2015	400	6.5%
Yantai	Ningbo	2014	300	4.9%
Yantai	Yantai	2014	400*	6.5%
Bayer	Caojing	2015/2016	700	11.3%
Total			**1,800**	**29.2%**

*Source: Deutsche Bank estimates. * closure of a 200kt plant and will be replaced by a 600kt plant*

Relationships expanded. In line with several companies who have been in the region for a while Bayer is now looking to expand downstream and is fast looking at developing further PU system houses (that effectively provide a more tailored specialty product to the customer) and compounding facilities for the PC business. In addition, like many other companies, Bayer appears to have developed an excellent relationship with the Chinese government. For example, Bayer has set up a special training academy for Chinese nationals to help get as many as possible to senior roles in its and other chemical operations on the Caojing site. It also provides transport for its workers from Shanghai to the site and intends to reduce the level of expatriates from 5-8% to 1-2% once the Caojing expansion is completed.

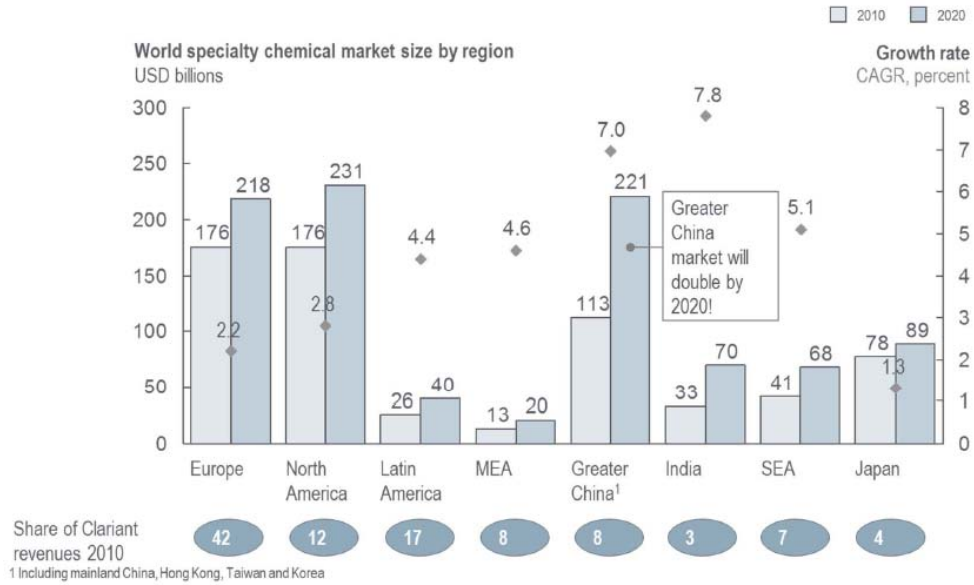
Clariant (Hold, Target: CHF 11.7): Looking to increase scale in the region and helping customers move up the value chain

We met with Per Sjoeberg, Clariant's Regional Head for Greater China, and Dr Richard Zhang, President of Sud-Chemie in China.

Clariant's first office in China was set-up in Shanghai in 1895 as part of the Hoechst organisation. Through the Sandoz part of the business the first office was set-up in Beijing in 1979. China (alongside India and Brazil) remains one of the three growth regions within the "third pillar" of the group's growth strategy ("Growth dynamics in emerging markets").

In 2010 Greater China's specialty chemical market amounted to $113bn, behind Europe and North America which were both $176bn. However, by 2020 Clariant estimates that the Chinese market will double to $221bn and overtake Europe and be almost the same size as North America. With the growing urbanisation and growing middle class within China we see this long-term growth potential as realistic.

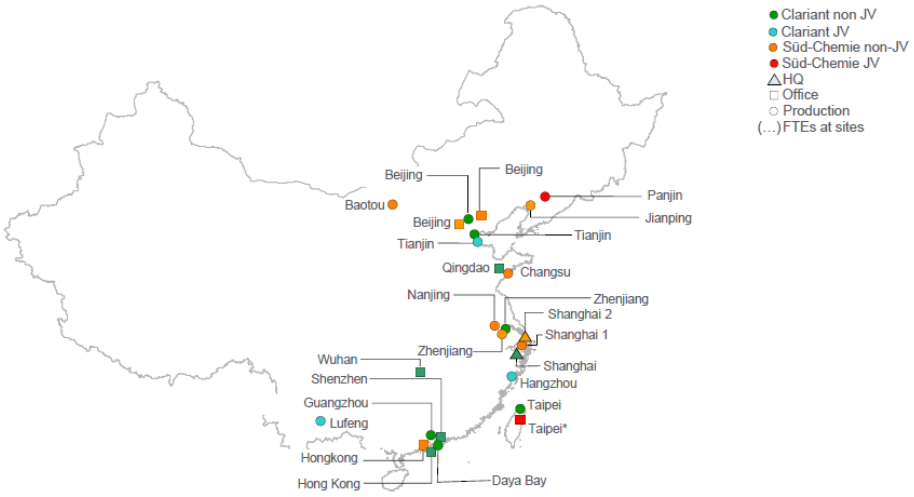
Figure 91: Growth forecasts for specialty chemicals by region – China expected to double by 2020



Source: Clariant

In 2011, Clariant generated sales of CHF 442m in China – equivalent to 6% of group sales. Clariant has shown a steady increase in the proportion of sales derived from China from 3.5% in 2005 and 4.5% in 2008. The company has 24 sites in the region and approximately 1900 employees. Of the sales made in China 50% is manufactured locally and this ratio is expected to steadily increase – compared to many European and US chemical companies Clariant seems to import more product into the region (as a proportion of what is sold). Management estimates that approximately 30% of the company's sales in china end up being re-exported. In Figure 92 we detail the regional footprint of Clariant in China although note that some of these sites are just office sites rather than pure production sites. At the moment Clariant appears to have several production sites and no clear "hub" within the region but with further investments we expect the scale to be enlarged in the Eastern regions and serve to replace the imports from Europe (and to a lesser extent the US). There is no divisional breakdown of the business in China but management noted that the business units with the highest exposures to China are Pigments, Textiles, Masterbatches, Leather and then ICS. ROCE in China is below group level (due to the increase in recent investments).

Figure 92: Clariant's regional footprint in China



Source: Clariant

Underrepresented in the region – plans to expand. China accounts for 14% of global specialty chemical demand but Clariant only generates 6% of its sales in the region. CHF200m has been invested in China over the last 5 years and a similar rate is expected going forward but management is also focusing on four key strategies to boost sales:

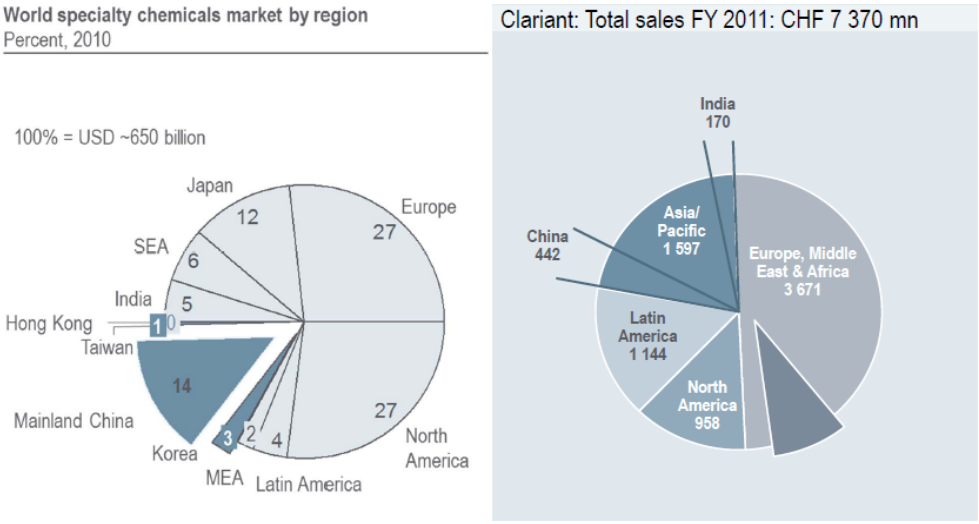
1) Growing beyond MNCs and penetrating local customers. Many locals prefer cheap production routes but a growing proportion are looking to copy Western competitors and sourcing better quality raw materials to improve quality.

2) Expand into key under-served industries where the added "service" that Clariant can offer can be helpful. Key customer groups in construction, automotive, electronics and packaging are being identified.

3) Strengthen the direct to market approach and reduce the focus on distributors (they have already reduced their number of distributors by over 60%) and increase direct customer interactions. This also involves more R&D locally, increased lobbying to shape government regulations (e.g. flame retardants).

4) Increase local production (which will lower the cost base in low value products)

Figure 93: Clariant derives 6% of sales in China but 14% of speciality demand is in China



1 Only includes Mainland China
Source: Clariant

Management sees their very high product standards and know-how in many areas of their business as a key competitive edge in China. Competition in China typically price their products at 20-30% lower than Clariant, but despite this management notes that the business continues to perform very well on pricing and was able to offset the impact of raw material inflation in 2011 and expects to do the same in 2012. Offsetting "other cost" inflation is more difficult – e.g. labour cost inflation running at 10% – but management sees an on-going focus on efficiency improvement and volume leverage as able to offset this.

Speciality competition is increasing as "locals" improve their production, but some customers are increasingly looking for better quality raw materials. Management accepts that the commoditisation within specialities is an on-going threat and with some local competition also improving their product quality – as local government regulations focus producers into better quality production – this is becoming an additional pressure. In some areas management has had to exit businesses that no longer become viable (such as optical brighteners, anti-oxidant additives). However, Clariant feels this negative impact of commoditisation can continue to be offset by growth from stronger penetration of the Chinese market and a further focus on premium product to the customers looking to improve their production quality – this appears in-line with the 12th five year plan to increase the "quality" of China's production output.

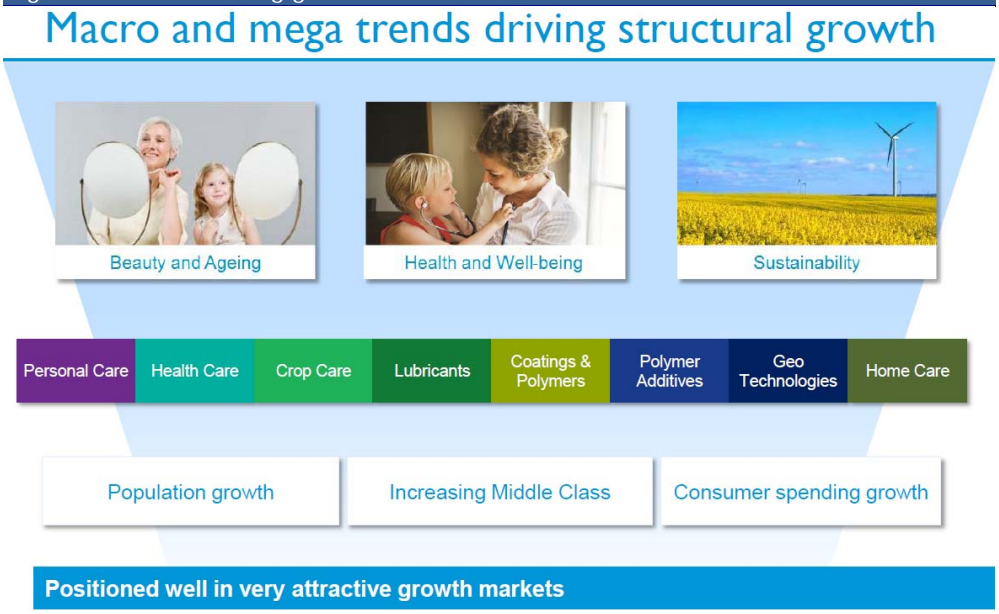
Sud-Chemie is still operating as a separate company in China. The system integration programme is expected to be rolled out in early 2013. Synergies between Clariant and Sud-Chemie are expected to be derived once the integration programme starts although no firm plans or details have been made. Limited information was provided on the business in China but we note that it has 7 production sites (3 for Functional Materials and 4 for Catalysts) with the regional headquarter based in Shanghai.

A slow start to the year. As with most companies the post Lunar New Year period has seen a slower than expected rate of recovery – but still growth – but management does not see this as indicative of a structural problem in the economy and expects a steady recovery of demand through the year.

Croda (Buy, Target: 2450p): Increasing focus on China

We met with Sean Christie, Croda Finance Director, David Barraclough, President Asia Pacific, Shuiling Wong, Managing Director – Greater China and Arthur Knox, Managing Director Singapore. At Croda's recent full year results management highlighted the establishment of new Management Boards in Latam and Asia demonstrating the increasing focus in the group on emerging markets. As such its presence in China is embryonic compared with other regions but most parts of Croda's portfolio are supported by and will benefit from developments in China. Figure 94 gives a summary of the trends that will drive growth in the region.

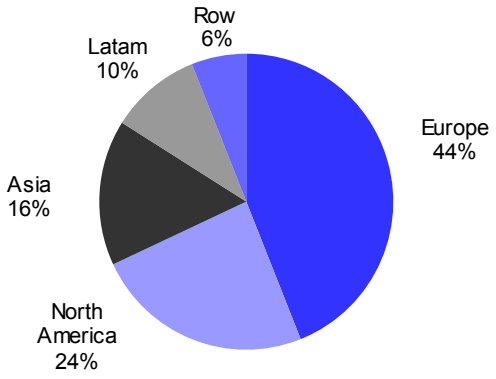
Figure 94: Trends driving growth for Croda in China



Source: Croda

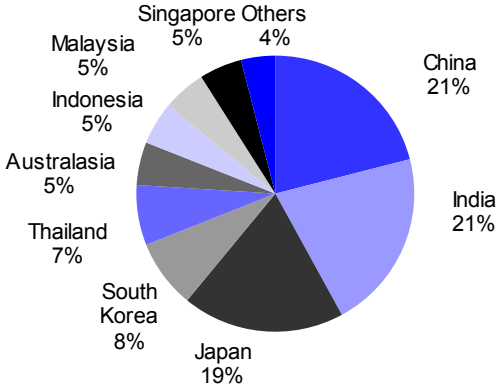
The Enterprise Technology group, which is tasked with finding new technologies for Croda focusing mainly on universities and small to medium sized enterprises, is active in the region with greater resource now in China, India and Singapore. It is biased towards bolt-on acquisitions to support growth in key markets with technologies being sourced across the globe.

Figure 95: Croda geographic breakdown of sales



Source: Croda

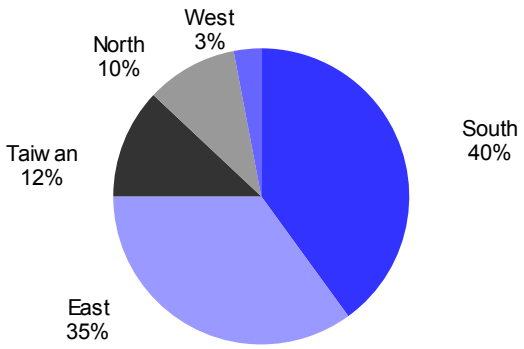
Figure 96: Croda Asia Pacific geographic sales



Source: Deutsche Bank estimates, Croda

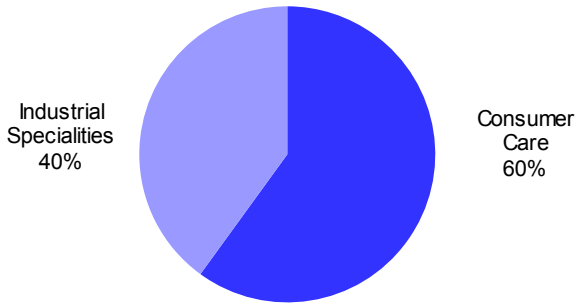
Croda's view of the development of China is that economic growth is moderating, albeit remaining high in comparison with developed economies at 8.5%. The trend in the eastern coastal region, which has developed first, is for fixed asset investment to moderate and retail sales to rise with the middle class population increasing. The majority of Croda's sales in China are made in the more developed southern and eastern regions. Croda has six sales offices in China with 50 employees (of which 40 are customer facing in either sales, technical service or customer service roles) and over 1200 customers. They have laboratories in Guangzhou and Shanghai which focus on formulation development and efficacy testing rather than pure research.

Figure 97: Sales by region in Greater China



Source: Deutsche Bank estimates, Croda

Figure 98: Sales by market segment in Greater China



Source: Deutsche Bank estimates, Croda

The China personal care market is forecast to grow by an average CAGR of 7.4% (2010-15) with skin care the largest part of it (41% in 2011) forecast to show the highest growth with 8.9%. In figure 99 we show the different elements of the China Personal Care Market and forecast growth rates. The key drivers of the personal care market are the growing middle class with a rising disposable income. This is now penetrating beyond the tier one cities and further inland. Croda has moved with its customers focusing on serving the multinationals as they grow in the region but also supplying the larger local producers.

Figure 99: China Personal Care market

RMB bn	2010	2011	2012	2013	2014	2015	CAGR
Skin Care	64.2	70.7	77.3	84.1	91.1	98.2	8.9%
Hair Care	28.2	29.8	31.6	33.3	35.1	36.9	5.5%
Bath & Shower	15.2	15.9	16.6	17.4	18.1	18.9	4.4%
Colour Cosmetics	14.3	15.3	16.4	17.8	19.2	20.8	7.8%
Others	39	41.9	44.9	48.1	51.5	55.1	7.1%
Total GBP bn	16.4	17.8	19.1	20.5	22	23.5	7.4%

Source: Deutsche Bank

The China crop care market was also highlighted and the supportive trends with every increasing polymeric surfactant demand to increase emulsion stability and environmental protection (growing focus on the environment in China). This 'green' theme is increasing with a desire for water-based formulations in all sectors. The key drivers for the sector in China remain an increasing requirement for food and in particular oil seed crops (increasing yield). Government legislation is driving the development of more environmentally friendly formulations (water based rather than solvent based).

Performance Products key market drivers in China highlighted. The Performance Technologies division key market drivers were flagged including rapid expansion of polypropylene and polyethylene production. There is increasing demand for synthetic lubricants for automotive engine oils following the rapid expansion of auto production. Government regulations on environmental protection have meant a move from solvent to water based coatings, again playing to Croda's strengths. There is also increasing demand for polymeric surfactants for LED TV, solar cells and lithium batteries and also demand for demulsifiers for oil field applications. The growth rates were also highlighted per product area given these drivers:

- Polymer Additives forecast to grow more than 10% (slip additives for polyolefins)
- Lubricants specialities grow above 5% (friction control modifiers)
- Coating and Polymer Specialities grow more than 15% (solvent reduction additives)
- Geo Technologies grow more than 10% (demulsifiers for heavy oil)

Growth strategy in China is to move inland and increase indigenous innovation. The growth strategy involves moving inland to Chengdu and Xian as well as establishing an indigenous innovation centre in the country. Currently they have development and technical support but have been careful about establishing research activities given concerns about IP protection. They are also looking to develop local talent and at the same time maintain the culture of the company as they expand further.

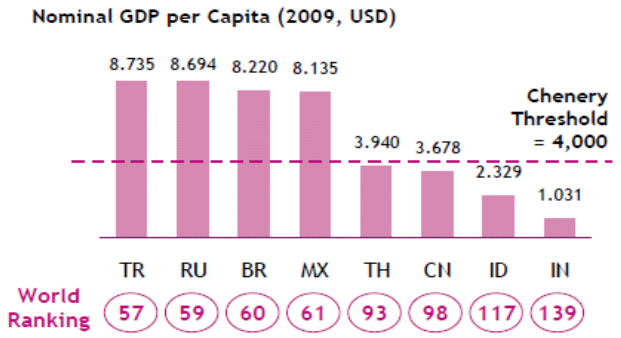
DSM (Hold, Target: Euro 41): Focusing on consumer growth

We met with Rolf-Dieter Schwalb, DSM CFO and Weiming Jiang, President of DSM China, at DSM's headquarters in Shanghai. DSM first began trading with China in 1963 with a trading license for urea. The company's first representative office was opened in 1993 with the first production facility opened in 1995. Weiming was keen to stress the growth potential for DSM in China driven by the trends driving DSM's markets globally (such as ageing population, population growth, food security and urbanization amongst others) which are even more relevant in China. Developments in China include the JV with Sinochem in anti-infectives and the capacity expansion in caprolactam. DSM has already built a strong platform in the region and offers a full spectrum of products from Nutrition, Pharma, Performance Materials and Polymer Intermediates.

China economic developments supportive to DSM. Management noted that China's economic growth may slow in early 2012 but expects annualised GDP over 2012 and 2013 to remain above 8%. Continued investment is expected in China with fixed asset investment remaining a key component of China's GDP. Management also noted that China is looking to increase the quality of growth with sustainability gaining greater prominence. This plays to DSM's strengths with for example its new facilities (caprolactam and 6 APA plant) being lower emission than older plants.

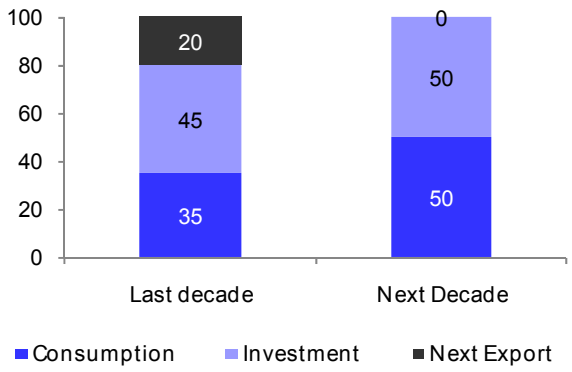
Chinese consumer spending is set to rise. The higher standard of living in China is driving increased consumption and changing the nature of business and production from export to domestic consumption. 0% net export is the target for the Chinese government in the next decade to balance import and export. Domestic consumption is expected to take over from exports as a source of growth with the Chinese government targeting a balance of imports and exports over the next decade

Figure 100: Higher living standards fuelling consumption



Source: DSM

Figure 101: Shift from exports to consumption



Source: DSM

In 2011, DSM China delivered sales of $2.0bn (c.16% of group sales) an increase of 30% year-on-year. The company is targeting $3.0bn by 2015. Management provided no EBIT numbers for the region (EBIT is done by business unit not by country within the group) but noted that theoretical profitability of DSM in China is similar to the group average. The current 60-70% of sales locally produced is expected to modestly increase over the next five years period. Sales to local Chinese based companies now account for around 2/3 sales of the group in the region with the remaining 1/3 accounted for by Western companies. Approximately 50% of the regions sales come from the lifescience businesses with the majority of this in the Nutrition cluster.

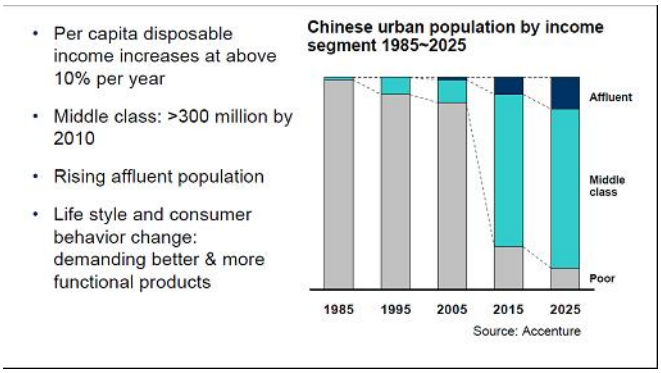
Increasing the focus on local management. DSM has previously focused on expanding the regional business through the use of expatriate management teams but this is steadily changing. There remains a clear commitment towards increasing the levels local management in the region. As a fluent 'local' speaker Weiming Jiang is keen to stress that the DSM culture in China is to attract local talent by showing that 'locals' can be promoted from within to senior management positions. We also believe that increasing the proportion of 'locals' in management should increase the company's ability to liaise and work with both local governments and customers. This has become more evident with the organizational changes in the group with business group HQ's moved to Asia (with caprolactam to Shanghai) and innovation centres initiated in China and India.

Move west following key end markets. In common with almost all companies we met DSM is looking to move inland to the west. This is where the growth and new markets are and where they must produce. They are doing this by analysing the industries which are expanding there with agriculture highlighted. This has led to building a pre-mix plant in Sichuan and DSM sees the key strategically as positioning themselves in different regions. In addition they have an animal testing centre in China which tests how pigs and chicken grow with different types of food/premixes. The key to this growth is going to the areas where customers are and building a pre mix facility. So far in China DSM has five pre mix plants.

DSM is increasing the focus on more downstream products than just basic vitamins Basic vitamins remain very profitable at the moment but DSM is keen to further exploit the value-added products. An increasing focus on pre-mixing and services is enabling the company to further enhance margins and increase barriers to entry. DSM is expanding its franchise stores through the Chinese markets and has expanded from 60 stores in 2007 to over 150 by the end of 2011. Given the importance of traceability and quality control DSM's brand recognition is important in providing another barrier to entry. Management noted there is little sign of Chinese producers looking to broaden their portfolios of vitamins.

Competitive pressure from local suppliers remains strong but the focus on environmental and food quality has permanently increased. While DSM's technology in some areas of vitamins/nutrition and fine chemicals remains ahead of many local peers, management accepts that competition remains fierce for the most innovative products. An increasing focus on R&D in the region (the head office also encompasses a state-of-the-art R&D facility for the local market), the hangover from the food tainting issues seen in 2008, alongside greater environmental compliance has also increased the focus on quality control by many of the larger buyers. DSM views these as strong positives for its business as it continues to position itself as one of the premium players in vitamins and nutrition in the region. In addition, the increasing tightening of environmental regulations as part of the new 5 year plan (not just in the eastern regions but also increasingly in the in-land regions) has also resulted in DSM being able to leverage its "green" credentials to further strengthen their brand. DSM's "3P" strategy (People, Planet, Profit) and the focus on sustainability are tangible examples of this branding.

Figure 102: Middle class incomes are set to rise sharply



Source: DSM, Accenture

Figure 103: DSM has a strong footprint in China

Source: DSM

Martek acquisition increases distribution in China. As well as increasing DSM's position in the US market for nutritional products, Martek provides greater distribution in China; with DSM able to sell its products through the Martek network and Martek's products through its own. This is becoming more evident within the vitamin/nutrition markets where the focus today is on exports – DSM believes that the domestic market will soon overtake the re-export market in terms of demand as more locals become middle class and look for increasing lifestyle and health choices (ready meals, vitamin supplements, etc). It is worth noting that within China the population is rapidly ageing and that the rising middle class is increasing the healthcare focus.

DAI JV with Sinochem should drive strong growth in China. With both supply and demand in anti-infectives continuing to move to Asia and other high growth economies it was key that DSM as the strongest global player in terms of market and technology position moved to Asia/China in some form. This has the benefit of DSM's strong technology in production allied to Sinochem's distribution in the Chinese market and should accelerate growth in high growth economies. Further growth should also come from the construction of the new 6-APA plant. By 2015 management expects sales from the JV to increase to more than E600m with the EBITDA margin to be over 15%

Polymer Intermediates – demand remains strong, capacity to increase. DSM noted that current demand remains very strong, helped by the strong macro environment in China and continued growth in auto production and construction. No substantial capacity has been added recently (only de-bottlenecking) and prices are at high levels. DSM is expanding capacity principally via a new new 200kt line by 2014 in a JV with Sinopec (raw materials are secure and sourced locally). Sinopec is backing the new line with upstream investment of US$1bn. Management noted that DSM is the only foreign company with advanced technology in China and believes they are the lowest cost producer. Given the importance of the capacity expansion and Chinese capacity for DSM in Polymer Intermediates the headquarters of the caprolactam business has been moved to Shanghai.

Performance Materials is still underrepresented in China Longer term, management notes that since penetration of its performance materials products within the Chinese market remains relatively low. Autos remains a good example with growth above that of auto growth due to the increasing content of lightweight materials. Significant growth from some of its higher value products could be achieved with very little sales force investment.

ICL (Hold, Target: ILS 46). Focus on bromine activities

We met with Mr Haim Koren, head of ICL China. ICL China has been operating in China since the mid 90s and is responsible for the sale of imported fertilizers (Potash and specialty fertilizers) and chemicals (mainly Bromine and Bromine compounds). ICL operates on 7 chemical production sites (5 JVs and 2 wholly owned companies) of which 6 are on the Eastern Coast. It counts 700 employees, most of them being local. ICL main markets in China are fertilizers, water treatment (for petrochemicals, steel, paper, municipalities WW, drinking water), food additives, hygiene & disinfection (dairies, breweries, farms) and flame retardants (electronics, construction, auto). We estimate annual sales above 10% of group's turnover.

Figure 104: ICL sites in China

Source: ICL

Bromine demand in China should continue to increase. About 20% of global bromine production is consumed in China, of which 75% is brominated flame retardants (BFR) used mainly in electronic and construction. Demand should continue to increase driven by flame retardants, butyl rubber (few new plants in China – see pg 78 for more details) and mercury emission control. The BFR segment is not expected to decline due to envrionmental issues and so far no specific application has been phased out. ICL does not see substitutes gaining strong momentum due to the cost effectiveness of BFR.

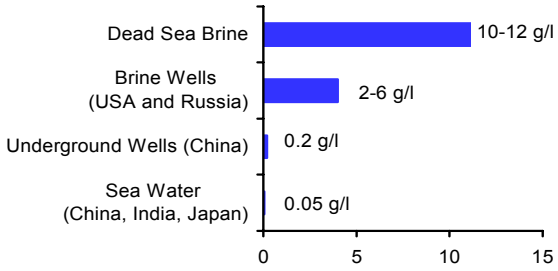
Mercury emission control potential in China very significant. Bromine technologies can also be used to control emmission from coal fired powerplants. China is the biggest polluter of mercury (China coal is rich in mercury) however there are currently no regulations in place to control it. The government needs to be convinced of the technology first which is likely to take a few more years. Global implementation of mercury emission control could boost global bromine demand by 25%, China would be a major portion of that.

Chinese Bromine production continues to deplete. 2/3 of the bromine consumed in China is produced locally with the rest being imported. 80% of the local production of bromine is produced off an underground reservoir in Shandong (North East China) and 20% is produced from sea water (by salt producers). Production is fragmented with over 100 small producers. The production in China has declined by c40% since its peak in 2007 due to the declining bromine concentration in Shandong reserves due to excessive mining. Bromine is not a strategic commodity for the Chinese government and the company is not aware of any new sources. Production should continue to decrease going forward and imports of bromine and bromine compounds should continue to increase.

Figure 105: China bromine production map

Source: ICL

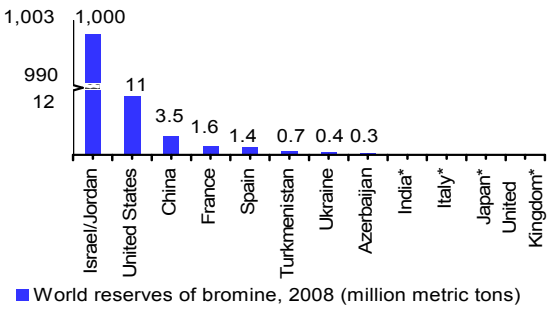
Figure 106: Bromine concentration across regions



Source: Company data

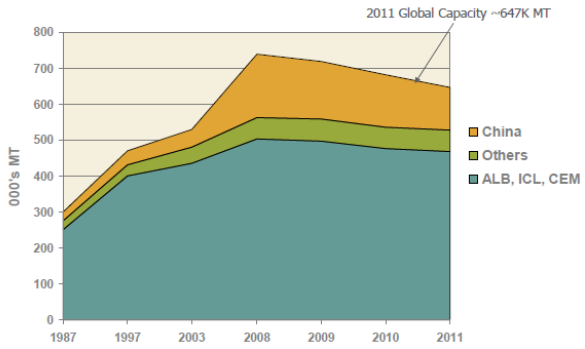
The Dead Sea should be the biggest source of bromine into China in the long term as Arkansas wells are also probably depleting although at a much smaller rate. Globally, about 80% of the world bromine is produced by 3 companies (ICL: ~40% of the global capacity, with a production rate of ~200kt production out of 280kt capacity, Albermarle: 25%, doubling capacity in Jordan from 60to to 120kt, Chemtura: 15-20%) with China producing around 20%. We note 25% of ICL bromine produced in the Dead Sea is exported outside of Israel of which a large part is to China.

Figure 107: World reserves of bromine (2008)



Source: SRI (Mineral Commodity Summaries, 2008, U.S. Department of the Interior, U.S. Geological Survey) *From waste bitterns associated with solar salt. Reserves are essentially unlimited.

Figure 108: Global bromine capacity by producer



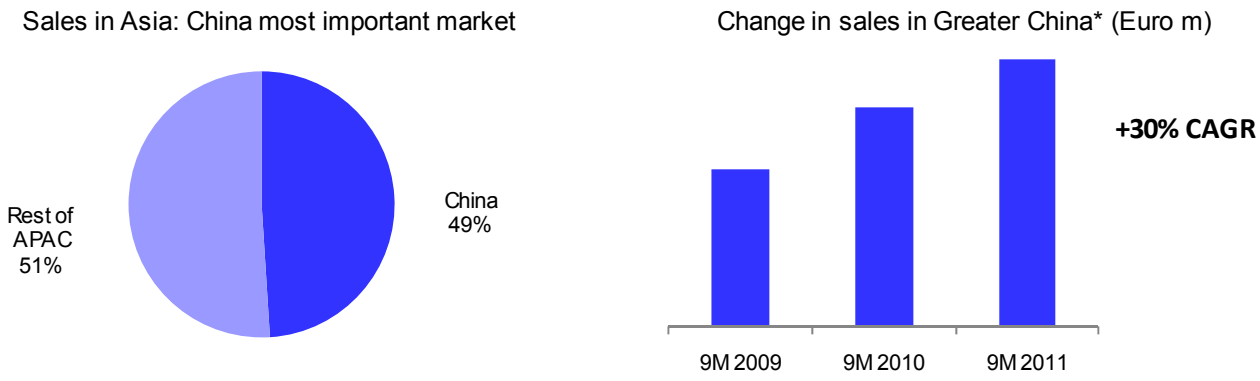
Source: Albemarle

Bromine prices. Bromine prices in China increased sharply from mid 2010 to mid 2011 due to strong demand and constrained supply. However they have declined by 20-25% in the past 6-8 months from the peak in Q2 2011 mostly as result of lower demand attributed to general economy. The bromine market in China is very reactive and can come back and shut down very quickly to adapt to demand. Many local producers therefore closed capacity in 2011 due to poor economics (production costs high due to low bromine concentration and high costs). We estimate local production decreased 5-10% in 2011 with imports therefore increasing. We note demand has started to pick up slightly after the Chinese New Year especially in BFRs for laminates and bromine prices have slightly picked up. The Q2 and H2 2012 outlook appears relatively positive however prices are unlikely to go beyond the peak of last year.

Lanxess (Buy, Target Euro 58): Well positioned for mega trends

We met with Martin Kraemer, CEO Greater China and Michelle Liu, CFO Greater China. Greater China represents c.50% of Lanxess's sales in Asia and 11% of 9M 11 group sales. Through the first nine months of 2011 Greater China sales grew 30%, a slight decline from the 39% growth experienced the previous year. With quality of growth now becoming more important than simply quantity of growth sustainable development is a key competitive advantage. Since 2003 Lanxess has won 15 different awards across various categories for its China activities.

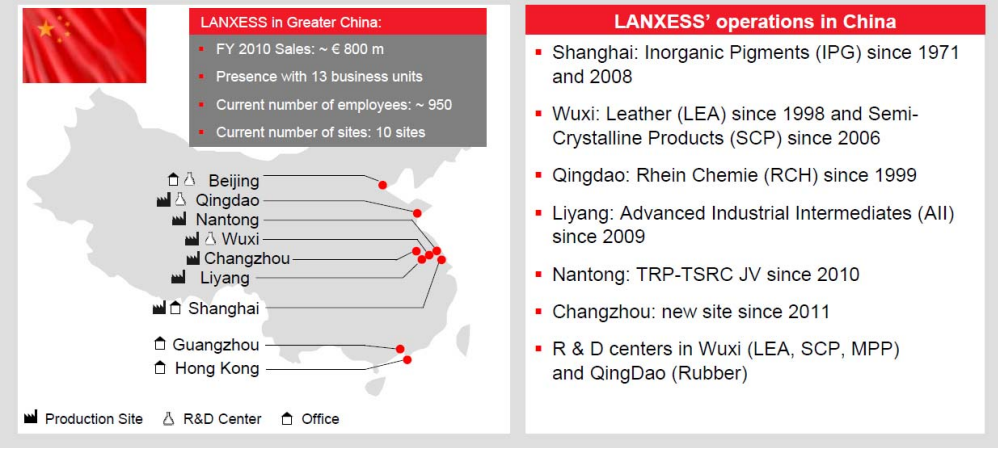
Figure 109: Greater China c50% of Lanxess's Asian sales



*Source: Lanxess, * including Mainland, Hong kong, Taiwan, Macao*

Lanxess has a strong and growing presence in China Lanxess has a strong presence in China, which we expect to grow stronger with increasing urbanisation and the need for rubber amongst other chemicals (mobility is a key mega trend that will drive growth for Lanxess in China alongside further urbanisation). Figure 110 shows the location of Lanxess's offices, production sites and R&D centres. Increasingly the focus is on both research and development whereas previously it had been more development. IP protection in China is increasing with China now having the second highest number of patent applications globally. Environmental regulations are also becoming tougher. Management commented that they have a lower ratio of ex pats than many western peers.

Figure 110: Location of Lanxess sites in China

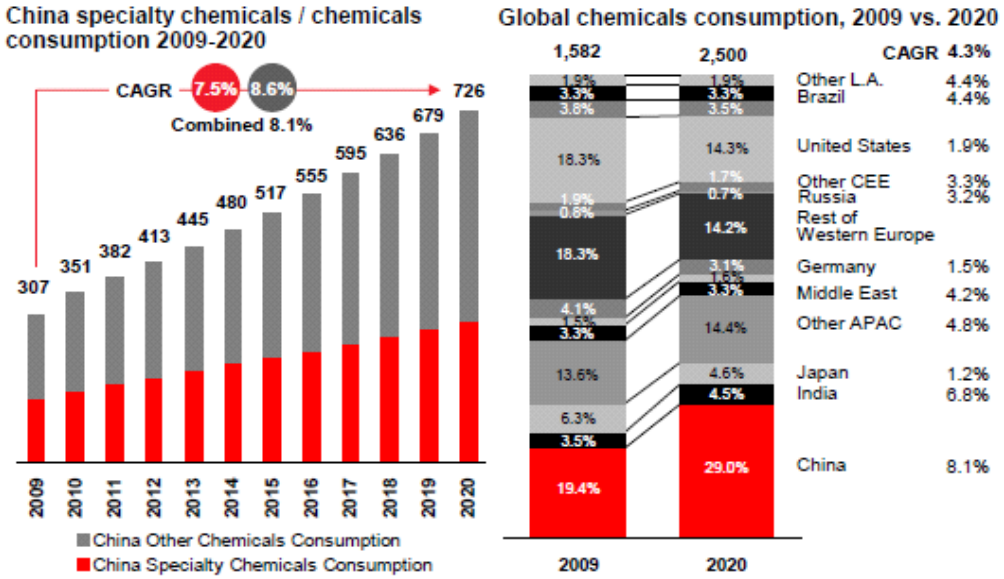


Source: Lanxess

Growth in middle class in China driving demand for specialty chemicals Over the next 10 years growth in the middle class is likely to be led by China, with almost one billion in the middle class by 2020 with rising income and increasing demand for products

based on chemicals. China's consumption of chemicals is expected to grow at 8.1% p.a. to 2020 and could surpass the US as the largest consumer of specialty chemicals by 2013 (see Figure 111). There is also likely to be a trend for increased local production and reduced imports and also an increase in the quality of chemicals over time.

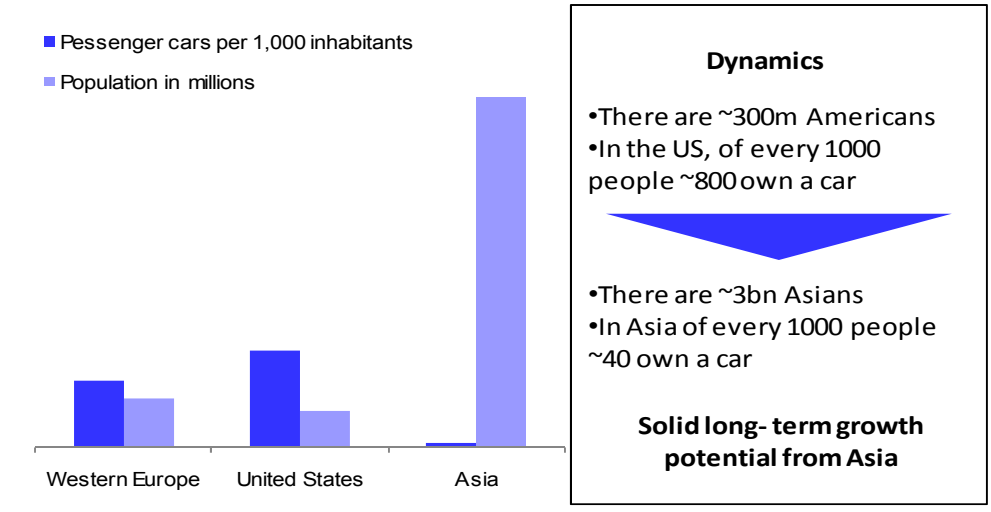
Figure 111: China and global consumption and growth prediction (in % and Eur bn)



Source: Lanxess, Global Insight

Increased mobility driving growth in tyres and plastics for autos One of the trends that Lanxess is benefiting from is mobility with auto production in China up 5% YoY in 2011, albeit lower growth than seen in previous years. We expect auto growth to return to double digit growth in the coming years and see Chinese auto production at least 2-4% above GDP for the next few years. Compared with Europe and the US, car ownership per head remains very low (Figure 112).

Figure 112: Car ownership is low in Asia compared to Europe or the US



Source: Lanxess, Michelin

Opportunities in tyres for Lanxess This has positive implications for tyre demand and with increasing volumes plus tyre labelling Lanxess should stand to benefit. China's policy on tyres targets 90% of tyres being radial by 2015, which will require the halo-butyl Lanxess produces. Re-treading is non-existent in China but Lanxess expects this to come in time and it requires high quality performance rubber.

New plant for Halo-Butyl in Singapore fully on track. The halo-butyl plant in Singapore is on track and scheduled to start production in Q1 13. The decision to base the plant in Singapore rather than China was made for a number of reasons. One of these was that key raw materials would only be available from local producers and conditional on Lanxess entering into a JV to produce butyl, so Lanxess has been careful to not bring in the latest technology and base production in China up to now. In addition Singapore offered favourable tax treatment with a tax holiday for about ten years.

Figure 113: Halo-Butyl plant in Singapore on track for Q1 13 start up

Key points

- Construction of 100kt butyl rubber plant on schedule
- Production on stream in Q1 2013
- €400 m investment
- Installation of infrastructure and steel successfully completed
- All major vessels installed
- Currently more than 2,000 workers active on site

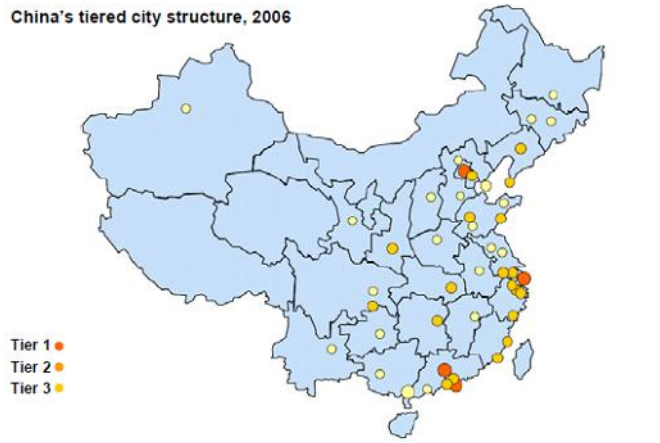
Source :Lanxess

New butyl plants are being developed in China. Management mentioned a couple of Chinese competitors (Cenway and Sinopec) are constructing their own butyl plants and developing the production process, though believed this to be regular butyl and not halo-butyl. For Lanxess it takes three years to construct a plant and then a further 3-6 months to ramp up production and they are very familiar with the process. For competitors unfamiliar with the technology this would take longer. Customers have not highlighted butyl availability from another source and Lanxess noted this would definitely have been the case given tightness in the product.

Plastics growth above auto production driven by increased substitution Further opportunities in autos come from reduction in weight with the substitution of metals by plastics adding further growth on top of auto production. With global auto production growth over the next ten years of 3-4%, substitution should drive growth of around 7% p.a. Lanxess has invested to take advantage with the start-up of SCP manufacturing in Wuxi in 2005 with an annual capacity of 20kt, which was expanded in 2007 to 40kt p.a. with a further expansion to 60kt in 2011. 2007 also saw the start-up of an R&D centre on the site, directly linked to similar facilities in Germany. Over 80% of plastics are still imported because of insufficient base resin capacity locally, although management expects this to reduce over time.

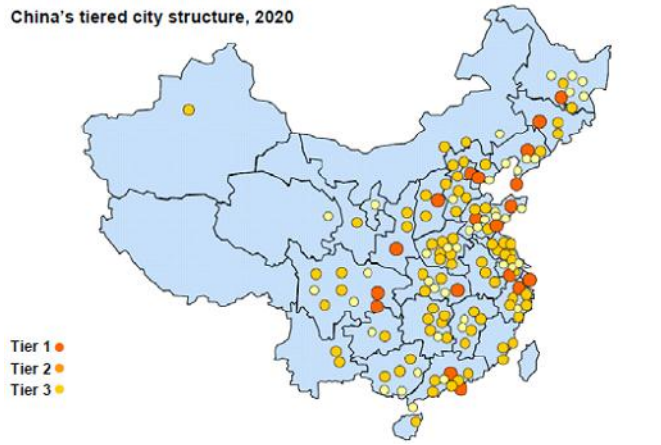
Urbanisation driving growth across the portfolio Urbanisation in China should drive other parts of Lanxess's portfolio with a dramatic increase in the number and size of cities from 2006 through to 2020 as shown in Figure 114 and Figure 115. This will drive demand for non-hazardous, environmentally friendly pigments for use in construction materials, additives for fashionable high quality leather, biocidal and disinfectant formulations, phthalate free plasticizers and halogen-free flame retardants. The demand for food should also benefit Lanxess which is a leading outsourcing partner for major agrochemical players.

Figure 114: China's tiered city structure 2006



Source: Lanxess

Figure 115: China's tiered city structure 2020

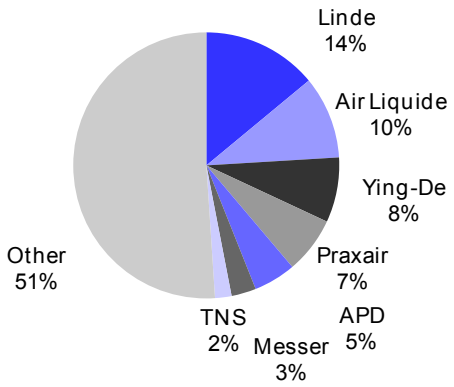


Source: Lanxess

Linde (Buy, Target: Euro 150): The leading gas position in China

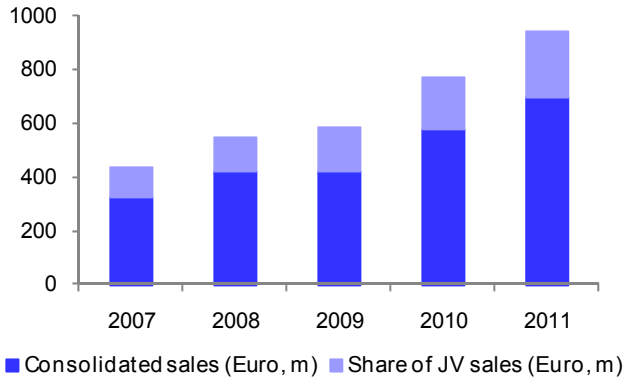
We met with Steven Fang (Head of China) and Sanjiv Lamba (Member of the Executive Board). Linde is the largest industrial gas player in China (14% market share) with its presence materially enhanced by the acquisition of BOC in 2006. In 2011 reported sales in China increased by 22% to Euro 701m with total sales (including share of JVs) up 22% to Euro 941m. This equates to 9% of total Gas sales. Growth is expected to be at least 15-20% in the coming years. While no profitability numbers are available, we estimate that profitability in China is similar to the group level although RoCE is lower (but rising) due to the scale of investment in the past few years. Management is confident the returns on new investments in China are in-line with those in other regions of the world.

Figure 116: 2011 China industrial gas market share



Source: Deutsche Bank estimates, company data

Figure 117: Linde sales in Greater China have shown strong progress over the past five years



Source: Linde

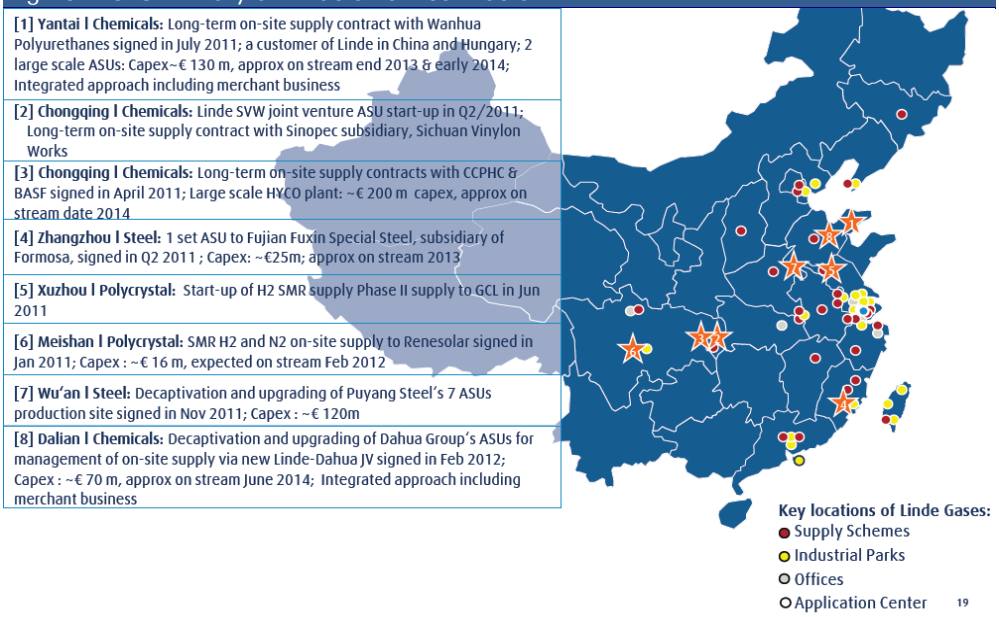
A long history in the region. Linde (through BOC) was the first international gases company to set-up in the region in 1986 although the Engineering business had been operating earlier. Linde Engineering first built a plant in 1911 and by 1965 had built over 100 plants – the strength of Linde's Engineering brand in China should not be underestimated. Linde employs over 4000 people in Greater China and expects this number to double by 2015. Linde already has approximately 150 plants in the region. Like most companies Linde has been focused on the three hubs of Shanghai/Nanjing, HK/Guandong and Tianjin/Beijing but is now increasingly moving the footprint in-land to ensure it is able to access strong economic growth potential of these regions.

Figure 118: Linde's footprint matches the GDP potential of China

Source: Linde

Recent wins are no longer just in the Eastern regions with some clear successes inland (e.g. a HYCO facility for BASF's MDI investment in Chongquing). We highlight a summary of the wins in Figure 119 but we also note that alongside the new builds the trend of de-captivations (site takeovers) is also accelerating.

Figure 119: Summary of Linde's new contracts



Source: Linde

Outsourcing – the growing opportunity. The outsourcing potential is huge in China although as with many gas companies the trend has been relatively slow in the past few years given the cultural desire to own your own assets in the region. Nevertheless as customers focus more on capital efficiency and as plant sizes are increased the desire to outsource becomes higher. Where Linde Engineering has built a plant this often gives them a very strong advantage in being able to buy back the plant from the customer. In the past 12m Linde has been able to complete 2 site takeovers in China and given their strong history in the region and deep customer relationships this trend should offer them more opportunities than some of the other gas names. It is clear to us that Linde (and Air Liquide) appear more successful in this area than their US peers, presumably due to broader relationships, better engineering focus etc.

On-site remains the key driver of growth in China. Linde's business in China is heavily focused on the tonnage business with around 70% sales coming from this. Merchant accounts for approximately 20% with Cylinder the remaining 10%. Linde is focused on winning early contracts with the tier one customers, then leveraging the on-site investment to either gain a strong position in the merchant business (through piggy-backing of on-sites) as has been done in the Ningbo area or to possibly also expand into cylinders. We estimate that 40% of the start-ups in 2010 and 2011 for the whole of Linde Gas have been in China alone, highlighting the scale of the investment in the region. Management estimates that the majority of group capex will continue to be spent in emerging markets (particularly China, India, Middle East) over next few years.

Strategy to focus on largest customers. Linde's strategy for the region is to focus on the key Tier 1 customers and work with them through their expansion programmes. As shown below the customer list in the region is impressive and spans many end-users and appears more diverse that some of its international peers, particularly US names.

Figure 120: A very broad customer list in the region

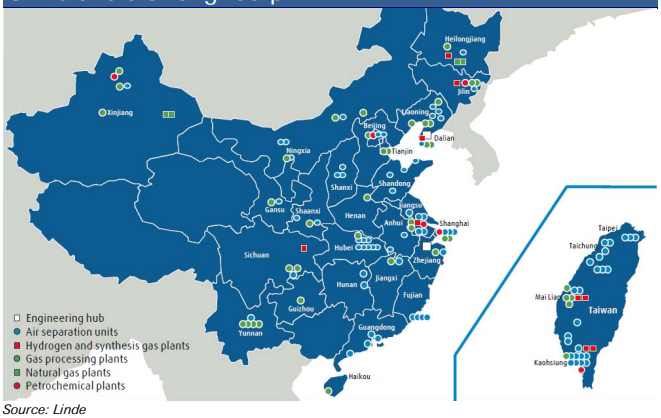
Industry	Key local players	Other international players
Oil & Petrochemical	SINOPEC	BP
	BASF/YPC	SAUDI ARAMCO
		EXXONMOBIL
Chemicals	WANHUA	BASF
	HUAYI	DOW
	HANWHA	BAYER
Metallurgy	TISCO	THYSSENKRUPP
	GISE	VOESTALPINE
	MANNSHAN IRON & STEEL COMPANY	
	BAO STEEL	
Electronics	BOE	SHARP
	RENESOLA	PHILIPS
	YAGEO	NDK
	HAIER	ASUS

Source: Linde

Merchant and cylinder expansion. As with most gas companies we note a growing willingness to expand further into the merchant and cylinder businesses in some regions. As the businesses mature in the regions we see Linde increasingly leveraging the on-site business and providing product into the merchant and cylinder markets. This has traditionally not been an area of focus for the major Western names but as infrastructure and knowledge of local markets grows this appears to be a logical step to further leverage strength in local regions/industrial hubs. We note that from discussions with Linde and global peers the contract terms for the merchant deliver (and cylinder) tend to be similar to those use in Western markets with price escalation clauses and take-or-pay agreements in place. We do not see this move as likely to increase the risk profile of the businesses in the region.

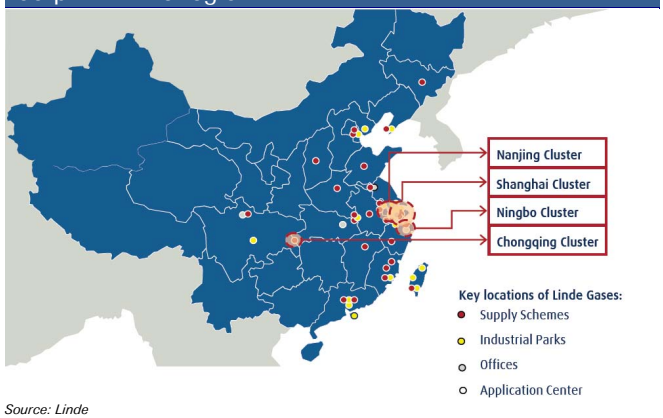
Critical to the on-going success of the gas business in the region has been the leverage of Engineering. As Gas investments continue to become more complex (and larger scale) the strong competence of Engineering should not be underestimated. As can be seen in Figure 121 and Figure 122 the foot print of the Engineering business is very impressive and gives Linde a lead-time advantage on new chemicals, refining etc investments compared to its other gas peers who often have weaker Engineering presence. Coal-to-olefins is a good example where of the current 50+ projects being built or under discussion Linde Engineering is already providing key technology for 32 of these projects – this will ensure that they are in a strong position to fully understand the opportunities for the industrial gas market in these hubs.

Figure 121: Linde Engineering has a leading position in China and a strong footprint



Source: Linde

Figure 122: The Linde Gas business also has a strong footprint in the region



Source: Linde

Linde Engineering operates out of three bases in the region (Dalian, Beijing and Hangzhou). Engineering for China is now almost all done locally which is providing strong local support to customers, an enhanced ability to tailor the product to the local market whilst lowering the cost base for Linde. In addition the recently opened gas technology centre in Shanghai (Linde only has 2 others in Munich and North America) is increasingly supporting local market gas application selling rather than just selling the gas itself.

Local players becoming more competitive in smaller sized on-site contracts. Management noted the increasing activity by some local gas companies but believes that the offering from these companies remains suited to smaller on-site investments as the weaker technology and lower energy efficiency means they are not competitive for the largest on-site and cluster investments. Assessing our meetings over the past few years while the "locals" so seem to be progressing steadily we continue to see a noticeable difference between the offerings from the Western names like Linde and the local players.

Coal to chemicals is a big opportunity for the gas industry – Linde more embedded in the technology than peers. The investment opportunities in this area in the next 10 years will be immense and while most of the majors are trying to position themselves for some of the growth, Linde seems to have a head start through Engineering. As mentioned earlier, their specific technologies around sulphur management have already been applied in over 30 facilities out of the 50+ that are being constructed or are at the planning stage.

Healthcare – strong long-term growth potential. The Healthcare business maybe small for Linde at the moment but the growth prospects in the group remains strong. Linde is already present in 5 provinces in the mainland and has a dedicated Healthcare team in place. Linde plans to use its already strong Healthcare platform in Hong Kong – where it has developed its Asian centre of excellence – as a base to expand further into mainland China.

Strong pricing focus in China, helped through the HPO programme. The HPO programme continues to be implemented in China with management very heavily focused on the pricing modelling (called LindePro) to ensure that ALL cost inflation in the business is recouped through pricing improvements to customers. This is a bold target, although management is very confident of achieving this.

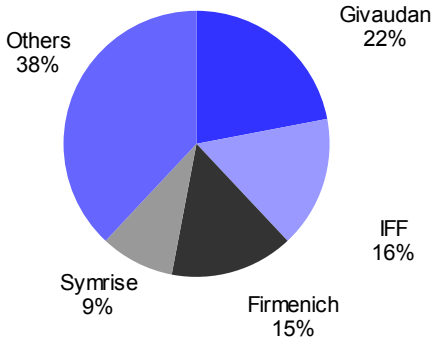
Symrise (Hold, Target: Euro 22): Strong focus on margins

We met with Markus Steiger, head of Fragrances for ASPAC and Declan MacFadden, head of Flavours for ASPAC

Symrise is the #4 F&F player in China. Headquartered in Shanghai, Symrise has been present in China since 1982. It is the #3 international Flavor house and #4 international Fragrances house in the country. Symrise derives just under Euro 100m of sales in China which represents 6% of group's sales. The company has 250 employees in China of which 95% are local. The company has production sites in Shanghai with sales office in Guangzhou and Beijing. On current demand trends, local management commented that it has not seen any slowdown with a good start to 2012 in all markets of F&F.

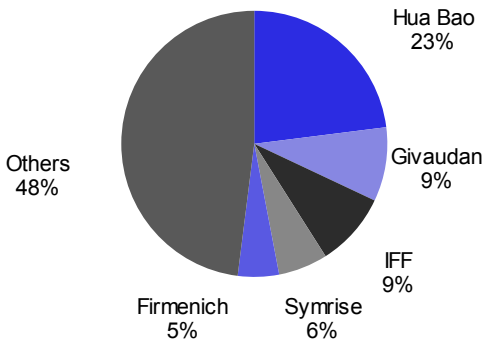
Fragmented market. The F&F market in China is very competitive, not as consolidated as the global market. It is dominated by local companies like Hua Bao although global players already have market share > 30%. Symrise considers that there are 5-6 real large players who invest in R&D and develop new technologies. Given the strong growth potential (c.10% CAGR through 2011-15), many new players are attracted to leverage this very attractive market in the F&F space. However, high barriers to entry exist due to world leading quality requirements. Mgmt stressed the company is not interested in acquiring the smaller, local players due to quality and reliability issues.

Figure 123: Symrise #4 in China Fragrance market



Source: Symrise, Deutsche Bank

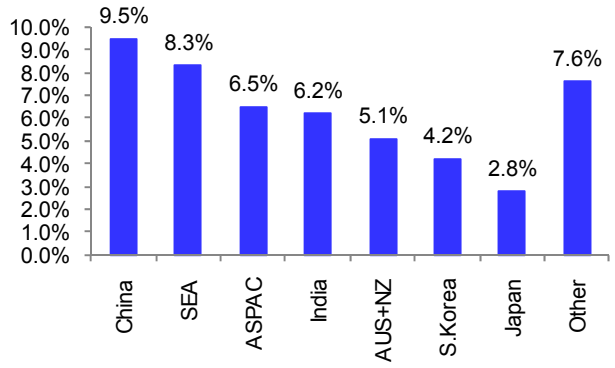
Figure 124: Symrise #3 in China Flavours market



Source: Symrise, Deutsche Bank

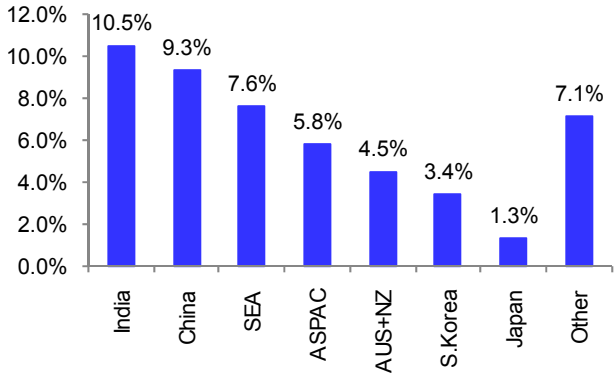
China is the fastest growing market of ASPAC. Asia Pacific (ASPAC) currently represents 29% of the world Fragrance market after EAME (32%) and North America (32%). The Fragrance business in ASPAC is expected to grow at a CAGR of c6.5% through 2011-15 with highest growth expected from China (c.9.5%) followed by South East Asia (c.8.3%), India (c.6.2%) and others. Within Flavors, ASPAC accounts for 32% of the world market and is expected to grow at a CAGR of c.5.8% through 2011-15 with the highest growth rate expected in India (c.10.5%) and China (c.9.3%) and robust growth in South East Asia (c.7.6%). Social demographic changes should continue to drive F&F industry in China as rural to urban Migration gives rise to >300 Mio new consumers who cluster around cities. The migration to cities translates to new consumption habits which increase processed food consumption which lead to increased consumption of flavors.

Figure 125: Fragrance growth rates 2011- 2015



Source: Symrise, Deutsche Bank

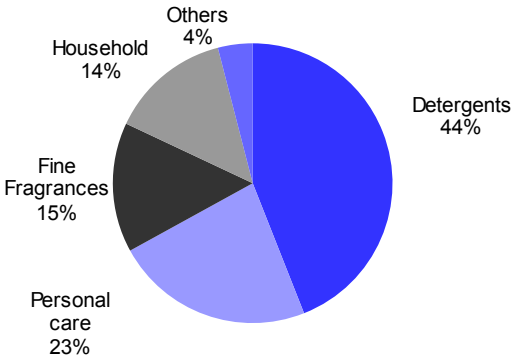
Figure 126: Flavors growth rates 2011- 2015



Source: Symrise, Deutsche Bank

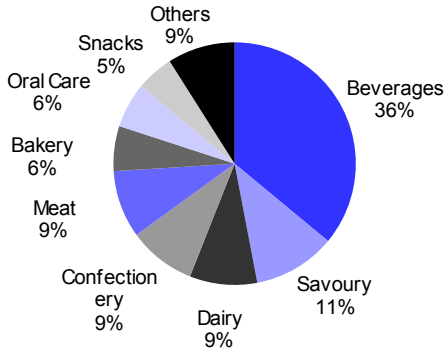
Symrise exposure to all key categories of ASPAC F&F market. We note that Symrise has exposure across all Flavor and Fragrance market categories in ASPAC. The Fragrance market which is currently dominated by detergents (c.44% of total market) is expected to see faster growth in Personal Care segments as increasing urbanization and aging population in developing markets demand for better innovative products in these segments. Air Care is another fast growing segment globally where Symrise is focusing on. Within Flavors, Oral care is a very big market for Symrise where it is currently number 1 with 50% win rates.

Figure 127: Fragrance ASPAC market – approx E 1.7bn



Source: Symrise, Deutsche Bank

Figure 128: Flavors ASPAC market – approx Euro 2bn



Source: Symrise, Deutsche Bank

Symrise is exposed to a mix of global and local customers. The F&F market consists of local and global customers. In S&C, global customers account for the largest portion of the market whilst they are small in F&N as most local players focus on Flavours. The company stressed that it has to be very careful with the customers it is doing business with in order to avoid being linked with food scandals (in 2011 the DEHP beverage packaging scandal cost Symrise E6-8m high margin sales). Many are coming up with "in-house" creation team or R&D people who can mimic flavors and challenge flavor suppliers.

Pressure increasing on suppliers. Symrise raw material sourcing is done globally due to economies of scale and quality requirements hence the company does not benefit from low cost local sourcing. In addition, increasing costs of tests and controls (chemicals and natural precursors including air and water pollution) have been minimising former cost advantages of local dubious suppliers. Food scandals and adulteration cases force upstream suppliers to ensure proper tracing.

Margins above group average. Local management stressed that low income does not mean low pricing. Even for small or mid-sized customers in China, relationship, efficacy and reliability are key capabilities which come before the price in the customer's decision process. Symrise also offers an online F&F library where small customers can pick and chose off the shelf products which increases efficiency. In addition, the company manages to keep costs relatively low as employees are mainly locals (95%) – management estimates that production costs are 1/4 to 1/3 lower than more mature markets or Japan. The relatively small size of the business enables local management to exercise a strong control on all P&L aspects and be very reactive when necessary such as in 2011 when raw material costs increased sharply. Local management is satisfied that it has been able to pass on the raw material cost pressure due to its strong relationships and very frequent discussions with customers. The 4 levers the company is using to offset the raw material cost pressure include reformulation, price increase, procurement improvement and efficiency/scale.

China Food & Flavors market. The Food industry in China has been growing at an average rate of 20% with strong market presence from local and global manufacturers and brands. The competition between food & beverage manufacturers and brands particularly in the second and third tier cities has increased. Past scandals have also led to stronger regulations particularly on the agricultural producers, food manufacturers, additives, ingredient suppliers and food. For this reason Symrise only deals with the global customers or the locals which are large enough and have strong expansion plans. The Flavours market in China is estimated at E500m. Symrise combines local Chinese knowledge of customers and markets, local operational excellence with its global research background and strengths in upstream raw-material processing, while leveraging consumer insights and research. Symrise is positioned well to develop faster than competitors due to this unique ability and higher than industry-win-rate of major brands of food & beverage products.

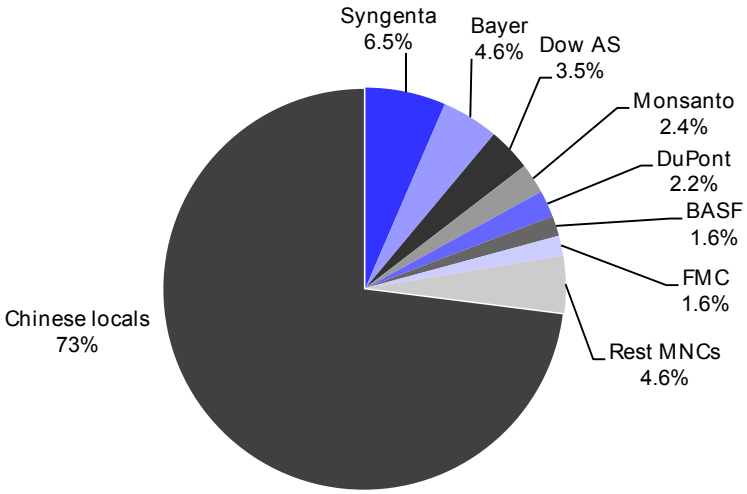
Chinese operations running at very high capacity so need to invest. The company is planning to expand its production site in Shanghai. It is planning to double capacity in China in order to improve critical mass however will be very selective. It will produce in China only F&F for the Chinese market—not building critical operations in China if for the export market given the risks of investing in China owing to volatility in laws (operating environment). Construction has not started yet – will probably start in 2013 for commercial start up in 2014.

Syngenta (Buy, Target: CHF 330): A leading position in a very fragmented agrochemical market

We met with Pierre Cohadon, China territory head at Syngenta. We have discussed some of the background information that Syngenta provided on the Chinese agriculture market in pages 32 to 37 but below have also highlighted the comments of specific relevance to Syngenta.

Leading position in a highly fragmented market. Syngenta currently derives approximately $250m revenues in the region which is 2% of group sales although the long-term potential within the region is material. The company's overall sales in China have grown at 20% CAGR in the past 5 years whilst the CP market has grown at 8.5%. With a 6.5% market share in the crop protection market in China, Syngenta is the leading player, followed by Bayer, Dow, Monsanto, DuPont and BASF. R&D companies account for c30% of the market with Chinese locals accounting for the remaining. In Seeds, it is the #2 player after DuPont but before Monsanto, and is mostly present in Corn and Vegetables seeds.

Figure 129: Syngenta is the largest player in crop protection with 6.5% market share

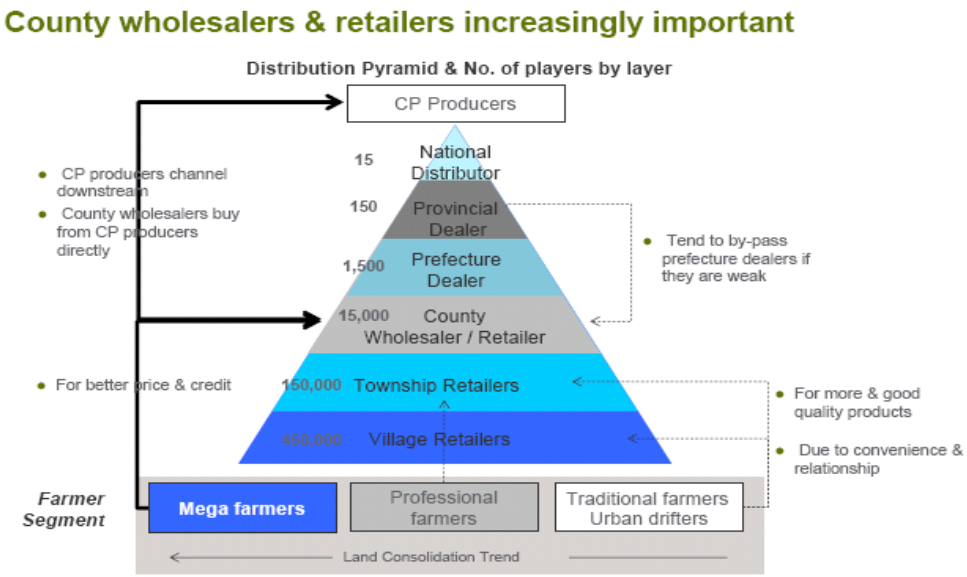


Source: Syngenta, DBe

Generics share should go down in the long run. The agrochemical market is currently focused more on generic products (c70% share), which is symptomatic of the lower levels of farm incomes. However, with increasing regulations, costs and farms concentration, management sees the generics market share to go down to c60% within 10 years. In addition, the major international agrochemical companies are steadily increasing farmer and distributor education which should increase the penetration of tier-one more profitable agrochemicals in the market. This should be also helped with the consolidation of distributors – there currently exists nearly half a million distributors in China which will also be phasing government regulation and consolidation. Syngenta is active in communication through several different methods:

- Working closely with government organisation and universities
- Develop awareness for products through local agronomist training
- Target key players in the distribution model to increasingly influence product usage

Figure 130: The distribution model in China



Source: Syngenta

CP IP more enforceable, R&D investment in the region is increasing. Management believes that intellectual property rights are easier to defend and while the incidence of copy usage of their active ingredients may not be decreasing in the market their ability to enforce their rights is materially enhanced over the past few years providing Syngenta (and the other major players) with a much stronger platform to leverage. Syngenta is investing in the region and has already developed several R&D sites and seems to be one step ahead of many of its peers through the creation of some early benchmark R&D relationships with leading government organisations and universities. By crop the biggest opportunities appear to be within rice and corn followed by wheat and then fruit & vegetables. The focus at the moment remains within the agrochemical market and while seeds ultimately will be a large market it remains a very complicated market dominated by government's protectionism.

Seeds more complicated and difficult to penetrate but big potential. The Seeds market is highly fragmented and also highly complicated driven by the government's desire to encourage ''local champions''. FDI restrictions force foreign companies to invest in Seeds only through JVs with a minority ownership (49-51). R&D has to be integrated at the JV level implying significant IP risk. However, the market potential is very significant (Syngenta sees it doubling in 15 years with 8-10% CAGR) and foreign companies have to adapt to this environment. In order to penetrate the market Syngenta set up in 2007 a 49-51 JV with Sanbei, a leading Chinese corn seed company. Corn is the largest and a key strategic crop in China due to growing protein consumption however yields are very low (40% below the US). Sanbei has strong commercial operations and an attractive product portfolio, which added to Syngenta's expertise in corn breeding, is allowing the company to offer improved and broader product availability for Chinese growers. Sanbei, as other local seed companies, has been lacking innovation as R&D is done at the public institute level in China. However, with the government's policy now encouraging companies to have their own R&D, public institutes should progressively withdraw. On ag biotech, Syngenta believes Chinese authorities are very close to approving the GM option.

Integrated strategy successfully implemented. The integrated strategy went live in China in September 2011 and has been well accepted by the organisation. The company has already been able to generate wins from cross selling. It expects to launch more growth initiatives beyond traditional CP/Seeds in the next few years.

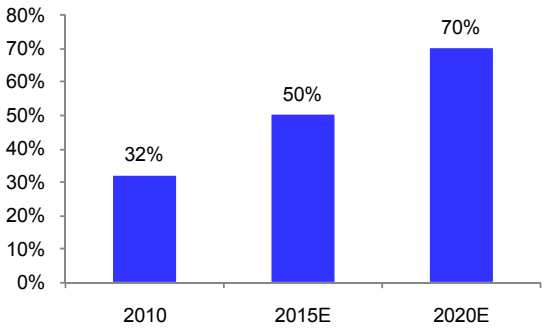
Figure 131: New integrated strategy adopted in China

Source: Syngenta

MA industries acquisition by ChemChina not seen as a threat. Management believes ones of the key reasons motivating the acquisition was improving the very high cost base of Makhteshim Agan compared to their Chinese and Indian peers. However, with costs in China starting to increase significantly, management expects the benefits to be minimal.

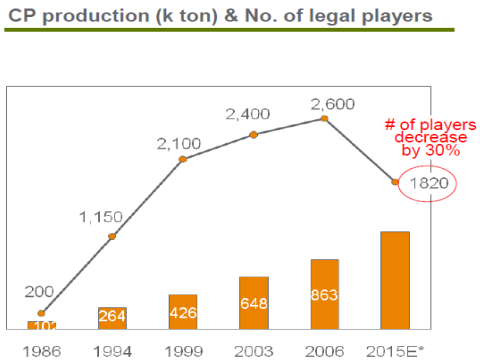
Consolidation to continue. The government is actively encouraging the consolidation of the domestic agrochemicals industry in a bid to improve efficiency and increase local R&D. We estimate that there are currently over 2000 agrochemical companies and the government is targeting a sharp reduction of this over the next 10 years. Consolidated R&D efforts are expected to result in greater local market solutions being developed. Currently most Chinese companies that have R&D centres are not producing research compounds with the majority being spent on process improvement/product copying. Most Chinese crop protection companies are investing less than 1% sales in R&D compared to multinationals at 8%.

Figure 132: Top 20 concentration rate target of CP companies



Source: Deutsche Bank, Syngenta, China CP 12- Five Year Plan, Government long-term guidance on pesticide industry

Figure 133: The number of local players is expected to fall



Source: Syngenta

Government policies improving regulation in the agrochemical market. Recent government policies are tightening CP regulations and pushing industry to upgrade and consolidate. R&D investment in the region is increasing. We note three key measures that have been undertaken in the past two years:

Pesticide Management Act (MOA, 2009)

- Cancel temporary registration
- Establish —exit mechanism‖
- Strengthen —Genuine‖ registration sample and report

Pesticide Industry Policy (MIIT, 2009)

- # of players decrease by 30% by 2015
- Market share of top 20 producers achieve 50% by 2015, and 70% in 2020
- 50% of AI producers must move to chemistry park by 2015, and 70% by 2020
- Top 10 producers must invest 3% of sales on R&D by 2015
- Emission of waste water, gas to be improved

Pesticide Production Access Requirement (MIIT, 2009)

- RMB 30m registration capital for AI producer
- RMB 10m registration capital for formulator

Chinese companies

(Tim Jones, Head of Deutsche Bank European Chemicals Research, David Begleiter, Head of Deutsche Bank North American Chemicals Research, Virginie Boucher-Ferte and Martin Dunwoodie)

China BlueChemical (N/R) – Leadership in fertilizer production and significant cost advantage

We spoke with Mr Quan, CFO of China BlueChemical. The company manufactures and sells mineral fertilizers and chemical products like urea, phosphate (DAP, MAP) and methanol. It is headquartered in Beijing with production facilities in Hainan Province, the Inner Mongolia Autonomous Region and Hubei Province. The company has annual production capacity of 1.84mt of urea, 0.5mt of phosphate and 1.6mt of methanol. Expansion plans are currently under way. It is the largest listed producer of urea and methanol in China where it generates 83% of its sales. Key shareholders of the company include CNOOC (59.41%) and public shareholders (38.42%).

Key points of our meeting follow (please refer to pg 32-37 of this report for more details on China's agriculture outlook):

1) Nitrogen

- Nitrogen demand in China is expected to grow at 2% CAGR in the next 5 years, down from 3% previously due some over-application on the Eastern part of the country whilst the Western part still under-applies due to a lack of purchasing power. This is also due to the fact that land growth is continuing and that there is no soil rotation in China so nutrient gets used up in the soil.
- In 2011 and Q1 2012, the domestic urea price has averaged RMB 2200/t which is a historical high level, due to good demand and higher costs. Mgmt notes that this price has been also maintained in the weak season.
- Urea production costs currently stand at RMB 1900-2000 pt (all-inclusive) for traditional small-scale anthracite coal producers (MC). These producers make up c25% of China's urea production capacity (15-20mt out of total 67mt). These are the marginal cost producers, they stopped producing in October 2011 when the urea price went down to RMB 1900pt.
- Urea production costs from natrual gas depend on the location. The highest price is RMB 2/cubic meter which implies all-inclusive production cost of RMB 1600-1700pt. We note most natural gas-based producers are suffering from a shortage of natural gas and therefore do not operating at full capacity (75-80% utilisation rate).
- China BlueChem however has sufficient gas supply and is operating at near full capacity - in the last three winters gas production has been insufficient in Mongolia here China BlueChem has a plant however with Petrochina building a second pipeline management believes gas supply will no longer be an issue for the company in the region.
- China BlueChem has a signifciant cost advantage which explains its above-average profitability levels. Its urea production costs currently stand at RMB1200/t based on a gas cost of RMB 1.1/cubic meter (long-term contract with majority shareholder CNOOC and Petrochina). China BlueChem also owns its coal resources in Shanxi.
- CFO expects energy costs to continue to increase in partiular natural gas prices (first part of the reform).
- The industry has not seen any impact from longer export tariffs in 2011 as the domestic price was higher than the export price. In 2012 the export window has been maintained in line with 2011 however the base price has increased slightly, from RMB 2100 in 2011 (including 7% export tariff) to RMB 2100 (excluding tariff) in 2012. This news should be positive for the industry in 2012.

- In the past few years, some of the marginal producers which had to stop producing due to poor economics have gone bankrupt and won't resume production. The government is encouraging consolidation by market way and we should continue to see coal-based players closing down. China BlueChem is not interested in acquiring nitrogen assets unless natural gas supply is secured.
- New capacity is expected to grow at 3mt p.a. however this should be offset by demand growth and small scale consolidation, ensuring the currently high level of pricing is maintained. Nearly all of this new capacity is coal based. For the new coal-based technology conversion averages 1.35t coal for 1t of urea (also depends on the price of coal and technology).

2) Phosphate

- Phosphate capacity has significantly increased in China and similarly to urea there is a surplus of capacity. The government now wants to encourage upstream companies to go downstream with integrated facilities. In the coming five years, it will therefore encourage the building of new phosphate projects with production centralised in few provinces.
- Phosphate fertilizer demand growth has outpaced urea in the past 4 years. Total capacity currently stands at 20-25mt with demand at 15mt.
- The key issue for the industry has been the dramatic increase in phopshate rock prices (from RMB 360/t at the end of 2010 to RMB 550/t at the end of 2011) but this has not been an issue for China BlueChem which owns rock deposits in Hubei. 1.8-2.2t of phosphate rock is required to make 1t of fertiliser (depending on grade). China lacks high grade phophate rock resources. Standard grade represent 30%.
- China BlueChem builds phosphate fertilizer capacity next to its own rock capacity giving itself significant cost advantage.
- Sulphur prices increased significantly in 2011 but dropped RMB 200/t so far this year as Sinopec and Petrochina put high sulphur natural gas into production and utilisation rate of phosphate facilities decreases (reduces demand for sulphur).
- Management sees a positive outlook for phosphate prices due to high sulphur and phosphate rock prices.

3) Potash

- China Bluechem is currently not involved in potash. Acquiring potash assets has been one of the key targets since the listing 5 years ago however given the strong increase in potash prices asset prices have reached very high levels. China BlueChem is open to international assets (Canada, Belarus etc). CNOOC (majority owner) will support the acquisition and most likely buy the asset and integrate it into China BlueChem. We note that CNOOC imports 400kt of potash every year but it is not possible for China BlueChem to acquire the license from CNOOC (WTO agreements).
- Key reason for acquiring potash assets is the view that a more balanced fertilization and the use of compound fertilizers (NPK) will become increasingly important in order to improve yields. China BlueChemical aims to become the dominant fertilizer producer in China.

4) Crop season update

- Only 1 province has been suffering from drought which is overall supportive.

Hubei Sanonda. Agrochemicals producer (owned by ChemChina)

We met with Mr Zhang Ziyun and Mr Larry Guo of Hubei Sanonda. The company is based in the Hubei province and is China's oldest agrochemical producer, founded in 1958. Sanonda joined the ChemChina group as a wholly-owned subsidiary company in 2005. It is the largest locally owned agrochemical producer.

The company manufactures over 100 types of insecticides, herbicides and fungicides. Glyphosate (a broad-spectrum systemic herbicide) it the company's biggest product but this has been de-emphasised in the past few years as the company has been shutting now less economically viable production to increase the focus on the more specialty products – the focus on R&D is now being increased. Its main production capacity contains 90kt p.a. of agrochemicals and 200kt pa of organic chemicals and intermediates. Hubei's agrochemicals capability is based on 3 main lines (organophosphate, pyridine and phosgene).

Key points of our meeting follow (please refer to pg 32-37 of this report for more details on China's agriculture outlook):

- The company reported $330m revenues in 2011 of which c50% ($160m) generated through exports, predominantly to Asia with some product into the Latin American and North American markets. It does not export in Europe due to the complicated registration process. The company exports organic insecticides mainly. Glyphosate makes up a very small portion of the export business. 2008 was the last time it exported to the US and it is not expecting to export glyphosate to the US in the next few years.
- Hubei has been reducing its exposure to glyphosate and other "older" agrochemical products and is now increasing its focus on more R&D focused products. This shift in product exposure has been helped by the governments focus on improving production within China and banning some older more toxic products.
- The biggest issue facing the Chinese glyphosate industry is pollution (primarily waste water – a waste water treatment facility can cost up to 25% of the cost of a plant). Chinese nameplate glyphosate capacity is around 1mt but around 200-250kt of this has been permanently closed in the past two years. Current annual market production is approximately 400kt. In the last few months glyphosate prices have been recovering and some plants have therefore restored production which is likely to cap the potential for glyphosate price appreciation.
- Production costs have been increasing in China. Raw material costs are going up (e.g. yellow phosphorus increasing from 14k to 18k rmb/t). Other key raw materials such as methanol, chlorine and sulphur have been increasing. Labour cost is also increasing. Safety issues and environmental regulations are also contributing to the cost increase.
- Higher production costs are causing agrochemical prices to increase. The level of price increases vary by products but some will have to increase by 15% (eg glyphosate intermediates). Management believes that farmers can absorb these agrochemical (and fertilizer) price increases due to increasing crop prices and government support.
- Management expects volumes to increase by c10% in 2012 driven by new products.

- From a peak of 300 glyphosate producers in China, today there are only 60-70 producers (many of which are state owned). The number of producers is expected to decline further to 40-50 by 2012-13 as the government puts in place new, more stringent environmental regulations for pollution control and encourages the consolidation of the local agrochemical industry.
- The government is actively encouraging local producers to combine and gain scale through attractive tax breaks. Hubei see the Chinese market as becoming more focused on R&D – they intend to increase their focus on own product development.
- ChemChina acquired MA Industries in October 2011. Hubei already had links with some subsidiaries of MA before the acquisition and sees now more opportunities. The company notably expects MA to give them greater access to overseas markets through better registration and distribution. However, nothing has been formally decided yet on the potential integration and market penetration strategy. In addition, Europe remains the most difficult market to penetrate due to the very strict registration system and Hubei is not 100% sure it will change with MA. We therefore continue to believe that even if ChemChina and Hubei's penetration potential into Europe and other key overseas markets improves, this is likely to be for the long-term only.
- ChemChina is planning to research, develop and launch new products but only based on one of the three existing chemistry platforms it is mastering. It is therefore not planning to develop a generic version of azoxystrobin following Syngenta's patent expiry in 2010. The time to launch commercial production from initial launch is estimated at about 3 years.

Sinopec (Buy, Target: HK$10.94). Building relationships with Western players

We talked with Mr Baomin Zheng (Head of Investor Relations) of Sinopec. The company has a 25% free float with 75% government ownership.

Sinopec Corp. is the largest producer and distributor of petrochemicals in China with petrochemical production sites located throughout China's eastern, central and southern areas. It produces and distributes a great variety of petrochemical products, including intermediates, synthetic resin, synthetic fibre monomers and polymers, synthetic fibre, synthetic rubber and chemical fertilizer. The company integrates its petrochemical production with its refining business. Chemical feedstock (e.g. naphtha) is mainly supplied by the company's refineries. Sinopec distributes most products in the domestic market.

Sinopec Corp. has 11 ethylene plants (including 3 joint venture companies) and has 30% market share in China with annual planned ethylene production at 9.9mtpa (up 9.9% in 2011). Sinopec Corp. has 29 synthetic resin plants with a total capacity of 14mtpa. The capacity of polyolefin (PE+PP) facilities for 5 major synthetic resin products has reached 10mtpa. Sinopec Corp. has synthetic rubber plants, synthetic fibre monomers and polymers plants alongside urea plants.

In the 12th five year plan Sinopec is planning to increase ethylene production capacities to 13mt by 2015 with major cracker investments in Wuhan (0.8mt) and Guangdong (1.2mt) starting up in 2013 and 2015 respectively.

Sinopec has chemical JVs with numerous Western companies including BASF, BP, Exxon and SK and now also with KPC. In each case Sinopec has partnered with another company to make sure they can maximise the value of the feedstock they are providing to the JV. Management sees strong potential for further JVs and while it already has strong relationships with several Western companies it is willing to do JVs with new parties if they can offer technology. Management also noted that they are increasingly willing to do JVs with more local SMEs.

Management noted that the environmental compliance within China is very strong and this should not be underestimated for future chemical investments. For all companies – western and Chinese – there are increasingly strict regulations that have to be adhered to and this remains a key barrier to entry for many smaller private local chemical companies. We believe that further closures of small unprofitable companies/plants are inevitable near term.

Sinopec notes the strength of the BASF JV in Nanjing (called YPC) and also notes that BASF has been a good partner for Sinopec in developing "fine chemicals" chains from the basic off take products from the refinery. They see further potential for this JV but, at the moment, have little interest in going significantly downstream from the current product suite that the JV offers. They noted that this JV is the most profitable of all of their Western JVs and the reason Sinopec went into the JV with BASF was because of the unique Verbund concept that BASF offered.

Sinopec would be willing to expand its chemicals activities overseas depending on the exact location and type of chemical product although this strategy is not the priority at the moment. An expansion is under discussion in Trinidad as a JV with SABIC.

By product the company notes that the tightness in the C4 and C6 chemical chains is likely to continue within China given the limited availability of this product from either refineries or form naphtha based crackers. The company is looking carefully at the long-term usage of chemicals (particularly within these chains) in China to decide where to deploy its future capacities in these key chains. At the moment management expects synthetic rubber to be an attractive market in the longer term – current operating rates are at 100% – given the region's strong demand for rubber for tyres. Sinopec is looking at expanding further into the rubber market in the next 5 years and is planning two JVs with Sibur in butyl due to come on-stream in the next few years – we discuss this in more detail on page 76 in the Lanxess section.

Coal to Chemicals is an area of potential for the group as they see large future investments in this area. Sinopec is already active in this area. Management notes that "water" remains the key issue for the viability of some coal to chemical investments which may cause delays in the completion of some planned investment by industry peers. Sinopec sees little logic in involving Western companies in coal investments as Sinopec has its own proprietary technologies in this area (in particular it has its own catalyst technology).

Operating rates in China typically run at 100% to reduce import requirement for chemicals but in 2011 they were the first Chinese company to actively lower operating rates at their crackers (in April 2011) to around 90-95%. At the moment they see average Asian cracker rates at 60-70% but their crackers are running harder with Nanjing currently at 90%. Q4 was weak and 2011 overall was impacted by the Chinese government's desire to manage monetary policy. So far in 2012 Sinopec has seen some rebound on pricing but that the pick-up in demand has been slow year-to-date. Margins in much of the upstream business remain quite weak due to high feedstock costs (oil).

Shale gas in China could offer long-term potential but Sinopec sees it as early days on the potential for this fuel. In addition, with the government discouraging natural gas being used for chemicals it is unlikely that shale gas will be used significantly for chemical production. In addition, while testing is currently underway it is felt that the gas may be "dry" which is of much less use in the production of chemicals.

Yantai Wanhua (N/R, 600309:CH). Bold plans for MDI polyurethane expansion

We spoke with Ms Minghua Xiao, Head of Investor Relations for Yantai Wanhua. Yantai Wanhua Polyurethanes was established in 1998 and listed to Shanghai Stock Exchange in 2001. Yantai Wanua specializes in the research, production and sales of MDI and related products such as modified MDI, polyether polyurethane rigid foam, aromatic polyamine, and thermoplastic polyurethane products (TPUs). In 2010, Yantai Wanhua achieved sales of RMB 9.34bn. Yantai Wanhua has total MDI capacity of 800kt/year. It has subsidiaries in Japan, the United States, Europe, Hong Kong, Russia, Dubai and India, serving customers globally.

Key points of our meeting are as follows:

- Yantai produces 1.1mtpa of MDI which equates to 18% of world capacity. It is the No. 3 producer behind Bayer and BASF both with 21% global share.
- The company has bold plans to increase its market share. Yantai currently has two lines at Ningbo of 600kt and 300kt and then a further 200kt production at Yantai, Shandong. Yantai is planning to replace the existing 200kt plant with a 600kt capacity and to then increase the Ningbo site capacity to 1.2mt. It expects to have both expansions complete by the end of 2014. By then, total capacity will be 1.8mt which is a net increase of 700kt which is equivalent to 11% of world capacity. As this is mostly an expansion of existing capacity sites the investment cost is expected to be lower than Greenfield.
- Interestingly the chemical consultants, CMAI do not have any expansion by Yantai in their forecasts (to 2016) which we see as indicative of some inaccuracy in consultant data rather than a lack of ability of Yantai to expand.
- Current production at Ningbo is only 800kt due to some raw material constraints around the production site. They are currently not getting enough raw material access (Chlorine).
- MDI polyurethane is a product that the Chinese government classifies as “encourage” and Yantai see some support for the financing of their expansion plans. Yantai has a 20 year funding in place from the state for RMB 20bn at below benchmark rates (fixed) and sees this competitive financing as allowing the company to make strong profits even if there is some competitive oversupply risks in MDI medium term.
- Yantai does not believe that any other producer of MDI in China (BASF, Bayer, Huntsman) has a material advantage on the cost of production. Management doesn’t think it can compare technologies but believes they have a cost advantage. Not much difference in raw material sourcing (benzene) but management believes the advantage is in construction (using local equipment) and power (they have preferential supplies).
- Demand has been good in Q1 12 relative to the weaker Q4 11. Management expects growth momentum to steadily recover through 2012 but that the rate will be lower than in previous years.
- Yantai is also acquiring some capacities in Eastern Europe and plans to increase these to 100kt of MDI and to 90kt of TDI through technological improvements. Management notes they have no current strong desire to move into TDI in China.
- Pricing has been increasing year-to-date with MDI now at RMB 21,100/t and up 10% since the start of the year. Management believes this has offset the increase in raw materials.
- Not all MDI produced is used in China as approximately 25% exported to Europe, N America, SE Asia, India and Russia.

ChemChina (China National Chemical Corporation)

We spoke with Mr Chen, Vice President of Finance and in charge of overseas M&A and capital raising.

China National Chemical Corporation (ChemChina) is a large State-owned enterprise under the administration of SASAC and established in May 2004 with the approval of the State Council. ChemChina is in the list of Fortune 500 and is China's largest chemical company and ranks 14th in the world's chemical companies (by sales). Since its establishment in 2004, ChemChina has adhered to its development orientation – "traditional chemicals, advanced materials". Instead of competing with upstream players for resources and downstream players for markets, ChemChina will further optimize its industrial structure through expanding its leading businesses both upstream and downstream in light of a "Harmony brings wealth" principle. It will form a competitive edge by R&D and innovation and use a market-oriented competitive method to develop itself. It sees itself as a national innovative enterprise.

In 2010, total assets reached RMB 179.6 billion and sales reached RMB 140.2 billion. ChemChina has opened production and R&D bases in 140 countries and regions around the world. It controls ten A-share listed companies and has a total of 118 enterprises, six overseas divisions and 24 R&D institutes.

Key points from our discussions are as follows:

- ChemChina's business is made up of 6 sectors: new chemical materials; basic chemical materials; oil processing; agrochemicals; rubber products; chemical equipment.
- ChemChina is implementing the 12th Five-year Plan and accelerating industrial restructuring. Its strategic focus is based on business layout of "3+1", namely: materials science, environmental science and life science plus the focus on basic chemical.
- Two acquisitions were closed in 2011; Elkem for silicon metal ($2.2bn) which satisfied the new materials criteria and then also acquired a majority stake in MA Industries (consistent with the life science criteria).
- ChemChina is the 14th largest chemical company in the world by revenues and they are targeting to become Top 3 globally by 2014. This is expected to be achieved predominantly through further acquisitions. Management notes that while Europe has started to tighten regulations surrounding foreign investment in companies, it still sees good possibilities to acquire businesses from the region.
- Management is looking for further acquisitions with the criteria being technology, branding, management quality and distribution channels. They are less focused on buying processing/manufacturing capacity. The company is actively looking at assets globally and continues to look for overseas opportunities in both Europe and North America. They have no formal focus on deal size – management is driven by the strategic logic to acquire assets. The group's strategy is to make money for its shareholders (Chinese government) and they focus on RoE and EVA.
- Management expects to make more moves in these three areas and flagged catalysts and battery materials as interesting areas.
- While the focus is on growing the business they are also looking to divest assets (via trade sale or IPO) where they see value-creating opportunities.

- ChemChina acquired MA Industries due to the strong defensive growth in agrochemicals in China and globally. They have made no announcement of their strategy to manage MA Industries alongside other ag related holdings (such as Hubei Sanonda) but we suspect they are long-term synergies between the two businesses, particularly in helping to consolidate the Chinese market and provide better innovation to farmers.

US companies

(David Begleiter, Head of Deutsche Bank North American Chemicals Research)

Dow Chemical (Hold, Target $35): Focus on Performance businesses but coal-to-olefins project continues to progress

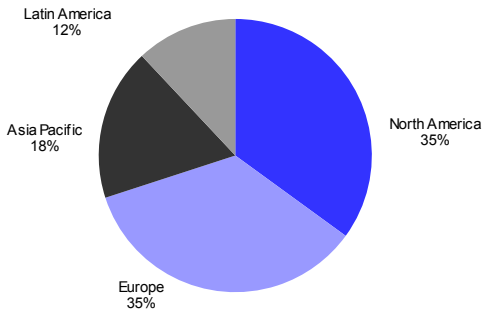
We met with Peter Sykes, President, Dow Greater China and Vincent Lai, Area Finance Director – Asia Pacific at the Shanghai Dow Center, an impressive state-of-the-art research and development center and Dow's Asia Pacific headquarters. Prior to assuming his role as head of Dow's China business in 2010, Mr. Sykes served as President, Dow Automotive Systems and President, Dow Japan and Korea. In total, Mr. Sykes has spent over 20 years working for Dow in Asia.

Prior to its acquisition of Rohm & Haas in 2009, Dow had developed a unique, import-based strategy for China focused on its Performance businesses. This strategy has been further enhanced by the acquisition of Rohm & Haas which added a sizeable presence in locally produced electronic materials. While Dow continues to progress toward building a large, basic chemical manufacturing site in central China, currently 75% of what Dow sells in China is imported with 97% of sales from performance and market driven businesses.

Dow's business in Greater China dates back to the 1930s, when it supplied China with products through trading agents. Dow opened its first sales office in Asia-Pacific in Hong Kong in 1957 and an office in Taiwan in 1968. In 1979, Dow established its first China office in Guangzhou. Today, Dow has 7 business centers across Greater China in Beijing, Shanghai, Guangzhou, Taipei, Hong Kong, Tianjin and Chengdu plus 18 key manufacturing sites and 3,600 employees. In 2004, Shanghai became Dow Greater China's headquarters. And in 2009, the Shanghai Dow Center opened.

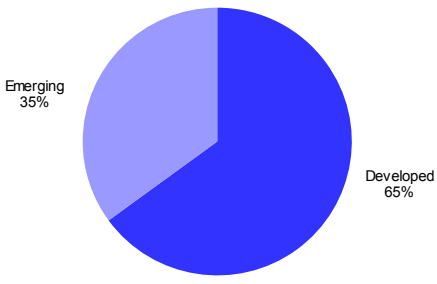
In 2011, Dow's Greater China sales totaled $4.45 billion, up 20% YoY, and 7% of total company sales. Highlighting the capital light nature of its import-based strategy for China, Greater China assets total $1.2B, or 2% of total company assets. Greater China (China, Hong Kong, Taiwan) is Dow's second largest market behind the U.S. (and ahead of Germany) and a key component of the company's global business and growth strategy. Greater China accounted for 43% of Dow's $10.6B in 2011 Asia-Pacific sales, or 18% of total company sales. Since 2001, Dow's Asia Pacific sales have grown at a compound rate of 13%. Dow is targeting $15B of sales in Asia by 2015 (50% from China).

Figure 134: Dow Chemical sales by geography, 2011



Source: Dow Chemical

Figure 135: Dow Chemical sales by market, 2010



Source: Dow Chemical

Dow's China strategy is focused on its Performance businesses

Dow's strategy in China differs from its peers. Starting in the early 1990s, Dow actively explored the viability of building a world-scale naphtha-based ethylene cracker with

derivative units in China. However, despite years of negotiations, Dow was not able to find a project that would generate adequate returns. As a result, Dow has not made the large, basic and intermediate chemical investments that companies such as BASF, Bayer, BP, Celanese, Shell and ExxonMobil have made in China.

Instead, Dow's China strategy has focused on its Performance businesses (90% of its Greater China sales) and selling higher value, environmentally driven products. As a result, Dow's plants in China tend to be smaller, more flexible and closer to its customers than its peers, enabling Dow to better meet the needs of the market. Another element of Dow's China strategy is to focus on Chinese companies. Of Dow's top 10 customers in China all are local Chinese companies with its largest customer being Haier, the largest white good (home appliances) supplier in the world.

In executing its China strategy Dow has focused on building market share in China with imported product from its low cost, advantaged feedstock joint ventures in Kuwait, Thailand and, until 2009 when it was divested, Malaysia. Today, 75% of what Dow sells in China is imported. Going forward, Dow's Saudi Arabian-based Sadara project (joint venture with Saudi Aramaco, potentially the world's largest petrochemical complex), will become another important source of low cost, advantaged feedstocks for its China business. Dow forecasts that 45% of Sadara's projection will be exported to China.

What makes this import-based strategy work for Dow are: 1) a high-quality marketing and sales force that management believes is the equal to any Western company in China, 2) low (~6%) import duties on chemical and plastic products, making China essentially an open market and 3) a reliable and consistent supply chain. Management noted that local Chinese customers are very comfortable with imported products as long as logistics/supply chain functions reliably.

Despite the focus on imports, Dow has built a sizeable manufacturing, research and development base in region. Dow has 18 manufacturing sites in Greater China with 13 in China, 4 in Taiwan and 1 in Hong Kong. In 2009 Dow opened the Shanghai Dow Center at the Zhangjiang Hi-Tech Park in Shanghai. At the heart of the center is a state-of-the-art research and development facility which houses more than 500 scientists and engineers working in over 80 integrated labs. This new facility, which is home to more than a dozen Global Application Development Centers and Research Centers of Excellence, has substantially enhanced Dow's ability to work with customers at the local level in China and Asia (the key to building sustainable relationships), accelerate product development and differentiation for China and Asia and strengthened Dow's competitive position for long-term growth in China and Asia. The center is also Dow's Asia Pacific headquarters and includes a global information technology hub as well as other support and service facilities. Also in Shanghai, Dow Epoxy has built 2 world-scale production units (a liquid epoxy resins plant and an epichlorohydrin plant). And in 2010, Dow started commercial production from a propylene-oxide based glycol ether plant in Zhangjiang.

Dow's coal-to-olefins megaproject continues to advance

Despite its unsuccessful 20-year effort to build an integrated-ethylene complex in China, Dow has not stopped trying. And over time, its thinking has evolved. Dow now believes a new, world-scale ethylene cracker in China to generate attractive returns it must either: 1) be coal-based, 2) be oil-based with full integration into a refinery as this will maximize its feedstock advantage and flexibility or 3) have derivative units that produce high value and advanced technology products. Dow is currently working on a megaproject which fits these criteria.

In 2004, Dow and Shenhua Group, China's largest coal company, began to study the feasibility of a world-scale coal-to-chemicals project in Shaanxi province in central China. The projected cost of this project is over $10B (including $1B to manage the water footprint). Eight years later, with a number of technology, environmental and operational risks resolved and/or better understood (including critical power and water issues), the project is progressing with the feasibility study and project approval process underway. A Project Application Report (PAR) was submitted to the Chinese government in October 2010. Following a series of questions from the Chinese government, the PAR was resubmitted (with answers to these questions) in March 2012. It is unclear how long the PAR approval process will take going forward.

Dow believes the Chinese government will ultimately approve this project as it 1) utilizes and adds value to the country's vast coal reserves while reducing China's reliance on imported products and 2) aligns with the government's "Go West" strategy by making a significant contribution to an underdeveloped province. If completed, the Dow-Shenhua coal-to-chemicals project it would be the largest foreign invested project in China.

While Dow and Shenhua have yet to choose which one of two coal-to-olefins technologies to use (a UOP technology or a domestic Chinese technology), as both technologies are proven we do not believe this is a material risk. With an enhanced focus by the Chinese government on the environment and greenhouse gas emissions, there is the potential for the project to evolve into a gas feed petrochemical project utilizing shale gas from China's western provinces.

In addition to a world-scale ethylene cracker (with sizeable propylene production), this project would make a number of advantaged, downstream performance products such as polyurethanes (taking advantage of salt reserves underneath Shenua's coal reserves), epoxies and acrylics. The project would also include a chlor-alkali facility to supply chlorine (from salt) to the polyurethanes facility and a number of other downstream plants, fully integrated from feedstock. With the JV (likely) owning a coal mine in close proximity to the project, the project's coal costs would be close to extraction costs, which we estimate at ~$10/ton (and well below market prices). At this price the project would be viable at an oil price of ~$50/bbl. The project would be able to ship its products on Shenhua's private railroad to the east coast for transport to other parts of China. Using extraction costs, Dow estimates this project would be able to deliver product to the coast at a lower landed cost than Middle East produced product. However, given the location of the project in the interior of the country the long-term goal is for the plant to supply central China.

There are presently 3 coal-to-olefins projects in China, 2 by Shenhua and 1 by Datang Power. All 3 of these projects produce around 500,000 mt of basic chemical product (propylene, ethylene, benzene). The Dow project would be at least 3 times as large, or 1.5 million mt of olefins output. Given the size, scope and advanced technology required for this project, coupled with Dow's large capital projects on the US Gulf Coast and Saudi Arabia, start-up is unlikely before 2018-20.

As the project will be a joint venture with Shenhua, it will be off-balance sheet for Dow. Assuming a 70/30 debt equity split for the $10 billion project, Dow's cash contributions (capital cost) would be $1.5 billion. The project would also be expandable (there are enough coal reserves to more than double the size of the project). Dow will handle most if not all sales and marketing of products produced from the facility. The project is expected to have very strong cash generation with an estimated 60% cash conversion of revenues. Given this high level of cash conversion, there would be a strong incentive to run this project at maximum rates.

Current trends: 2012 is off to a mixed start

With respect to recent trends and the current business environment in China, Dow noted the following:

- 2012 is off to a bit of a mixed start with demand characterized as "spotty - not great, not terrible".
- Pricing in commodity products was characterized as "quite tough". However, given Dow's performance / specialty oriented mix in China, the impact of pressured commodity pricing on Dow's Greater China operations is manageable
- By end market, food packaging is demand is "fine" with other key sectors, including electronics and coatings, a "bit slow".
- Despite the slow start to the year, Dow expects Q1 2012 sales to be up versus Q1 2011.

Praxair (Buy, Target: $120). Focusing on returns and profits

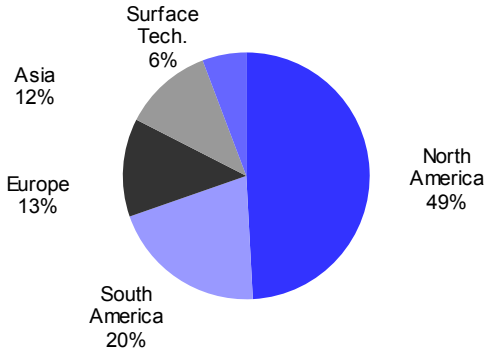
We met with Anne Roby, President, Praxair Asia and President, Praxair Electronics and Min-Da Ho, President, Praxair China and Global Vice President, Gasification at Praxair's Asia headquarters in Shanghai. Ms. Roby has been with Praxair for 21 years while Mr. Ho has been with Praxair for 28 years. Praxair has built a successful Asian business centered on the fast growing economies of China and India (where Praxair is #1 with a ~35% market share). As with the rest of its businesses and geographies, Praxair's primary focus in Asia is on returns and profitability. However, Asia is also Praxair's primary growth driver and one of the keys in Praxair delivering low double-digit EPS growth in 2011 and 2012.

During the 5-year period 2004-08 Asia was Praxair's fastest growing region with sales and earnings increasing at a compound rate of 18%. However, in 2009 sales and earnings fell modestly due to the global economic downturn and FX headwinds. In 2009, Praxair's Asia sales fell 1% to $885 million (10% of total sales), operating profit declined 7% to $138 million (7% of total operating profit) and operating margins compressed 110 basis points to 15.6% (vs. total company operating margins of 21.0%). In 2010, Asia rebounded with sales up 28% to $1.1B (11% of total sales) and operating profit up 20% to $166MM (8% of total operating profit) while operating margins compressed 90 bps to 14.7% due to mix (higher proportion of lower margin electronic sales). In 2011, Asia sales increased 16% to $1.3B (12% of total sales), operating profit rose 23% to $205MM (8% of total operating profit) and operating margins expanded 90 bps to 15.6% due to new plant start-ups. Praxair expects strong, 10%-plus growth in Asia over the next 3-5 years driven by a strong project backlog.

In Asia, Praxair focuses on four countries: China, India, Thailand and Korea. These are four of the 11 core geographies Praxair focuses on as it is these locations where it has its strongest market positions and thus its lowest distribution and production costs. Praxair also has smaller operations in Japan, Malaysia, Taiwan and the Middle East. By end market, Praxair is heavily weighted in Asia towards metals, chemicals, and manufacturing along with a large CO2 business in Thailand (for freezing shrimp).

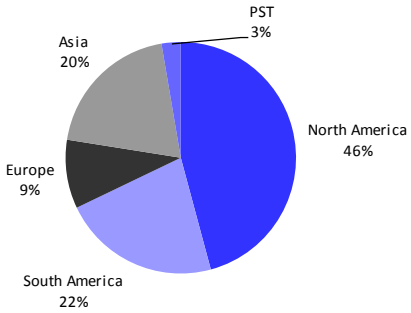
Praxair is investing heavily in Asia. In 2011, capital spending totaled $475 million, up 57% YoY, and 26% of the company's $1.8 billion in total capital spending. Of the 40 projects in Praxair's large project backlog, roughly 40% are in Asia, the majority of which are in China. However, by dollar amount, Asia represents roughly half, or more than $1.3 billion, of the $2.7 billion of capital investment represented by the 40 project backlog. Growth capital spending accounts for approximately 75% of Praxair's estimated 2011 capital spending of $2.3 billion.

Figure 136: Praxair sales by geography, 2011



Source: Praxair

Figure 137: Praxair capital expenditures by region, 2010



Source: Praxair

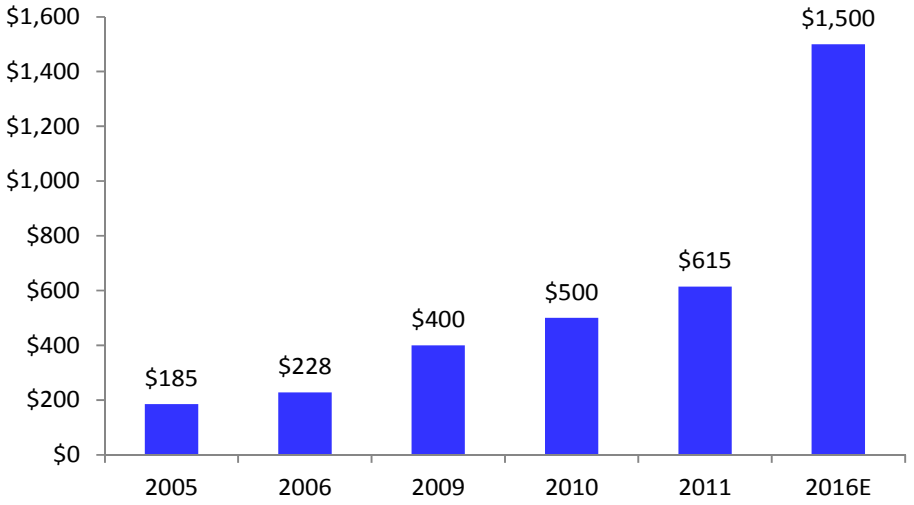
Praxair's China operations have returns on capital of around 10%

Praxair began operations in China in 1988 and established its first joint venture in 1992. Today, Praxair China, headquartered in Shanghai, is the leading industrial gases supplier in China, with 18 wholly owned companies, 10 joint ventures (with leading steel, chemical and electronics companies), over 1,000 employees, several strategic alliances, a technology center, more than 30 plants and total investment of more than $900 million. Praxair's areas of strength in China are in the Shanghai River delta, the Pearl River delta and Beijing. Praxair has 3 major enclaves in China: Caojing (50/50 JV with 2 ASUs and 2 HyCo units, $20B chemical and refining investment), Daya Bay ($4B petrochemical investment by Shell and CNOOC) and Chongqing (upcoming, 2 ASU's totaling >5,000 tpd, $5B petrochemical complex led by BASF MDI project). In addition to being Praxair's Asia headquarters, Shanghai is also the hub of engineering resources and an R&D center that supports Praxair's Asia business.

Praxair's combined China sales (including its 50% share in the SCIP [Shanghai Chemical Industry Park] JV with Air Liquide, or roughly $100 million) were $615 million in 2011, up 21% YoY, 5% of total company sales and 45% of Asian sales. By mode of distribution, roughly 55% is on-site, 40% is Merchant and less than 10% is Packaged Gases. Praxair estimates 80% of its customer production is consumed locally. Praxair expects its China sales to grow at a compound rate of 20% and reach $1.5 billion in 2016 with operating margins of around 20%. Driving this growth is a large and growing project backlog.

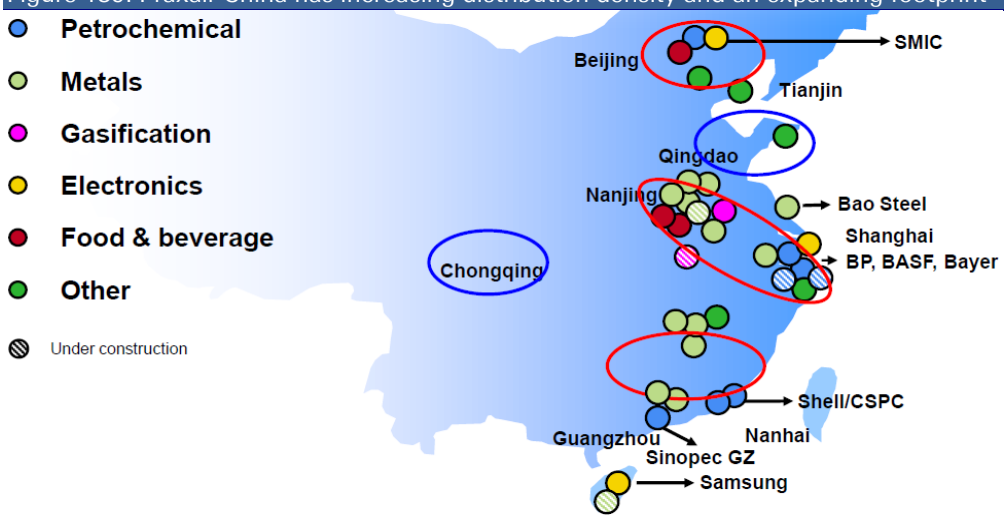
Praxair's return on capital in China was ~10% in 2011 versus a total company return on capital of 14.7%. Praxair expects to increase its China returns on capital by 100-200 bps (to 11-12%) by 2014 as the benefit of operating leverage from greater scale, higher plant loadings and cost productivity gains more than offset a growing capital base from new plant start-ups. Praxair's hurdle rates for projects in China are comparable to its hurdle rates for projects in the US.

Figure 138: Praxair China sales, which increased 23% in 2011, are forecasted to increase at a 20% CAGR thru 2016 driven by a large and growing project backlog



Source: Deutsche Bank, company data

Figure 139: Praxair China has increasing distribution density and an expanding footprint



Source: Praxair

Praxair's China is taking a selective approach to the China market

Praxair is taking a selective approach in China, focusing on high-quality customers and projects with attractive locations and end markets while maintaining strict return on capital criteria. Overlaying this selective approach is a strategy focused on 1) building density in core markets and expanding geographic coverage, 2) capitalizing on mega trends (gasification, energy efficiency and environmental applications, infrastructure build-out in the interior), 3) having the most competitive air separation design (thru low cost sourcing, and high efficiency and reliability), and 4) operational excellence/reliability.

Praxair believes one of its key competitive advantages in China is its ability to build larger plants than local Chinese competitors. Praxair is able to build 3,000 tpd oxygen plants as a standard design with the ability to go up to 5,000 tpd. In contrast, the largest plants local Chinese competitors are able to build are 2,000 tpd.

China is a large industrial gas market with numerous growth opportunities in infrastructure development and industrialization of inland provinces. The China industrial gas market is estimated at more than $2 billion in sales with roughly half captive, 30%-plus controlled by the 4 major global industrial gas companies and around 20% is in the hands of local (Chinese) producers. Among the global companies, Praxair, Linde/(BOC) and Air Liquide all have market shares of 7-10%. Air Products is fourth in China with a 5-6% market share.

Current trends: Business development activity in China is beyond pre-crisis levels
With respect to recent trends and the current business environment in China, Praxair noted the following:

- Business development activity in China is well above prior year levels. A large proportion of this activity is in coal gasification.
- Praxair is targeting 10%-plus sales growth in China in 2012 with volumes growing 1.5-2.0x industrial production due to plant start-ups. Relative to the US, intensity of gas use is still very low in China (4% of US per capita gas consumption).
- In 2011, Praxair China signed 4-5 large projects. Management expects to sign an additional 4-5 large projects in 2012.
- While China remains a competitive industrial gas market, returns on new projects are attractive with returns at least as good as the rest of the world. Typically, Praxair is bidding against 1 or 2 of the global gas companies in China, not all three.
- Praxair estimates that its current market opportunities in China total 100k tpd of which 50k tpd represent targeted, or high probability opportunities, based on target regions, high quality customers and project viability. These customers/projects are focused in gasification, chemical, steel, electronics and non-ferrous end markets. Praxair's win rate on targeted opportunities is 30-40%.
- In coal gasification alone, Praxair believes there is a $1 billion revenue opportunity over the next 5-7 years driven by China's abundant and low cost coal reserves, the expansion of the domestic chemical industry and China's desire to increase its energy security (and reduce its reliance on imported oil). Praxair expects to win its fair share (25-30%) of this business as it has a proven and reliable 3,000 tpd plant design. Coal gasification is already a key driver of Praxair's China business with one 3,000 tpd air separation plant (started up in 2009) supplying oxygen for coal gasification units for chemical production (Jiangsu SOPO [acetic acid]) and another one in development (Anhui Huayi Chemical [coking], 2011 start-up).
- Merchant pricing in China has improved slightly in oxygen and nitrogen while it is up substantially in argon. Merchant liquid pricing in China has been the primary area of disappointment for global industrial gas companies over the last few years. Weaker-than-expected merchant pricing was due to aggressive local Chinese producers and a fragmented industrial gas market. The merchant gas market is growing 20%/year.
- Praxair has increased its focus on applications development over the last year. Applications development is critical in the merchant business as > 50% of merchant sales have applications involved. Praxair believes a growing number of environmental applications will help its China merchant gas operations to grow faster than industrial production and get pricing.

- Chinese industrial gas companies are continuing to improve their technical competency. They can now build plants of up to 2,000 tpd versus 400 tpd a few years ago. However, their operating skills remain well below those of the four Western industrial gas companies and they continue to focus on sale of equipment rather than sale of gas.
- Praxair's industrial gas JV with Air Liquide (SCIP) has been doubled to 800 tpd by 2011. Current sales of the JV are around $100MM annually.

Celanese (Buy, Target: $60). Low-cost Nanjing complex key driver of Asia centric strategy

We met with Scott Richardson, General Manager Acetyl Intermediates, and Josh Cheng, President of Celanese China. In 2009 Celanese moved the headquarters of its Acetyl Intermediates business to Shanghai.

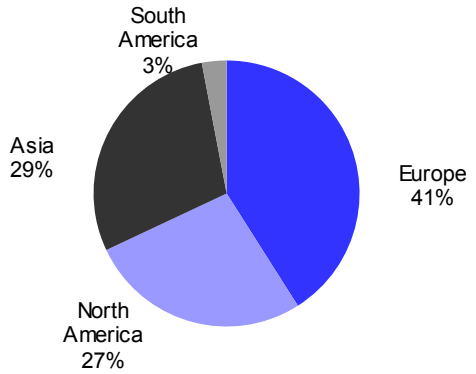
China is home to the Celanese Nanjing Chemical Complex, the world's largest and lowest cost integrated acetyls production site. The $350 million-plus Nanjing complex underscores Celanese's focus on and commitment to China and Asia. Further evidence of this commitment occurred in 2011 when the Celanese Shanghai Commercial and Technology Center (CSCT) was opened. The CSCT, located at the Zhangjiang Hi-Tech Park in Shanghai, combines previously separate R&D, marketing and business functions. CSCT is Celanese's China headquarters and houses more than 300 scientists, design engineers and technical experts serving customers in China and Asia.

Celanese is the most Asian centric company amongst US chemicals. In 2011, excluding sales from equity and cost investments, sales in China totaled $667MM, or 10% of total company sales (of $6.8B). An additional 19% of sales, or $1.3B, were generated in Asia outside of China (AOC). Including proportional sales from and equity and cost investments, we estimate China represented 10% of Celanese sales in 2011 with an additional 21% of sales from Asia outside of China (for a combined 31% of proportional sales from Asia). We estimate approximately 50% of Celanese's earnings are generated in Asia (including China). In AOC, the largest source of sales (based on location of the business) is Singapore with ~55% of sales though the majority of these sales end up outside of Singapore including Japan and India. These China and Asian exposures are the highest of any US chemical company.

In China, Celanese operates under tax holidays such that its effective tax rate is 50% of the statutory rate, or 12.5% based on the statutory rate of 25%.

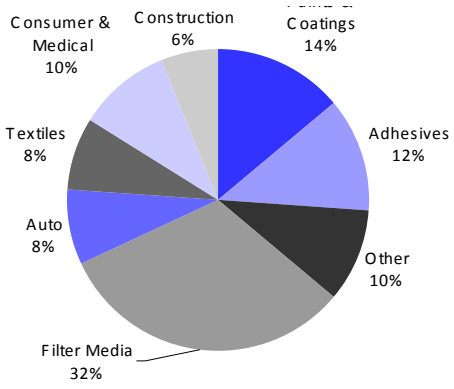
Within China, the company has diverse end market exposure with a mix of stable, high growth, infrastructure-related, export, and local demand oriented sales. The largest end-market is Filter Media (32%), a very stable end-market. This is followed by Paints & Coatings (14%) and Adhesives (12%)

Figure 140: Celanese sales by geography, 2011



Source: Celanese

Figure 141: Celanese sales in China by end market, 2010



Source: Celanese

Celanese Nanjing Chemical Complex – The heart of Celanese competitive advantage

Celanese Nanjing Chemical Complex, located at the Nanjing Chemical Industrial Park in Nanjing, China, is Celanese's largest manufacturing facility in the world. Opened in 2007, the complex site has 8 production units (up from its original 6) including a 1.2 mn mt acetic acid plant (expanded in 2009 from 600,000 mt, expandable to 1.5 mn mt with AOPlus 2 technology), a 300,000 mt vinyl acetate monomer (VAM) plant, a 100,000 acetic anhydride plant and a 120,000 mt emulsions plant (which makes vinyl acetate/ethylene [VAE] emulsions for use in low VOC paints; this facility was expanded in Q2 2011 from its initial capacity of 60,000 mt. The VAE expansion will serve the growing demand of vinyl-based emulsions used in low VOC, low emission paints.

In addition, Ticona, Celanese engineering polymers business, has 2 facilities on the site including a Celstran long-fiber reinforced thermoplastic production unit (capacity was doubled in 2011 to 5,000 mt), a GUR ultra-high molecular weight polyethylene (UHMW-PE) production unit. Two additional Ticona plants are planned for the site including a compounding unit and a Vectra liquid crystal polymer production facility.

Carbon monoxide for acetic acid production in Nanjing is supplied by Wison (Nanjing) Chemical Company, a wholly owned subsidiary of the Wison Group Holding Limited (China). The feedstock for Wison's carbon monoxide production is coal which has an approximately 25% cost advantage versus natural gas-based carbon monoxide production.

In addition to being Celanese's largest chemical complex, Nanjing is also its most profitable. When running at capacity, Nanjing will generate sales of around $1 billion, EBITDA of $200-$250 million, an ROIC of 25-30% and EPS of $1.10-$1.30; all for an investment of roughly $350MM.

To protect its intellectual property at Nanjing, Celanese has created multiple layers of protection. Celanese performed all engineering and design work and constructed all critical equipment outside the country. Celanese also built 3 control rooms for the acetic acid plant (versus the typical 1) in order to ensure that no single operator would have complete knowledge of Celanese's proprietary process to manufacture acetic acid. And lastly, security checks are performed on all key personnel, and labs and other key areas are separated with limited rotation amongst these areas.

Figure 142: Nanjing integrated chemical complex plants and plant capacities (in m.t.)

Plant	Capacity	Start-Up	Comments
Acetyls			
Acetic Acid	1.2 million	2007	40% to merchant, 20% to VAM, 20% to Anhydride Expanded to 1.2MM m.t. from 600,000 .t. in 2009 Expandable to 1.5MM m.t. with AOPlus 2 technology 200kt is being converted to ethanol capacity (mid-2013 start-up))
Vinyl Acetate Monomer (VAM)	300,000	2008	90% to merchant, 10% to emulsions
Acetic Anhydride	100,000	2007	
Emulsions	120,000	2008	Vinyl Acetate Emulsion Expanded to 120,000 m.t. from original 60,000 m.t. in mid-2011
Ticona			
Celstran	4,000	2007	Expandable to 8,000 tons
GUR	16,000	2008	Expandable to 32,000 tons
Compounding		TBD	
Vectra	7,000	TBD	

Source: Celanese

Figure 143: At full loading, Nanjing's economics are highly attractive ($ in millions)	
Sales	$1,000
EBITDA	$200-$250
Total Capital Deployed	$350
EBIT	$170-$220
Tax Rate	15.0%
EPS	$1.10-$1.30
ROIC	25-30%

Source: Deutsche Bank

Acetate tow: Stable and strong earnings generator

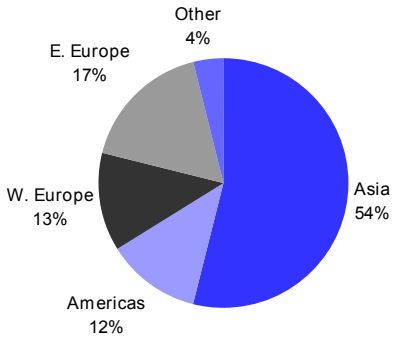
Celanese has a 30% interest in three manufacturing ventures with the Chinese state-owned tobacco entity, China National Tobacco Corporation (CNTC), that produce acetate flake and tow (for cigarette filters). CNTC is the largest producer of cigarettes in the world. In 2011, these three joint ventures paid dividends of $78MM to Celanese, up 10% versus 2010, and equal to $0.50/share, or 11% of total company EPS.

Celanese is the largest producer of acetate tow in the world with a 42% combined global market share (including JVs). Celanese has 23% global market share excluding the joint ventures.

Acetate tow demand is relatively stable. Global demand for tow was ~720kt in 2010 with the primary end-use being cigarette filters. Globally, roughly 6 trillion cigarettes were produced in 2011 with China totaling 30% of global production and demand. In 2010, Asia represented ~55% of global tow consumption.

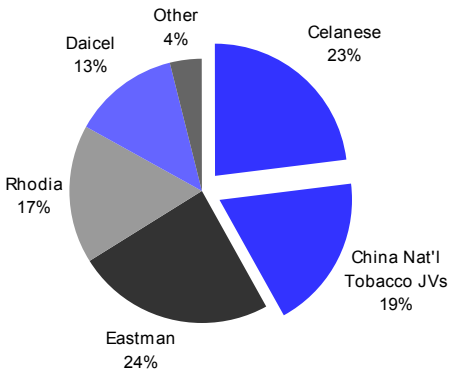
Celanese expects the global acetate tow industry to grow modestly (1-2%) through 2015, led by China at 3%-4%, followed by 1-2% growth in Asia ex-China, (1-2%) in Europe, and (3-4%) in the Americas. Celanese is well positioned to capture growth in China owing to is partnership with CNTC that dates to the late 1980s. Proportional sales from its 3 Chinese joint ventures (with CNTC) were ~$250MM in 2010. One of the JVs (in Nantong) is currently expanding acetate tow and flake capacity by 30kt (4% of global demand). The expansion should be completed in late 2012 with initial dividends in 2013. The expansion should add roughly $15MM in dividends to Celanese by 2014.

Figure 144: Acetate tow demand by region



Source: Celanese

Figure 145: Global acetate tow market share



Source Celanese

Ethanol: The next growth leg

In November 2010 Celanese announced its intention to build 2 industrial ethanol production facilities in China utilizing its innovative TCX technology. TCX is an advanced process that produces ethanol from hydrocarbon feedstocks for the production of ethanol. The technology integrates newly developed technologies with elements of Celanese's proprietary acetyl technologies. Celanese expects TCX technology to be lowest cost ethanol production in the regions in which it operates.

In January 2011 Celanese announced it had signed letters of intent to construct ethanol production facilities in Nanjing, at the Nanjing Chemical Industrial Park, and in Zhhai, China, at the Gaolan Port Economic Zone. Initial capacity of each of these units is expected to be 400,000 mt with expansion capability to 1.1MM mt. Production is expected to begin 30 months after project approvals. The units will utilize coal as the primary feedstock. Celanese ethanol technology allows each plant to be doubled in size at a modest cost. Celanese estimates the cost of each of the plants at $300MM.

Also in 2011, Celanese announced plans to accelerate its entry into the industrial ethanol business by converting 200,000 mt of its acetic acid capacity in Nanjing to ethanol using its TCX process technology. Ethanol production in Nanjing is expected to start-up in mid-2013. As noted below, ethanol margins are expected to be higher than acetic acid margins.

The China industrial ethanol market totals 3MM mt with annual growth of 8-10%. As such each Celanese ethanol plant represents between 1.3-1.7 years of market growth. At current industrial ethanol prices of $1,000/mt, each plant would generate sales of $400MM. Assuming slightly higher profitability and a similar tax rate to Celanese's Nanjing acetyl operation, we estimate EBIT margins of 24%, EBITDA margins of 30%, EPS (per plant) of $0.45 and ROIC of 24%. While Celanese is focusing on industrial uses for its ethanol technology, it is also exploring applying this technology to fuel ethanol applications in China and other countries. In 2012, we expect Celanese to formalize plans to construct at least one ethanol plant in China and announce an agreement with a fuel marketing partner to use ethanol produced from the plant as a fuel blending agent in China.

Figure 146: China ethanol economics (per plant) ($ in millions)

Capacity (m.t.)	*400,000*
China ethanol price ($/m.t.)	*$1,000*
Sales	$400
EBITDA	$120
EBITDA Margin	*30.0%*
Investment	$300
EBIT	$96
EBIT Margin	*24.0%*
Tax Rate	25%
EPS	$0.45
ROIC	24%

Source: Deutsche Bank

Current trends: Demand post the Lunar New Year at the top end of the expected range

With respect to recent trends and the current business environment in China, Celanese noted the following:

- Demand in Q1 is as expected with volumes having recovered post the Lunar New Year in late January. According to IHS Chemical, acetic acid demand weakened in China in late February and early March forcing some producers to reduce operating rates. However, Celanese, as the low cost producer in China, ran its Nanjing acetic acid facility close to 100% thru the first 2 months of the year.
- Acetic acid pricing is stable in the low $400's/mt versus high $500's in Q2 2011. According to IHS Chemical, Chinese average spot prices rose $18 mt in February, or 5%, to $403 mt. However, with the weak acetic acid market expected to continue thru March, we would expect average spot prices in China to be flat to down in March vs February.
- Feedstock methanol prices are stable in China.

Air Products (Buy, Target: $100). Building a broader Asia growth platform

We met with Doug Hayes, Vice President – Tonnage Gases, Asia at Air Product's China headquarters in Shanghai. Air Products has built a large (>$2 billion in sales) profitable and growing Asian business focused on electronic specialty materials and, more recently, tonnage and merchant gases. Due to its larger and more established business in Asia (>2x larger than Praxair), Air Products was initially slightly more cautious than its peers in bidding for projects in China. This has changed as Air Products has added a number of large, on-site tonnage projects in China over the last few years. This was highlighted by Air Products' announcement in December 2011 that it has been awarded (in China) the largest single on-site ASU order ever for an industrial gas company (12,000 tpd). Nevertheless, as a result of its later start, Air Products has the smallest market share in China (5-6%) of the four major global industrial gas companies (who range from 7-10%). Key points of our meeting follow:

In fiscal 2011 (ending September 30), Air Products' Asia sales increased 30% to $2.1 billion (21% of total sales). In fiscal Q1 2012, Air Products Asia sales increased 19% to $573 million due to new Tonnage plant start-ups. For fiscal 2012, we expect Air Products' Asia sales to increase 15% driven by new plant start-ups. Also in 2012, 42% of the targeted $1.9B-$2.2B capital spending will be in Asia.

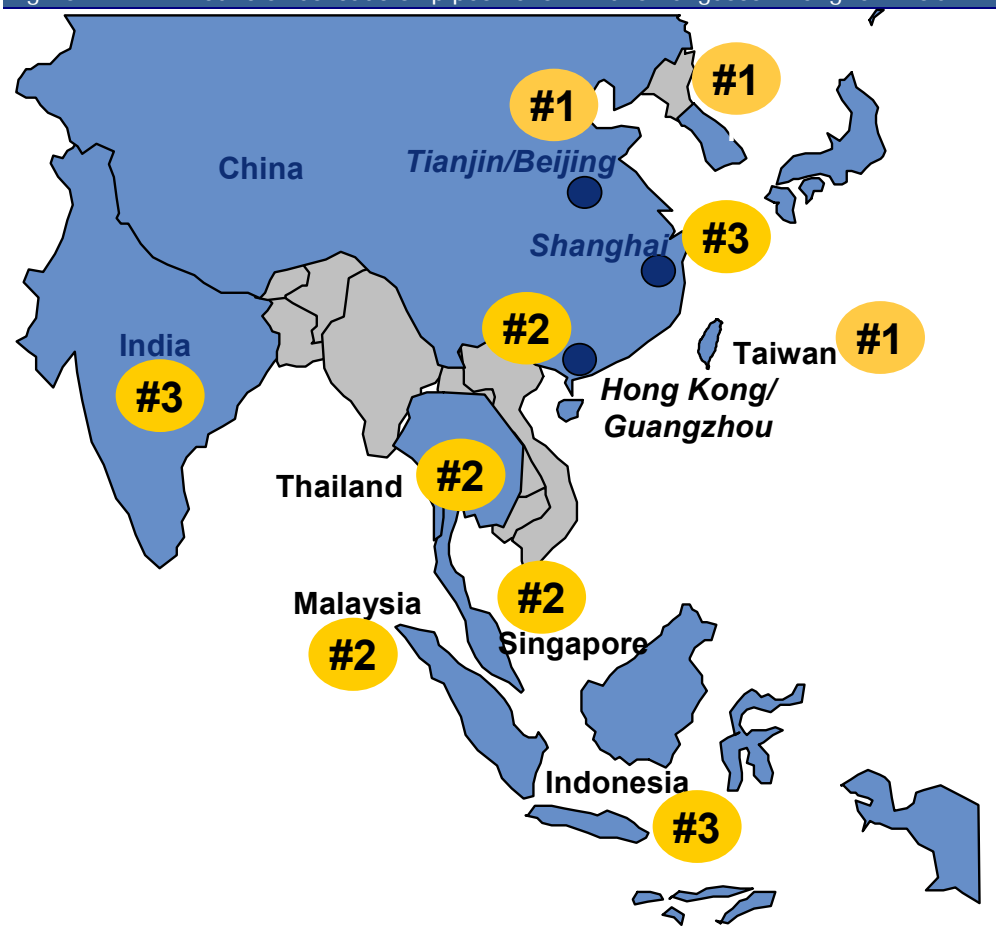
In Asia, Air Products focuses on four countries: Korea (the largest with ~25% of Asian sales on a 100% owned basis), Taiwan (~20%), China (20%) and Japan (~15%). Together, these countries account for approximately 80% of Air Products Asian sales. Air Products believes it has the #1 gases position in Korea (2/3 from electronics and tonnage gases) and Taiwan (2/3 from electronics and tonnage gases) and the #2 position in Singapore, Malaysia and Thailand. Air Products has a small position in India (<$100MM in sales thru a joint venture). Within China, Air Products believes it has the #1 position in the Tianjin/Beijing area.

By segment, and on a 100% owned basis, Air Products' Asia is heavily weighted towards Electronics (~40% of sales), followed by Merchant Gases (30-35%), Chemicals (15%) and Tonnage Gases (~15%). Within Asia, Air Products operates ~20 tonnage plants (versus 50 in the US and Canada and 30 in Europe) and over 45 electronics facilities (versus 45 in the US).

Over the last five years, Asia has been Air Products highest growth region. This growth has been led by its Electronics business which derives approximately 50% of its $1.3 billion in sales from Asia. A key driver of this growth has been the LCD industry: Air Products supplies more than 60% of the LCD fabs in Korea and Taiwan. As many of these companies with LCD fabs in Korea and Taiwan are investing in China, we believe Air Products is well positioned to capture this business as production continues to increase. Air Products' long-standing position serving the semiconductor and LCD industries has enabled it to be a leading supplier to the thin-film PV industry where it has already won a large number of contracts to supply the fast growing photovoltaic market.

In Tonnage, Air Products is focused on growing its existing franchises with most new growth focused in China. On the merchant side, despite a slightly more cautious/disciplined approach than its competitors, Air Products has grown its business 20%-plus/year driven by strong demand throughout the region while continuing to develop production infrastructure in high growth markets. Air Products believes it has the largest liquid/bulk share in China among the global majors and leading positions in Taiwan, Korea and Thailand. And in Performance Materials, Air Products has strong and profitable operations with an expanding manufacturing presence highlighted by the 2010 start-up of a specialty amines plant in Nanjing.

Figure 147: Air Products has leadership positions in industrial gases throughout Asia



Source: Deutsche Bank

Sales in China are focused on electronics with a growing position in steel and chemicals

Air Products began operations in China in 1987 with the establishment of a joint venture in Shenzhen. Today, Air Products China, headquartered in Shanghai, has sales of more than $450 million, or 4% of total company sales $600 million of investments, 50 production facilities and 2,200 employees. Sales are focused in electronics and fiberglass/glass with a growing position in steel and chemicals. The majority of sales are in the merchant business.

China is one of Air Products largest growth opportunities. To capture this growth, Air Products is pursuing and integrated gases and materials strategy. In addition to increasing its resources in China, Air Products relocated a member of its Corporate Executive Committee, Steve Jones, Senior Vice President and General Manager, Tonnage Gases, Equipment and Energy, to China in 2011 to drive its strategy. Mr. Jones is also Air Products' China President.

Air Products strategy in China (and Asia) is to serve customers with local manufacturing capabilities (to ensure the best quality for lowest cost) supported by best in-class technology. To this end Air Products operates a global engineering center near Shanghai with over 220 engineers and ~$800 million of projects in execution (up from $500MM a year ago and equal to one-third of the $2.5B large project backlog), a global cryogenic equipment manufacturing facility in Caojing (which has built many of the oxygen and nitrogen coldboxes it has sold in Asia as localization helps drive low costs) and a technology center at the ZhangJiang Hi-Tech Park with a primary focus on Performance Materials.

For most of last decade, Air Products' Tonnage business in China did not keep pace with its Merchant business. This was due to a lack of experienced commercial development people in China. To remedy this situation Air Products has more than doubled commercial development professionals in China over the past 4 years and installed new management. Results from these investments and changes have been impressive. In 2010, Air Products China was awarded (at the time), the largest single ASU on-site order ever committed to an industrial gas company (8,200 tpd of O2, 3,100 tpd of N2 for a coal gasification process for chemical production for Pucheng Clean Energy Co., Ltd in Shaanxi province; start-up FY 2013). In December 2011 Air Products topped this with a contract award from Shaanxi Future Energy Chemical Co., Ltd. for a 12,000 tpd O2 facility for a coal chemical plant. This is the largest on-site ASU order ever awarded to an industrial gas company. The facility, also located in Shaanxi Province, China, will start-up in 2014. And most recently, in March 2012 Air Products was awarded a contract for a 2,000 tpd ASU by Henan Xinlianxin Fertilizer to supply Xinlianxin's expanding fertilizer plant in Xinxiang. The ASU (and an integrated gas liquefier to supply the region's growing merchant business), will be onstream in 2013).

Current trends: Business development activity in active and strong

With respect to recent trends and the current business environment in China (and other countries), Air Products noted the following:

- Business development activity for large on-site industrial gas projects remains strong in China with no signs of slowing. Air Products expects to announce 1-2 more tonnage projects in the next few months.
- Competition from local Chinese industrial gas companies is primarily concentrated in the 1,000 tpd plant range. By 2,000-3,000 tpd, they lose their advantage.
- Merchant gas pricing is increasing. Air Products is realizing success in raising prices to offset higher power costs.

Figure 148: Air Products has 22 major production facilities in China

Source: Deutsche Bank

Figure 149: Air Products major projects in China

Plant	Location	Capacity	Timing
ASU/Liquid	PetroChina, Chengdu	World Scale	H2 FY12
H2	PetroChina, Chengdu	90MMSCFD H2	H2 FY12
ASU	PCEC, Weinan	8200 TPD O2	FY13
ASU/Liquid	Wison, Nanjing	1500 TPD O2	FY14
ASU	Shaanxi	12,000 TPD O2	FY14

Source: Air Products

DuPont (Buy, Target: $57). Diverse competencies align with long-term China trends

We met with Tony Su, President, DuPont Greater China (China, Hong Kong and Taiwan) in Shanghai. Mr. Su has spent more than 30 years with DuPont. Prior to assuming his current role in September 2010, Mr. Su was Vice President for Marketing and Sales for DuPont China.

DuPont has made a broad and significant commitment to grow its presence in China through putting its science to work. DuPont believes it can achieve 10%-plus compound sales growth in China over the next 3-5 years owing to the tight alignment between its capabilities and competencies and China's 12th 5-year plan (increasing food production and safety, decreasing dependence on fossil fuels, protecting lives and the environment, growing in developing markets, urbanization and infrastructure development, increasing people's disposable income and industry restructuring and local innovation).

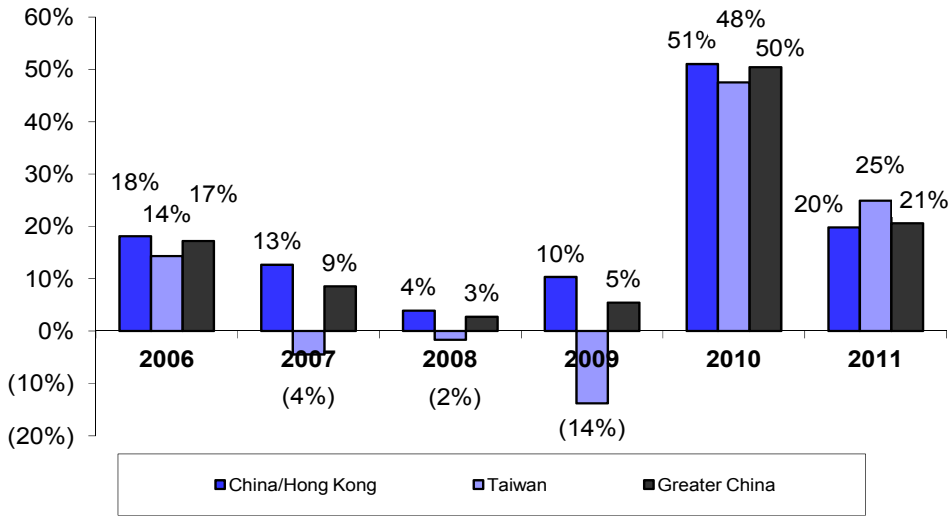
DuPont made its first sales into China in the 1860's during the Qing Dynasty. DuPont China Holding Company Limited was established in Shenzhen in 1989 as the first wholly-owned entity of the company. Today, DuPont China (China/Hong Kong – ex Taiwan) has 26 plants, 7 R&D/Technical Centers, 5 offices, 20 joint ventures and ~7,500 employees. DuPont's investment in China totals more than $1 billion.

DuPont China (China/Hong Kong, ex-Taiwan) is DuPont's 2nd largest market (behind the US and ahead of Brazil, Germany, and Japan) with 2011 sales of $3.3 billion, up 20%, and 9% of total sales. By segment, Performance Materials is DuPont's largest business in China with ~25% of sales followed by Performance Chemicals (~20%) and Electronics and Communication (~20%). Safety & Protection (~12%), Performance Coatings (~12%) and Agriculture & Nutrition (~8%) have smaller presences in China. DuPont's four leading industries in China are agriculture, auto, photovoltaics (PV) and electronics.

DuPont Greater China (including Taiwan) had a strong year in 2011 with sales up 21% to $4 billion. All segments contributed to this growth with especially strong results in TiO2, electronics and performance materials and TiO2 (Taiwan). Taiwan sales increased 25% in 2011 driven by TiO2. From 2006-11, DuPont China (China/Hong Kong) sales increased at a 19% CAGR.

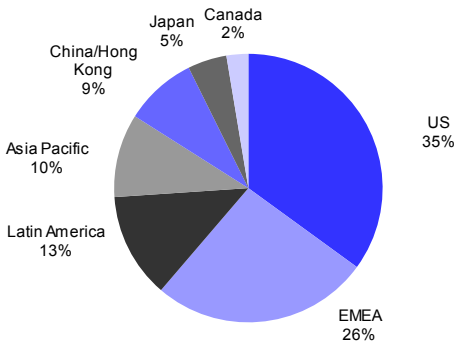
DuPont's long-term plan includes compound annual growth targets of 7% for sales and 12% for EPS. In 2011, sales were up 20% with strong contributions across most segments with EPS increasing 12%. Sales in developing markets, which include China, India, and the countries located in Latin America, Eastern and Central Europe, Middle East, Africa, and Southeast Asia, are targeted to make up 40% of DuPont's sales by 2015, a 6 percentage point increase from 2011. In 2011, sales of new products introduced in the last four years were in line with the company's long-term target of 30% of total sales. Additionally, the company exceeded its 2011 goals for fixed cost and working capital productivity. The company remains on-track to exceed its 3-year 2010-2012 plan of $1 billion fixed cost productivity actions and has already exceeded its three-year 2010-2012 plan of $1 billion working capital productivity.

Figure 150: DuPont Greater China sales increased 21% in 2011 led by strong growth in China /Hong Kong(+20%) and Taiwan (+25%) (YoY % change in sales)



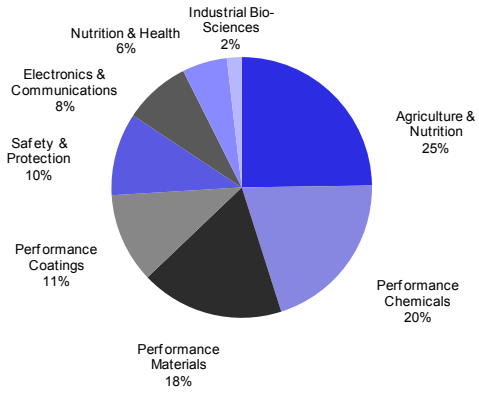
Source DuPont

Figure 151: DuPont sales by geography, 2011



Source: DuPont

Figure 152: DuPont sales by segment, 2011



Source: DuPont

DuPont's growth strategies are working in China

DuPont's strategy for growth is to apply its science and technology to address three challenges driven by global population growth: feeding the world, reducing dependence on fossil fuels and keeping people and the environment safe. Critical areas for the company's growth are innovation, differential management and productivity. Applying science to deliver innovative solutions and new products in the marketplace generates shareholder value and profitable growth. Differential management is a disciplined process to prioritize and allocate resources across businesses and geographies aligned with growth opportunities. And lastly, DuPont continues to achieve fixed cost, working capital and variable cost productivity through disciplined business processes called DuPont Integrated Business Management (DIBM) and DuPont Production System (DPS). DIBM focuses on the business supply chain to maximize efficiency and optimize working capital, while DPS focuses on productivity outcomes to eliminate operational inefficiencies and improve lead time, cycle time and quality.

In China, DuPont's growth strategies are aligned with and being fueled by China's 12th 5-year plan. The key elements of the 12th 5-year plant are increasing food production and safety, decreasing dependence on fossil fuels, protecting lives and the environment, growing in developing markets, urbanization and infrastructure development, increasing people's disposable income and industry restructuring and local innovation.

With over $1B already invested in China, DuPont has made a significant commitment to the country. While DuPont remains committed to investing aggressively in China going forward, one area where it is not likely to invest in the near term is TiO2.

In 2005, DuPont announced plans to construct a $1 billion TiO2 facility in Dongying. This world-scale TiO2 plant would have an annual capacity of 200,000 mt (4% of global capacity). DuPont has completed geologic and environmental impact studies and has received environmental approvals for the project. However it has been unable to obtain a business license for the facility due to opposition from Chinese TiO2 producers who are opposed to DuPont entering the Chinese market.

Due to opposition from Chinese TiO2 producers (and their support from local political leaders), there was no discernible progress made during 2010 or 2011 in obtaining a business license for this project. And with the TiO2 cycle showing signs of maturing in early 2012, we believe DuPont's interest has also cooled in the near term in building a greenfield TiO2 production facility in China. Given these dynamics, we do not expect the project to progress in 2013.

In support of its growth strategy in China, DuPont in late 2010 announced an expansion of its China R&D Center at the Zhangjiang Hi-Tech Park in Shanghai. The facility which today operates more than 30 labs with about 200 scientists and technicians will double in size by the end of 2012.

DuPont's increasing ability to bring new products to the China market is a key driver of DuPont's growth strategy. Success is being achieved with notices of invention increasing from 10 in 2007 to more than 40 in 2010 and more than 50 in 2011.

Figure 153: China's 12· 5-year plant: Opportunities and Implications for DuPont

China Opportunities	Implication	DuPont
Increasing Food Production & Safety	Higher yields Advanced technology in ag & nutrition Food quality Food safety	Pioneer Dansico Animal Health Packaging& Industrial Polymers
Decreasing Dependence on Fossil Fuels	New energy Energy efficiency New materials Bio materials	Photovoltaics Bio-fuel Bio-materials Mass transportation
Protecting Lives & Environment	Water treatment & conservation Emission reduction New materials Mass transportation	DSS DCAF DPT BI
Growing in Developing Markets, Urbanization & Infrastructure Development	Construction Infrastructure Electricity grid Mass transportation	BI DPP DTT DPT
Increasing People's Disposable Income	Automotive Construction Consumer goods & food Electronics & communications	OPC BI DTT E&C
Industry Restructuring & Indigenous Innovation	Agricultural modernization Upgrading traditional industries Develop new strategic industries Services sector development	DC&F DCP Pioneer DPP

Source: DuPont

China's long-term trends will drive DuPont's growth

Enhancing DuPont's growth efforts in China is the fact that a large number of China's long-term growth trends (greater demand for agriculture commodities, sustainable development, clean air and water) are closely aligned with DuPont's capabilities and competencies. By growth trend, we note the following:

Agriculture: Higher yields, advanced technologies in corn and rice and improved food quality are priorities for the Chinese government. As a global leader in seed technology, crop protection chemicals and food safety, management believes it is well positioned to benefit from growth within the Chinese seed and crop chemical market.

In seeds, where Pioneer operates through 2 commercial JVs, 1 R&D JV (with a local partner) and 1 wholly owned R&D entity, China sales increased 19% in 2011 to $250MM on a 100% basis (vs $2.6 billion in North America). Among multinationals, Pioneer has a greater than 75% share of the China corn seed market. However, within the entire market (including local Chinese suppliers), Pioneer's share is less than 5%. While the Chinese seed market is currently entirely conventional (hybrid) seed (Pioneer offers 10 commercial hybrids in China), the Chinese government appears committed to the introduction of genetically modified seeds. DuPont believes genetically modified rice could be introduced in China in the next 2-3 years with genetically modified corn introduced within 5 years.

To help drive long-term growth in its seed business in China, DuPont 1) increased its seed production capacity by 50% in 2011 (which followed a 40% increase in 2010, 2) is enhancing its product portfolio through new products, 3) extending its market coverage to the Southwest and early maturity corn markets, 4) increasing its research investment with the opening of a new research center in eastern China in 2010 and 5) enhancing its customer service.

In crop chemicals, DuPont has less than a 5% market share of China's ~$3 billion crop protection market (the world's third largest). This is despite DuPont's crop protection sales in China having increased 120% in 2009, 25% in 2010 and 23% in 2011. This growth has been driven largely by Rynaxypyr, DuPont's breakthrough insect control technology. Increased Rynaxypyr penetration is expected to help drive strong crop protection sales growth in China in 2012-13.

Environment: The Chinese government is increasing its focus on and commitment to environmental protection, sustainable development and renewable energy. The initial manifestation of this change was the elevation 4 years ago of China's environmental protection agency to a ministerial level. As a result, economic growth is no longer the only barometer by which development decisions are made. With new government regulations for clean fuel, clean air and energy savings there is strong and growing demand in China of clean technology offerings.

With a multitude of technologies and competencies in alternative energy, biofuels and clean technologies, DuPont believes it is well positioned to benefit from this powerful secular growth trend. In the near-term, the largest impact will be in photovoltaic (PV) and wind energy. As a leading supplier of materials to the PV and wind energy industries, management believes it is well positioned for the growth of the Chinese PV industry, home to 50% of the world's solar cell/module production and a growing proportion of the world's wind energy. In 2010, DuPont's China PV sales increased nearly 150% to approximately $600 million (out of total company PV sales of $1 billion). DuPont estimates wind energy installations will increase at a 16% compound rate from 2010-20E and PV installations will increase at a 50% compound rate from 2010-20.

In clean technologies (for clean fuel, clean air and energy savings), DuPont forecasts 12% compound sales growth from 2011-16E (from a small base). DuPont estimates the addressable China clean technology market opportunity at $500 million in 2012.

"Harmonious Society": The Chinese government is committed to equitably distributing the benefits of economic growth in order to maintain social stability. The implications of this strategy are an enhancement of rural infrastructure and increased domestic consumption. With a large number of technologies and products for the automotive and electronics industries, DuPont is well positioned to benefit from a primary manifestation of this strategy: increased Chinese automotive and electronics production. To enhance its ability to benefit from the automotive opportunity DuPont has customized a number of its offerings for the Chinese auto industry. DuPont forecasts China auto builds (already the world's largest car market) will increase at a 11% compound rate 2009-15E. Meanwhile in consumer electronics, with a wide range of material solutions and products, DuPont is well positioned to realize significant growth in this rapidly growing market.

In addition, with more of China's growth taking place in 2nd and 3rd tier cities, DuPont has enhanced its sales force in these 2nd and 3rd tier cities at a low marginal cost. As a result, DuPont will cover 950 cities by 2012 vs less than 10 in 2008.

Demographics: With disposable income in China rising and the middle class continuing to grow and mature, DuPont management believes it is well positioned to supply the growing high technology and knowledge intensity needs of China's population through its industry leading productivity and market driven science.

Appendix A: Global valuation

Figure 154: Global sector valuations

			Price	Target	Est. Earnings		P/E^		EV/EBITDA		Mkt Cap
	Rating	Cur.	20/03/2012	Price	FY11	FY12E	FY11	FY12E	FY11	FY12E	(US$ m)
EUROPE: MAJORS											
Arkema	Buy	EUR	67.3	80.0	9.2	7.7	7.3	8.8	4.9	5.4	5,500
BASF	Buy	EUR	67.2	75.0	6.3	6.3	10.7	10.8	6.4	6.1	81,634
Lanxess	Buy	EUR	55.7	58.0	6.5	4.7	8.6	11.9	5.9	6.9	6,126
Solvay	Hold	EUR	86.0	80.0	5.7	6.1	15.1	14.0	11.3	7.1	9,235
Yule Catto	Buy	GBp	238.8	280.0	18.8	22.0	12.7	10.8	9.2	8.0	1,286
EUROPE: INDUSTRIAL GAS											
Air Liquide	Hold	EUR	99.3	98.0	5.4	5.6	18.3	17.6	9.4	9.0	37,090
Linde	Buy	EUR	130.9	150.0	7.6	8.8	17.1	14.9	8.5	8.1	29,603
EUROPE: SPECIALTY											
AkzoNobel	Buy	EUR	44.6	51.0	2.9	3.4	15.3	13.2	7.5	7.1	13,829
AZ Electronic Materials	Buy	GBp	288.6	350.0	0.4	0.4	13.0	12.7	8.0	7.7	1,743
Clariant	Hold	CHF	12.6	11.7	1.2	1.0	10.5	13.1	6.1	6.3	4,068
Croda	Buy	GBP	2135.0	2450.0	122.5	136.6	17.4	15.6	12.1	10.5	4,584
DSM	Hold	EUR	43.3	41.0	3.7	3.3	11.8	13.1	6.0	6.1	9,344
Givaudan	Sell	CHF	862.0	690.0	45.0	49.7	19.2	17.4	11.9	11.3	8,591
Johnson Matthey	Buy	GBP	2306.0	2450.0	146.3	156.8	15.8	14.7	9.7	9.0	7,784
Kemira	Hold	EUR	10.7	10.0	0.8	0.8	12.7	13.0	7.6	6.9	2,151
Symrise	Hold	EUR	20.7	22.0	1.5	1.6	14.2	13.2	10.0	9.2	3,235
Umicore	Hold	EUR	39.3	35.0	2.7	2.3	14.7	16.8	7.3	8.4	5,879
Victrex	Hold	GBP	1322.0	1300.0	85.4	69.8	15.5	19.0	10.1	11.6	1,748
Wacker	Hold	EUR	67.8	65.0	7.6	5.7	15.5	11.8	6.1	4.6	4,454
EUROPE: AGROCHEMICALS											
ICL	Hold	USD	41.4	46.0	1.2	1.1	9.3	10.0	7.2	7.6	13,992
K+S	Sell	EUR	39.3	35.0	3.5	3.0	11.1	13.1	6.7	7.4	9,928
Syngenta	Buy	USD	295.5	330.0	20.1	23.1	16.1	14.0	10.7	9.3	29,662
Yara	Hold	NOK	260.0	255.0	34.9	24.9	7.4	10.4	5.2	6.1	12,857
EUROPE: PHARMA CHEMS											
Bayer	Buy	EUR	54.0	61.0	4.83	5.02	10.5	10.8	8.3	7.8	59,035
Lonza	Sell	CHF	47.12	43.0	3.0	3.4	15.9	13.9	9.4	7.4	2,660
US: MAJORS											
Celanese	Buy	$	45.7	60.0	4.5	4.8	10.0	9.6	6.8	6.3	7,146
Dow	Hold	$	35.3	35.0	2.6	2.8	12.8	12.8	5.6	5.6	40,736
DuPont	Buy	$	52.7	57.0	3.9	4.2	12.6	12.5	8.1	7.8	48,757
PPG	Hold	$	93.9	90.0	6.9	7.1	12.3	13.2	6.9	7.5	14,371
LyondellBasell	Buy	$	42.9	52.0	4.6	4.2	7.7	10.1	4.1	4.9	24,442
US: AGROCHEMICALS											
Mosaic	Hold	$	58.1	60.0	4.3	4.7	15.2	12.2	8.3	6.8	25,786
Monsanto	Buy	$	79.1	85.0	2.9	3.5	22.6	22.6	11.3	11.7	42,345
Potash Corp.	Hold	$	46.9	55.0	3.7	4.6	12.7	10.3	7.1	5.6	40,176
US: INDUSTRIAL GAS											
Air Products	Buy	$	91.2	100.0	5.7	6.0	15.3	15.2	8.2	8.2	19,031
Praxair	Buy	$	110.8	120.0	5.4	5.9	18.4	18.9	10.8	11.2	33,068
Airgas	Hold	$	85.7	75.0	4.0	4.7	21.2	18.0	9.8	8.8	6,553
US: SPECIALTY											
Albemarle	Buy	$	64.0	70.0	4.8	4.8	12.0	13.2	7.9	8.4	5,749
Cytec	Buy	$	60.9	70.0	3.7	4.0	13.6	15.1	6.1	6.6	2,832
Valspar	Hold	$	48.2	48.0	2.7	3.1	13.2	15.8	8.2	9.0	4,466
ASIA											
LG Chem	Buy	KRW	373500	470000	29070	33600	12.8	11.1	7.7	7.1	24596
Honam Petrochem	Buy	KRW	322500	400000	34608	41911	9.3	7.7	4.8	3.8	9156
Hanwha Chemical	Hold	KRW	26900	28000	2976	3439	9.0	7.8	6.6	6.5	3390
JAPAN											
Sumitomo Chemical	Buy	JPY	356	420	0.0	38.5	n/a	9.2	7.5	6.2	6,989
JSR	Buy	JPY	1732	2100	111.9	149.2	15.5	11.6	5.8	4.7	5,018
Nitto Denko	Buy	JPY	3420	3800	188.5	301.0	18.1	11.4	4.4	3.4	6,756
Shin-Etsu Chemical	Hold	JPY	4710	3700	228.5	259.1	20.6	18.2	7.1	6.6	24,019

*Source: Datastream, Capital IQ & Deutsche Bank estimates. Syngenta Share price is in Swiss Francs but reporting is in US dollars, ICL report in US$ while the stock price are in ILS. *For Johnson Matthey 2011E is March ending 2012. For Airgas FY11E is March ending 2012. For Victrex FY11E is September ending 2011. For Mosaic FY11E is May ending 2011. For Monsanto FY11E is August ending 2012. 2011 estimates for Lanxess and ICL as they are still to report their FY 11 numbers. For additional information on all stocks mentioned here please refer to our website at: http://gm.db.com*

Figure 155: European Valuations

Company	Mkt Cap US$	Rec.	Cur	Price	Target	P/E			EV/EBITDA			EV/Sales			FCF Yield %			Dividend Yield%		
				20/03/12		11	12E	13E	11	12E	13E	11	12E	13E	11	12E	13E	11	12E	13E
Bulk						**10.9**	**11.3**	**10.0**	**7.5**	**6.7**	**6.0**	**1.0**	**0.9**	**0.8**	**4.0%**	**4.1%**	**7.0%**	**2.4%**	**2.5%**	**2.9%**
Arkema	5,500	Buy	EUR	67.3	80.0	7.3	8.8	8.0	4.9	5.4	4.8	0.9	0.8	0.7	2.9%	4.9%	7.3%	1.9%	1.9%	2.5%
BASF	81,634	Buy	EUR	67.2	75.0	10.7	10.8	9.8	6.4	6.1	5.5	1.0	1.0	0.9	6.0%	8.1%	8.4%	3.7%	3.8%	4.1%
Lanxess	6,126	Buy	EUR	55.7	58.0	8.6	11.9	9.2	5.9	6.9	5.7	0.7	0.8	0.7	-1.7%	5.0%	6.6%	1.4%	1.4%	1.8%
Solvay	9,235	Hold	EUR	86.0	80.0	15.1	14.0	13.2	11.3	7.1	6.8	1.4	0.9	0.9	8.8%	1.5%	4.5%	3.6%	3.8%	4.1%
Yule Catto	1,286	Buy	GBp	238.8	280.0	12.7	10.8	9.7	9.2	8.0	7.0	1.0	0.9	0.8	-38.7%	0.9%	8.5%	1.5%	1.7%	1.8%
Industrial Gases						**17.7**	**16.3**	**14.6**	**9.0**	**8.5**	**7.8**	**2.2**	**2.1**	**1.9**	**3.0%**	**3.3%**	**4.5%**	**2.2%**	**2.4%**	**2.6%**
Air Liquide	37,090	Hold	EUR	99.3	98.0	18.3	17.6	15.8	9.4	9.0	8.2	2.3	2.2	2.0	2.8%	3.5%	4.5%	2.5%	2.6%	2.9%
Linde	29,603	Buy	EUR	130.9	150.0	17.1	14.9	13.3	8.5	8.1	7.3	2.1	2.0	1.8	3.3%	3.0%	4.5%	1.9%	2.1%	2.3%
Specialties						**14.6**	**14.5**	**12.8**	**8.5**	**8.2**	**7.4**	**2.0**	**1.9**	**1.7**	**2.3%**	**4.6%**	**5.4%**	**2.9%**	**3.0%**	**3.3%**
AkzoNobel	13,829	Buy	EUR	44.6	51.0	15.3	13.2	12.0	7.5	7.1	6.5	0.9	0.9	0.8	-3.7%	1.2%	4.5%	3.1%	3.3%	3.4%
AZ Electronic Mat	1,743	Buy	GBp	288.6	350.0	13.0	12.7	10.9	8.0	7.7	6.7	2.6	2.5	2.2	6.3%	6.9%	7.6%	2.7%	2.7%	3.2%
Clariant	4,068	Hold	CHF	12.6	11.7	10.5	13.1	11.9	6.1	6.3	5.9	0.8	0.8	0.7	-4.4%	5.8%	5.6%	2.4%	2.4%	2.5%
Croda	4,584	Buy	GBP	2135.0	2450.0	17.4	15.6	13.8	12.1	10.5	9.3	3.1	2.8	2.5	3.7%	4.9%	5.7%	2.6%	2.8%	3.4%
DSM	9,344	Hold	EUR	43.3	41.0	11.8	13.1	11.5	6.0	6.1	5.6	0.9	0.8	0.8	5.6%	7.5%	7.8%	3.3%	3.5%	3.6%
Givaudan	8,591	Sell	CHF	862.0	690.0	19.2	17.4	15.6	11.9	11.3	10.3	2.4	2.3	2.1	1.4%	3.4%	4.6%	2.6%	2.6%	2.7%
Johnson Matthey	7,784	Buy	GBP	2306.0	2450.0	15.8	14.7	12.9	9.7	9.0	8.0	2.2	2.0	1.8	1.4%	6.5%	6.1%	2.4%	2.6%	2.9%
Kemira	2,151	Hold	EUR	10.7	10.0	12.7	13.0	12.8	7.6	6.9	6.6	0.9	0.8	0.8	0.3%	2.7%	4.4%	5.1%	4.7%	4.7%
Symrise	3,235	Hold	EUR	20.7	22.0	14.2	13.2	11.6	10.0	9.2	8.2	2.0	1.9	1.7	5.0%	7.0%	7.8%	3.0%	3.0%	3.4%
Umicore	5,879	Hold	EUR	39.3	35.0	14.7	16.8	13.7	7.3	8.4	7.2	1.8	1.9	1.7	7.0%	7.9%	4.1%	2.5%	2.7%	2.8%
Victrex	1,748	Hold	GBP	1322.0	1300.0	15.5	19.0	16.7	10.1	11.6	10.3	4.8	4.9	4.6	5.2%	3.6%	2.8%	2.5%	2.7%	3.0%
Wacker	4,454	Hold	EUR	67.8	65.0	15.5	11.8	9.9	6.1	4.6	4.2	1.4	0.9	0.8	0.3%	-1.7%	4.0%	2.1%	3.0%	3.5%
Agrochemicals						**11.0**	**11.9**	**10.5**	**7.4**	**7.6**	**6.8**	**1.8**	**1.8**	**1.7**	**6.0%**	**7.2%**	**5.5%**	**4.1%**	**4.1%**	**4.6%**
ICL	13,992	Hold	USD	41.4	46.0	9.3	10.0	8.8	7.2	7.6	6.8	2.2	2.4	2.2	6.2%	9.0%	8.0%	7.6%	7.6%	8.7%
K+S	9,928	Sell	EUR	39.3	35.0	11.1	13.1	11.2	6.7	7.4	6.7	1.6	1.6	1.6	6.2%	2.7%	-2.2%	3.3%	3.1%	3.6%
Syngenta	29,662	Buy	USD	295.5	330.0	16.1	14.0	12.4	10.7	9.3	8.3	2.3	2.1	1.9	5.7%	6.1%	7.2%	2.7%	3.0%	3.4%
Yara	12,857	Hold	NOK	260.0	255.0	7.4	10.4	9.8	5.2	6.1	5.5	1.0	1.0	0.9	6.0%	11.0%	8.8%	2.7%	2.7%	2.8%
Hybrids						**13.2**	**12.3**	**10.2**	**8.9**	**7.6**	**6.5**	**1.7**	**1.4**	**1.3**	**4.8%**	**3.4%**	**7.6%**	**3.9%**	**3.9%**	**4.0%**
Bayer	59,035	Buy	EUR	54.0	61.0	10.5	10.8	9.8	8.3	7.8	6.7	1.6	1.6	1.4	2.8%	8.4%	5.9%	3.2%	3.3%	3.5%
Lonza	2,660	Sell	CHF	47.1	43.0	15.9	13.9	10.5	9.4	7.4	6.2	1.9	1.2	1.2	6.7%	-1.6%	9.3%	4.6%	4.6%	4.6%
Sector Average						**12.9**	**12.9**	**11.3**	**7.9**	**7.5**	**6.7**	**1.8**	**1.6**	**1.5**	**1.7%**	**4.5%**	**5.6%**	**3.0%**	**3.1%**	**3.4%**

Notes:

1) FCF defined as free cashflow before acquisitions, dividends and share buyback programmes but after restructuring payments. 2) FCF Yield is defined as FCF / Market Cap

*Source: Deutsche Bank estimates, Syngenta Share price is in Swiss Francs but reporting is in US dollars, ICL report in US$ while the stock price are in ILS. *For Johnson Matthey 2011E is March ending 2012. For Victrex FY11E is September ending 2011. 2011 estimates for Lanxess and ICL as they are still to report their FY 11 numbers*

Figure 156: European chemical sector financial performance

Company	Sales			Net debt	Net Debt /EBITDA	BV/Share	EBIT Margin			EBITDA Margin			CFRoA			RoCE			RoE		
	11	12E	13E	11	11	11	11	12E	13E	11	12E	13E	11	12E	13E	11	12E	13E	11	12E	13E
Bulk							**11.2**	**11.1**	**11.6**	**15.9**	**15.8**	**16.3**	**19.8**	**19.2**	**20.1**	**17.1**	**16.9**	**18.2**	**21.7**	**19.1**	**19.2**
Arkema (Euro)	5,900	6,485	6,765	603	0.6	35.75	12.9	10.2	10.6	17.5	15.0	15.3	20.4	18.9	19.2	20.7	16.4	16.9	25.9	19.0	17.8
BASF (Euro)	73,497	72,755	75,294	10,956	0.9	26.28	11.5	11.6	12.2	16.1	16.4	16.9	21.7	20.8	21.7	18.0	18.0	19.5	23.8	21.0	21.1
Lanxess (Euro)	8,740	8,253	8,796	1414	1.3	26.61	9.4	7.7	8.6	12.9	11.4	12.5	16.5	13.7	15.5	18.4	13.8	16.3	19.1	12.6	14.6
Solvay (Euro)	8001	12300	12710	1762	1.5	87.41	9.3	9.5	9.4	15.1	14.9	14.8	6.6	10.1	10.2	6.3	9.8	9.9	6.5	6.9	7.2
Yule Catto (GBP)	1,117	1,282	1,385	164	1.4	0.81	8.6	9.0	9.1	10.7	10.7	10.7	14.0	14.5	15.1	24.1	19.5	19.9	-2.6	23.0	21.3
Industrial Gases							**15.5**	**16.0**	**16.4**	**24.2**	**24.3**	**24.6**	**17.0**	**16.8**	**17.4**	**16.7**	**16.6**	**17.0**	**14.2**	**13.9**	**14.3**
Air Liquide (Euro)	14,457	15,116	16,326	5,371	1.5	33.02	16.9	16.8	17.0	24.9	24.8	25.0	16.1	15.9	16.5	14.9	14.4	15.1	15.7	15.0	15.3
Linde (Euro)	13,787	14,685	15,777	5,094	1.6	65.78	13.9	15.0	15.6	23.3	23.6	24.0	18.1	17.9	18.5	18.9	19.2	19.3	12.2	12.6	12.9
Specialties							**14.0**	**13.8**	**14.5**	**19.1**	**18.7**	**19.3**	**16.9**	**16.9**	**17.8**	**16.7**	**16.1**	**17.3**	**16.8**	**15.7**	**15.7**
AkzoNobel (Euro)	15,697	15,541	16,113	1,894	1.1	65.73	8.6	9.2	9.6	11.4	12.1	12.5	16.8	17.6	18.4	11.2	11.4	12.3	7.5	8.5	9.2
AZ Electronic (US$)	792	811	885	343	1.3	1.82	19.0	18.6	20.0	33.0	32.3	32.9	16.7	17.4	19.7	13.8	13.9	16.8	19.3	17.9	19.7
Clariant (CHF)	7,370	7,620	7,854	1,740	1.8	7.93	9.7	8.3	8.4	13.2	12.3	12.4	9.9	9.3	9.6	12.2	8.7	9.0	4.7	4.9	5.3
Croda(GBP)	1,068	1,163	1,258	231	0.8	199.10	22.7	23.5	24.1	25.7	26.5	27.1	29.4	31.6	33.3	34.8	37.3	39.6	61.5	58.2	49.3
DSM (Euro)	9,048	9,181	9,539	318	0.2	35.43	9.6	8.7	9.2	14.3	13.4	13.9	14.2	13.3	14.0	13.2	11.9	12.8	10.5	8.9	9.6
Givaudan (CHF)	3,915	4,112	4,261	1,453	1.8	384.38	12.3	14.2	14.9	20.2	20.0	20.7	11.6	12.2	12.8	12.4	12.8	13.7	11.8	12.4	13.1
JMAT (GBp)	2,592	2,765	2,938	670	1.1	747.63	16.8	16.5	17.1	22.7	22.2	22.7	17.2	17.9	18.8	19.2	20.2	21.6	19.5	18.6	18.8
Symrise (Euro)	1,584	1,631	1,704	482	1.5	7.43	14.8	15.2	16.1	19.9	20.3	21.1	16.0	16.7	18.0	15.1	15.8	17.2	18.9	18.6	18.9
Umicore (Euro)	2,290	2,210	2,392	267	0.5	14.72	18.2	16.3	18.0	24.1	22.6	23.9	15.3	14.4	15.4	17.0	15.4	17.4	19.5	14.7	16.0
Victrex (GBp)	216	209	224	-72	-0.7	2.66	43.5	37.5	39.8	47.5	42.3	44.3	49.2	39.5	39.3	56.9	43.6	43.0	32.9	24.5	24.4
Agrochemicals							**19.5**	**18.8**	**19.7**	**23.6**	**23.3**	**24.1**	**23.0**	**22.0**	**22.9**	**28.4**	**25.8**	**27.4**	**28.5**	**24.9**	**25.1**
ICL (US$)	7,090	6,659	7,134	1,477	0.7	2.25	27.7	27.0	28.5	31.3	31.1	32.5	33.5	31.0	32.4	42.3	34.3	36.9	48.8	40.6	41.7
K+S (Euro)	5,151	5,011	5,348	-46	0.0	14.98	18.9	17.0	19.0	23.6	22.1	24.0	21.7	18.6	18.7	27.4	21.9	22.6	23.5	17.6	18.5
Syngenta (US$)	13,268	14,282	15,054	1,135	0.4	81.12	17.3	18.2	18.9	21.9	22.9	23.5	18.7	20.5	21.6	23.5	26.5	28.4	23.9	24.9	24.9
Yara (NOK)	80,352	73,808	75,284	5,539	0.3	139.4	16.5	13.1	13.2	19.9	17.0	17.2	23.5	18.9	19.2	26.2	18.3	18.9	22.4	14.3	13.8
Sector Average							**14.6**	**14.5**	**15.1**	**20.1**	**20.0**	**20.5**	**19.3**	**18.8**	**19.6**	**19.4**	**18.6**	**19.8**	**20.5**	**18.5**	**18.7**

Notes:

1) BV/Share adjusted for previously written-off goodwill.

2) EBITA and EBITDA margins shown on an underlying basis where possible

3) CFRoA is defined as EBITDA divided by Total Assets (adjusted for Goodwill write-offs) minus Cash

4) RoCE defined as EBITA divided by Total Shareholder Funds (adjusted for Goodwill write-offs), Net Debt and other long-term items

5) RoE defined as pre goodwill net income divided by Total Shareholder funds (adjusted for Goodwill write-offs)

*Source: Company data, Deutsche Bank estimates, Syngenta Share price is in Swiss Francs but reporting is in US dollars, ICL report in US$ while the stock price are in ILS. Croda BV/Share is in Pence. *For Johnson Matthey 2011E is March ending 2012. For Victrex FY11E is September ending 2011. 2011 estimates for Lanxess and ICL as they are still to report their FY 11 numbers.*

Figure 157: Chemicals valuation ratios comparables

Market Segment/ Company	Symbol	Rating	Price 3/20/12	52-Week Range		Mkt Cap ($MM)	P/E Ratio		P/E Rel. to S&P 500		EV/EBITDA		FCF Yield		P/FCF		Div. Yield	Net Debt/ '12E EBITDA
							2012E	2013E	2012E	2013E	2012E	2013E	2012E	2013E	2012E	2013E		
Specialty Chemicals																		
Albemarle	ALB	Buy	$ 64.02	$ 72	$ 38	$ 5,682	13.2	11.9	0.96	0.94	8.2	7.5	2.8%	5.9%	35.8	16.9	1.0%	0.3
Ashland	ASH	Buy	$ 61.93	$ 69	$ 41	$ 4,837	10.8	8.8	0.79	0.70	5.9	5.4	5.1%	6.8%	-	14.7	1.0%	2.2
Cabot	CBT	Hold	$ 42.61	$ 49	$ 22	$ 2,794	14.2	11.8	1.04	0.94	6.9	6.3	2.0%	4.0%	-	24.7	1.7%	0.7
Chemtura	CHMT	-	$ 17.16	$ 19	$ 8	$ 1,653	12.6	9.8	0.92	0.77	5.4	4.5	-	-	-	-	-	
Cytec	CYT	Buy	$ 60.90	$ 63	$ 32	$ 2,771	15.1	13.2	1.10	1.05	6.5	5.9	(0.1%)	1.8%	-	-	0.8%	0.5
Ecolab	ECL	Buy	$ 60.49	$ 63	$ 44	$ 17,845	20.2	17.3	1.47	1.37	0.0	0.0	4.2%	6.2%	23.9	16.2	1.2%	2.7
Ferro	FOE	Buy	$ 6.13	$ 18	$ 4	$ 531	11.1	7.2	0.81	0.57	4.8	3.9	8.9%	6.1%	-	16.3	-	1.5
H.B. Fuller	FUL	Hold	$ 30.96	$ 32	$ 17	$ 1,559	14.7	12.1	1.08	0.96	9.5	8.0	2.5%	2.5%	40.8	40.8	1.0%	2.1
W.R. Grace	GRA	-	$ 57.75	$ 59	$ 30	$ 4,270	13.8	12.6	1.01	1.00	5.4	4.9	-	-	-	-	-	
3M	MMM	Hold	$ 89.35	$ 98	$ 69	$ 62,096	14.3	12.9	1.04	1.03	8.7	8.0	4.7%	5.9%	21.4	16.9	2.5%	0.5
Minerals Technologies	MTX	-	$ 65.13	$ 71	$ 46	$ 1,155	16.4	14.3	1.20	1.13	5.0	5.0	-	-	-	-	0.3%	
NewMarket Corp.	NEU	-	$ 186.80	$ 221	$ 135	$ 2,504	12.1	10.9	0.88	0.87	7.4	-			-	-	1.3%	0.2
OM Group	OMG	-	$ 28.10	$ 42	$ 20	$ 908	9.3	7.7	0.68	0.61	-	-			-	-	-	
Polyone	POL	-	$ 13.52	$ 17	$ 10	$ 1,202	12.0	10.2	0.88	0.81	6.1	5.6			-	-	1.2%	1.4
RPM	RPM	-	$ 25.22	$ 26	$ 17	$ 3,310	15.1	14.8	1.10	1.17	8.3	8.5			-	-	3.3%	1.1
Rockwood	ROC	Buy	$ 52.32	$ 62	$ 30	$ 4,025	11.5	10.3	0.84	0.81	5.6	5.3	6.8%	7.8%	14.7	12.9	-	1.2
A. Schulman	SHLM	-	$ 27.10	$ 28	$ 16	$ 797	11.9	10.6	0.87	0.84	5.6	5.2	0.0%	0.0%	-	-	2.3%	
Valspar	VAL	Hold	$ 48.23	$ 50	$ 27	$ 4,512	15.8	14.6	1.15	1.16	9.1	8.8	5.5%	6.2%	18.1	16.0	1.5%	1.3
Specialty Chemical Average							**13.5**	**11.7**	**0.99**	**0.93**	**6.5**	**5.9**	**3.9%**	**4.9%**	**25.7**	**19.4**	**1.5%**	**1.3**
Coatings																		
PPG	PPG	Hold	$ 93.93	$ 98	$ 66	$ 15,312	13.2	11.7	0.97	0.93	8.4	7.6	6.6%	7.2%	15.1	13.9	2.4%	1.3
Sherwin Williams	SHW	-	$ 107.17	$ 108	$ 69	$ 11,164	18.6	15.9	1.36	1.26	11.2	10.0	-	-	-	-	1.4%	0.6
Valspar	VAL	Hold	$ 48.23	$ 50	$ 27	$ 4,512	15.8	14.6	1.15	1.16	9.1	8.8	5.5%	6.2%	18.1	16.0	1.5%	1.3
RPM	RPM	-	$ 25	$ 26	$ 17	$ 3,310	15.1	14.8	1.10	1.17	8.3	8.5			-	-	3.3%	1.1
Coatings Average							**15.7**	**14.3**	**1.14**	**1.13**	**9.2**	**8.7**	**6.1%**	**6.7%**	**16.6**	**15.0**	**2.1%**	**1.2**

Source: Deutsche Bank, Bloomberg Finance LP

Figure 158: Chemicals valuation ratios (continued)

Market Segment/ Company	Symbol	Rating	Price 3/20/12	52-Week Range		Mkt Cap ($MM)	P/E Ratio 2012E	P/E Ratio 2013E	P/E Rel. to S&P 500 2012E	P/E Rel. to S&P 500 2013E	EV/EBITDA 2012E	EV/EBITDA 2013E	FCF Yield 2012E	FCF Yield 2013E	P/FCF 2012E	P/FCF 2013E	Div. Yield	Net Debt/ LTM EBITDA
Industrial Gases																		
Airgas	ARG	Hold	$ 85.69	$ 86	$ 58	$ 6,507	21.2	18.0	1.55	1.43	9.4	8.5	4.6%	4.5%		22.5	1.1%	1.7
Air Products	APD	Buy	$ 91.17	$ 98	$ 72	$ 19,201	15.2	13.3	1.11	1.06	8.5	7.7	0.5%	2.4%	221.8		2.4%	1.6
Praxair	PX	Buy	$ 110.78	$ 112	$ 89	$ 33,207	18.9	16.4	1.38	1.30	11.1	10.0	1.1%	2.0%	87.5	51.1	1.8%	2.0
Industrial Gases Average							**18.4**	**15.9**	**1.35**	**1.26**	**9.7**	**8.7**	**2.1%**	**2.9%**	**154.6**	**36.8**	**1.8%**	**1.8**
Differentiated Chemicals																		
Celanese	CE	Buy	$ 45.69	$ 59	$ 29	$ 7,132	9.6	8.3	0.70	0.66	6.3	5.7	6.3%	9.1%	15.8	11.0	0.5%	1.3
Dow Chemical	DOW	Hold	$ 35.30	$ 42	$ 21	$ 41,634	12.8	10.9	0.94	0.86	7.1	6.5	5.3%	6.2%	18.7	16.3	2.5%	1.9
Dupont	DD	Buy	$ 52.71	$ 58	$ 37	$ 48,816	12.5	10.8	0.92	0.85	7.9	7.1	4.6%	7.1%	21.9	14.1	3.1%	1.1
FMC	FMC	-	$ 99.20	$ 101	$ 64	$ 6,856	14.3	12.7	1.05	1.01	8.9	8.0					0.6%	0.2
Huntsman	HUN	-	$ 14.16	$ 22	$ 8	$ 3,368	7.8	6.6	0.57	0.53	5.2	4.8	7.6%	0.0%			2.8%	2.1
PPG	PPG	Hold	$ 93.93	$ 98	$ 66	$ 15,312	13.2	11.7	0.97	0.93	8.4	7.6	6.6%	7.2%	15.1	13.9	2.4%	1.3
Differentiated Chemical Average							**11.7**	**10.2**	**0.9**	**0.8**	**7.1**	**6.5**	**5.8%**	**6.0%**	**19.2**	**14.2**	**2.0%**	**1.2**
Commodity Chemicals																		
Kronos	KRO	Hold	$ 23.97	$ 35	$ 14	$ 2,778	8.0	7.7	0.58	0.61	5.3	5.1	17.2%	0.0%	5.8	-	0.5%	-
LyondellBasell	LYB	Buy	$ 42.88	$ 48	$ 23	$ 24,601	10.1	7.8	0.74	0.62	5.1	4.5	9.9%	0.0%	10.1		-	0.3
Methanex	MX	-	$ 11.13	$ 16	$ 5	$ 422	7.0	6.1	0.51	0.48	3.7	3.6			-		-	-0.4
Olin	OLN	-	$ 21.53	$ 27	$ 16	$ 1,724	11.6	10.2	0.85	0.81	5.4	5.0					3.7%	-
Commodity Chemical Average							**11.1**	**9.4**	**0.8**	**0.7**	**5.3**	**5.1**	**6.7%**	**4.2%**	**-19.4**	**19.4**	**1.6%**	**0.8**
Ag Biotech																		
Monsanto	MON	Buy	$ 79.09	$ 84	$ 59	$ 42,347	22.6	19.5	1.65	1.55	11.3	10.1	3.9%	4.0%	25.8	25.1	1.4%	-0.3
Syngenta	SYNN-CH	-	$ 295.50	$ 311	$ 211	$ 26,966	13.7	12.4	1.00	0.98	8.8	8.2	5.1%	6.7%	19.8	14.8	1.9%	0.3
Dupont	DD	Buy	$ 52.71	$ 58	$ 37	$ 48,816	12.5	10.8	0.92	0.85	8.2	7.3	4.6%	7.1%	21.9	14.1	3.1%	1.4
Ag Biotech Average							**16.3**	**14.2**	**1.2**	**1.1**	**9.4**	**8.5**	**4.5%**	**5.9%**	**22.5**	**18.0**	**2.2%**	**0.5**
Agchems/Fertilizers																		
Agrium	AGU	Buy	$ 88.27	$ 96	$ 60	$ 13,947	9.7	9.8	0.71	0.78	7.3	9.0	10.2%	7.2%	9.8	13.8	0.1%	0.8
CF Industries	CF	-	$ 183.99	$ 195	$ 115	$ 12,047	8.0	9.3	--	-	4.2	5.5					0.5%	0.1
Compass Minerals	CMP	Hold	$ 70.75	$ 98	$ 63	$ 2,329	14.6	10.3	1.06	0.81	8.4	6.3	4.0%	7.8%	24.7	12.8	2.5%	1.0
Intrepid Potash	IPI	-	$ 25.07	$ 36	$ 21	$ 1,885	15.8	13.2	--	-	7.3	6.2					-	-0.2
Mosaic	MOS	Hold	$ 58.05	$ 83	$ 45	$ 24,695	12.2	10.2	0.89	0.81	6.5	5.5	3.3%	4.8%	30.5	20.9	0.3%	-0.8
Ag/Fertilizer Average							**13.7**	**11.8**	**0.9**	**0.8**	**6.8**	**6.5**	**5.8%**	**7.3%**	**20.7**	**14.5**	**0.8%**	**0.2**
Chemical Average (ex-Ag.)							**13.4**	**11.6**	**1.0**	**0.9**	**6.9**	**6.3**	**0.0**	**0.0**	**28.2**	**19.9**	**0.0**	**1.1**
S&P 500	**SPX**		$ 1,405.52	$ 1,414	$ 1,075	$ 12,702,572	**13.7**	**12.6**										

Source: Deutsche Bank, Bloomberg Finance LP

Figure 159: Chemicals valuation metrics

Market Segment/ Company	Symbol	Rating	Price 3/20/12	52-Week Range		Mkt Cap ($MM)	EV ($MM)	Earnings Per Share 2012E	Earnings Per Share 2013E	EPS Change 2012E	EPS Change 2013E	EBITDA Per Share 2012E	EBITDA Per Share 2013E	FCF Per Share 2012E	FCF Per Share 2013E
Specialty Chemicals															
Albemarle	ALB	Buy	$ 64.02	$ 72	$ 38	$ 5,682	$ 5,911	$4.85	$5.40	2%	11%	$8.03	$8.82	$ 1.79	$ 3.79
Ashland	ASH	Buy	$ 61.93	$ 69	$ 41	$ 4,837	$ 7,737	$5.75	$7.00	37%	96%	$16.51	$18.14	$ 3.16	$ 4.23
Cabot	CBT	Hold	$ 42.61	$ 49	$ 22	$ 2,794	$ 3,144	$3.00	$3.60	(6%)	20%	$7.10	$8.02	$ 0.86	$ 1.72
Chemtura	CHMT	-	$ 17.16	$ 19	$ 8	$ 1,653	$ 2,227	$1.36	$1.76	21%	29%	$6.45	$7.80	$ -	$ -
Cytec	CYT	Buy	$ 60.90	$ 63	$ 32	$ 2,771	$ 3,019	$4.05	$4.60	11%	14%	$9.84	$10.81	$ (0.07)	$ 1.09
Ecolab	ECL	Buy	$ 60.49	$ 63	$ 44	$ 17,845	$ 24,124	$3.00	$3.50	22%	17%	$7.79	$8.52	$ 2.53	$ 3.74
Ferro	FOE	Buy	$ 6.13	$ 18	$ 4	$ 531	$ 771	$0.55	$0.85	(22%)	54%	$1.84	$2.29	$ 0.55	$ 0.38
H.B. Fuller	FUL	Hold	$ 30.96	$ 32	$ 17	$ 1,559	$ 1,999	$2.10	$2.55	10%	22%	$4.21	$5.00	$ 0.76	$ 0.76
W.R. Grace	GRA	-	$ 57.75	$ 59	$ 30	$ 4,270	$ 3,304	$4.18	$4.58	-	-	$12.48	$13.51		
3M	MMM	Hold	$ 89.35	$ 98	$ 69	$ 62,096	$ 65,907	$6.25	$6.90	5%	10%	$10.84	$11.82	$ 4.18	$ 5.29
Minerals Technologies	MTX	-	$ 65.13	$ 71	$ 46	$ 1,155	$ 844	$3.96	$4.56	5%	15%	$0.24	$0.24		
NewMarket Corp.	NEU	-	$ 186.80	$ 221	$ 135	$ 2,504	$ 2,699	$15.43	$17.07	9%	11%	NM	NM	$ 14.27	$ 15.67
OM Group	OMG	-	$ 28.10	$ 42	$ 20	$ 908	$ 1,128	$3.03	$3.65	(22%)	20%	$21.07	$23.48	$ -	$ -
Polyone	POL	-	$ 13.52	$ 17	$ 10	$ 1,202	$ 1,718	$1.12	$1.33	10%	18%	$8.76	$9.45	$ 1.61	$ -
RPM	RPM	-	$ 25.22	$ 26	$ 17	$ 3,310	$ 3,998	$1.67	$1.71	9%	2%	$5.32	$5.29	$ 0.78	$ 1.00
Rockwood	ROC	Buy	$ 52.32	$ 62	$ 30	$ 4,025	$ 5,148	$4.55	$5.10	13%	12%	$11.40	$12.21	$ 3.55	$ 4.06
A. Schulman	SHLM	-	$ 27.10	$ 28	$ 16	$ 797	$ 747	$2.27	$2.57	16%	13%	$1.10	$1.18	$ -	$ -
Valspar	VAL	Hold	$ 48.23	$ 50	$ 27	$ 4,512	$ 5,262	$3.05	$3.30	15%	8%	$6.06	$6.28	$ 2.66	$ 3.01
Specialty Chemical Average										**8%**	**22%**				
Coatings															
PPG	PPG	Hold	$ 93.93	$ 98	$ 66	$ 15,312	$ 18,294	$7.10	$8.00	3%	13%	$14.13	$15.69	$ 6.22	$ 6.74
Sherwin-Williams	SHW	-	$ 107.17	$ 108	$ 69	$ 11,164	$ 12,117	$5.76	$6.73	19%	17%	$7.02	$7.90	$ 6.05	$ 7.21
Valspar	VAL	Hold	$ 48.23	$ 50	$ 27	$ 4,512	$ 5,262	$3.05	$3.30	15%	8%	$6.06	$6.28	$ 2.66	$ 3.01
RPM	RPM	-	$ 25.22	$ 26	$ 17	$ 3,310	$ 3,998	$1.67	$1.71	9%	2%	$5.18	$5.05	$ 0.78	$ 1.00
Coatings Average										**12%**	**10%**				

Source: Deutsche Bank, Bloomberg Finance LP

Figure 160: Chemicals valuation metrics (continued)

Market Segment/ Company	Symbol	Rating	Price 3/20/12	52-Week Range		Mkt Cap ($MM)	EV ($MM)	Earnings Per Share 2012E	Earnings Per Share 2013E	EPS Change 2012E	EPS Change 2013E	EBITDA Per Share 2012E	EBITDA Per Share 2013E	FCF Per Share 2012E	FCF Per Share 2013E
Industrial Gases															
Airgas	ARG	Hold	$ 85.69	$ 86	$ 58	$ 6,507	$ 7,960	$4.05	$4.75	21%	17%	$10.78	$12.03	$ 3.92	$ 3.81
Air Products	APD	Buy	$ 91.17	$ 98	$ 72	$ 19,201	$ 23,554	$6.00	$6.85	5%	14%	$12.85	$14.21	$ 0.41	$ 2.16
Praxair	PX	Buy	$ 110.78	$ 112	$ 89	$ 33,207	$ 40,746	$5.85	$6.75	8%	15%	$12.16	$13.62	$ 1.27	$ 2.17
Industrial Gases Average										**11%**	**16%**				
Differentiated Chemicals															
Celanese	CE	Buy	$ 45.69	$ 59	$ 29	$ 7,132	$ 9,043	$4.75	$5.50	6%	16%	$9.10	$10.01	$ 2.89	$ 4.15
Dow Chemical	DOW	Hold	$ 35.30	$ 42	$ 21	$ 41,634	$ 61,790	$2.75	$3.25	8%	18%	$7.48	$8.17	$ 1.89	$ 2.17
Dupont	DD	Buy	$ 52.71	$ 58	$ 37	$ 48,816	$ 57,087	$4.20	$4.90	7%	17%	$7.69	$8.58	$ 2.41	$ 3.73
FMC	FMC	-	$ 99.20	$ 101	$ 64	$ 6,856	$ 7,539	$6.92	$7.79	16%	13%	$0.92	$1.00	$ -	$ -
Huntsman	HUN	-	$ 14.16	$ 22	$ 8	$ 3,368	$ 6,767	$1.81	$2.13	7%	18%	$9.43	$10.24	$ 1.08	$ -
PPG	PPG	Hold	$ 93.93	$ 98	$ 66	$ 15,312	$ 18,294	$7.10	$8.00	3%	13%	$14.13	$15.69	$ 6.22	$ 6.74
Differentiated Chemical Average										**7%**	**15%**				
Commodity Chemicals															
Kronos	KRO	Hold	$ 23.97	$ 35	$ 14	$ 2,778	$ 3,218	$3.00	$3.10	2%	3%	$17.79	$18.30	$ 4.12	$ -
LyondellBasell	LYB	Buy	$ 42.88	$ 48	$ 23	$ 24,601	$ 24,580	$4.25	$5.50	(8%)	29%	$8.45	$10.12	$ 4.27	$ -
Methanex	MX	-	$ 11.13	$ 16	$ 5	$ 422	$ 464	$1.58	$1.84	(2%)	16%	$0.22	$0.23	$ 1.36	$ 1.14
Olin	OLN	-	$ 21.53	$ 27	$ 16	$ 1,724	$ 1,943	$1.86	$2.11	13%	14%	$9.07	$10.42	$ -	$ -
Commodity Chemical Average										**27%**	**18%**				
Ag Biotech															
Monsanto	MON	Buy	$ 79.09	$ 84	$ 59	$ 42,347	$ 41,311	$3.50	$4.05	20%	16%	$6.77	$7.58	$ 3.06	$ 3.15
Syngenta	SYNN-CH	-	$ 295.50	$ 311	$ 211	$ 26,966	$ 27,997	$21.54	$23.92	11%	11%	NM	NM	$ 14.93	$ 19.91
Dupont	DD	Buy	$ 52.71	$ 58	$ 37	$ 48,816	$ 58,655	$4.20	$4.90	7%	17%	$7.69	$8.58	$ 2.41	$ 3.73
Ag Biotech Average										**12%**	**14%**				
Fertilizers															
Agrium	AGU	Buy	$ 88.27	$ 96	$ 60	$ 13,947	$ 15,772	$9.11	$9.00	(48%)	(1%)	$13.60	$11.12	$ 9.01	$ 6.40
CF Industries	CF	-	$ 183.99	$ 195	$ 115	$ 12,047	$ 12,680	$23.10	$19.84	1%	(14%)	$18.93	$14.65	$ 22.33	$ 22.57
Compass Minerals	CMP	Hold	$ 70.75	$ 98	$ 63	$ 2,329	$ 2,645	$4.85	$6.90	9%	42%	$9.42	$12.41	$ 2.86	$ 5.53
Intrepid Potash	IPI	-	$ 25.07	$ 36	$ 21	$ 1,885	$ 1,715	$1.59	$1.90	25%	19%	$7.2	$8.3	$ (0.25)	$ 1.14
Mosaic	MOS	Hold	$ 58.05	$ 83	$ 45	$ 24,695	$ 21,977	$4.75	$5.70	9%	20%	$7.61	$9.00	$ 1.90	$ 2.78
Potash Corp.	POT	Hold	$ 46.88	$ 63	$ 38	$ 40,256	$ 42,165	$4.49	$5.16	28%	15%	$6.80	$7.73	$ 2.64	$ 4.39
Ag/Fertilizer Average										**9%**	**17%**				
Chemical Average (ex-Ag.)										*8%*	*15%*				
S&P 500	**SPX**		**1,406**	**1,414**	**1,075**			**$102.57**	**$111.57**	**5%**	**9%**				

Source: Deutsche Bank, Bloomberg Finance LP

Appendix 1

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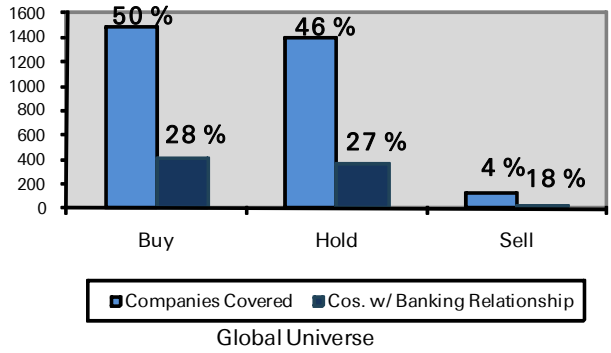

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