

REACTION

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KPMG GLOBAL CHEMICALS INSTITUTE

Chemicals in Africa: A land of hidden opportunity?

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cutting through complexity



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Introduction

Welcome to the first edition of Reaction Magazine for 2014 at a time when the feeling around the industry seems to be one of guarded optimism. Although a number of downside risks remain, the global economy appears to be returning to reasonable, if unspectacular, growth. Certainly, recent trends in rising new housing starts in the US and falling unemployment in Europe, if sustained, are likely to have a positive impact on chemical industry demand. Chinese gross domestic product (GDP) growth seems to have settled at a 'new normal' of 7–8 percent per annum – still better than almost anywhere else – and we continue to see the rise of emerging economies across the Association of Southeast Asian Nations (ASEAN) region (more on that in the next edition).

In this edition, we bring you a look at the portfolio rationalization activity in the industry and what leading companies are doing to maximize value on exit as well as a focus on cross-border tax planning and how this may be impacted by shale gas and the resultant shifts in global petrochemical trade flows. We also take an in-depth look at some of the current opportunities and challenges in Africa and feature an interview with Paul Victor, acting CFO of Sasol, who discusses how it is driving growth on the continent.

As ever, we continue to be active in the industry, with Paul Harnick speaking at the 2014 Redburn Chemicals Conference in the UK. We also recently hosted a table at the Chemical Industries Association's annual dinner in London.

We will be back with our next edition in June, which will focus on growth in the ASEAN region and provide an update on the chemical industry in Europe. If there are any other topics you would like us to cover in future editions of Reaction, please do not hesitate to contact us.



Mike Shannon

Global Chair
Chemicals and
Performance Technologies

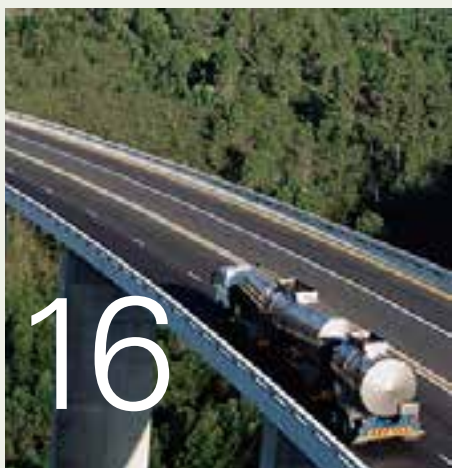


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Long-term opportunities for the **AFRIC** chemical industry

By **Paul Harnick**



AN

In many ways, Africa today resembles an emerging market, much like India was 10 or 15 years ago. The economic potential for the chemical industry is clear enough, with low costs for labor and materials, a relatively young and rapidly growing population, an expanding middle class and a rising demand for products. At the same time, Africa shares the problems of many emerging markets, such as social volatility, unreliable electric power and a weak infrastructure hampering the movement of feedstocks and products. Investors who believe in taking the long view are realistic about the challenges, but they also see enormous opportunities in a continent with vast natural resources and one of the fastest growing economies in the world.

The sheer magnitude of Africa cannot be underestimated. The continent is the world's second-largest and contains over a one-fifth of the total land area. With over 30 million square kilometers (11.67 million square miles), Africa is actually bigger in size than China, the US, Western Europe, India, Argentina and the British Isles combined. Including mountains, deserts, grasslands and rain forests across 54 countries, Africa is also the only continent to stretch from the northern temperate zone to the southern temperate zone.

Africa

by the numbers

Population:

1.08 billion Population in 2012

5.2% Projected growth for 2014

1.2 billion Estimated urban population by 2050 (2.8% compound annual growth rate)

52 Number of African cities with more than 1 million in population

382 million Size of workforce

Economy:

US\$2.0 trillion Collective GDP in 2012

4.0% CAGR of consumer spending, 2003–12

2.5% Annual crop production growth

500+ million Cell phone subscribers

US\$150 billion Forecasted foreign direct investment (FDI) into Africa by 2015 (from US\$50 billion in 2012)

Resources:

60% Share of world's total amount of uncultivated, arable land

10% Share of world's oil reserves

40% Share of world's gold reserves

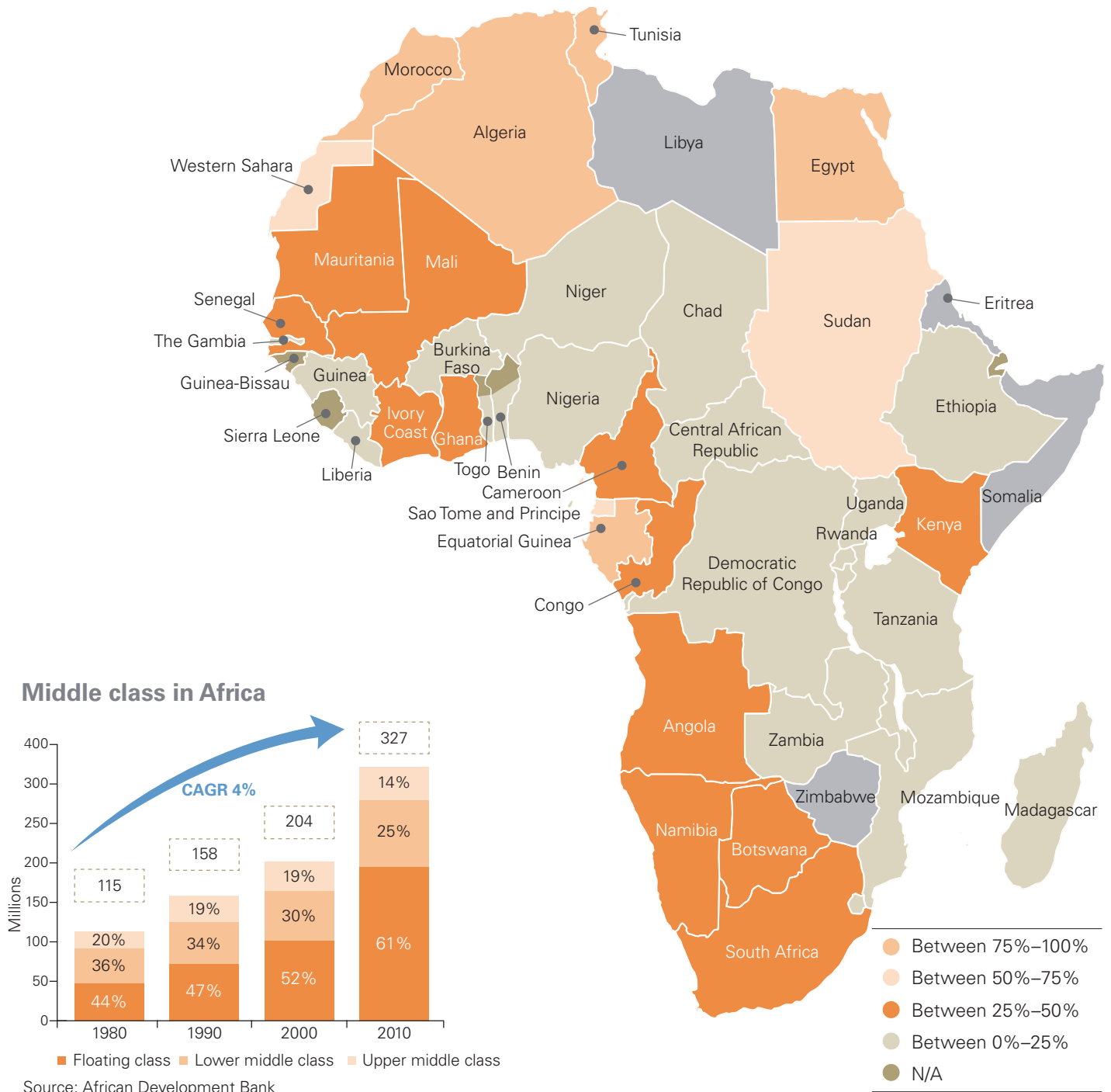
80–90% Share of world's chromium and platinum group metals

Source: Private equity in emerging markets: investing in Africa, Thomas Barry, McKinsey Global Institute, Oxford Institute, African Development Bank database

Major economic opportunities

For the chemical industry and its investors, opportunities in Africa center around three factors: high growth, major oil and gas reserves and demand in certain market sectors such as agriculture, consumer products, infrastructure development and construction.

Middle class population growth



Growth

The African economy is expected to grow over 5 percent in 2014, driven by the world's fastest population growth, increased urbanization and a rapidly expanding middle class. According to the Population Reference Bureau, the continent will more than double in population between now and 2050, from 1.1 billion to 2.4 billion.¹ To put these figures into context, in 1950 there were two Europeans for every African. By 2050, with present trends, there will be two Africans for every European.²

Approximately 50 percent of Africans are expected to be living in cities by 2030. The rapidly urbanizing populace is an indication of opportunities for investors seeking to invest in Africa. Growth at the lower end of the middle-class pyramid also presents significant investment opportunities.

Oil reserves

Along with a wealth of gold, copper, diamonds, chromium and platinum, Africa contains 10 percent of the world's oil reserves.³ Proven reserves for Africa have grown by nearly 120 percent in the past 30 years and this growth is expected to continue. African countries now make up 11 out of the top 50 countries in terms of proven oil reserves. Nigeria and Angola are among the top 20 oil producers in the world.

Africa also accounts for 20 percent of the world's total exports of crude and the region is recognized by Western and Asian markets as a way to mitigate their dependence on Middle Eastern oil. Energy analysts project that Africa will increase its production of oil from 9.4 million barrels per day BPD in 2011 to 12 million BPD by 2020.

In East Africa, new discoveries of onshore oil in Uganda and offshore gas in Tanzania have encouraged new development initiatives. In West Africa, the Gulf of Guinea remains a significant producer of hydrocarbons, supplying European and American markets. The Organization for

Economic Co-operation and Development (OECD) estimates that US\$1.25 trillion will be invested from 2001-30 in African energy, with upstream exploration and investment remaining the focus for both the oil and gas sectors.

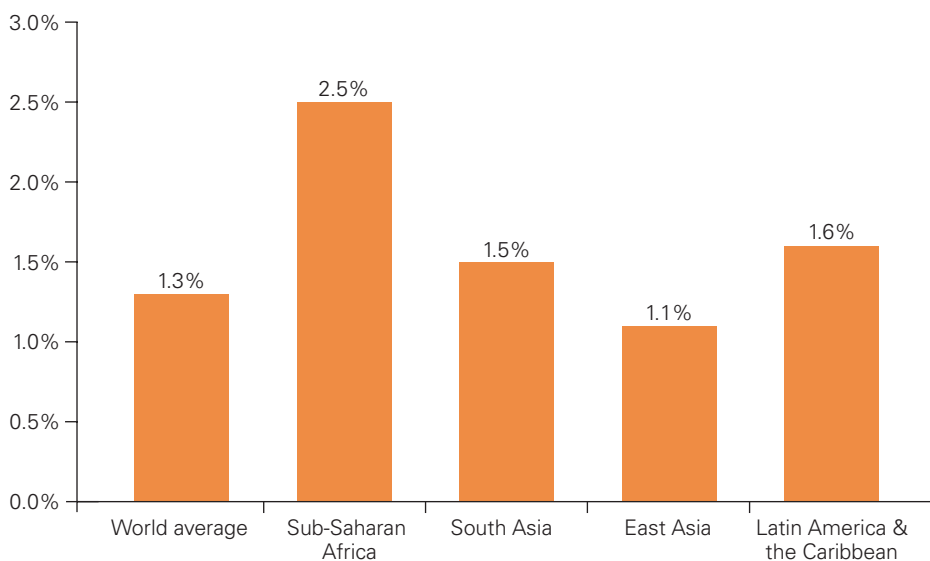
Demand in chemical subsectors

Despite some of these impressive figures, the industrial base in much of Africa remains undeveloped and economic growth is coming from a very low base. As a result, opportunities in the chemical sector are likely to be focused within a small number of subsectors.

Demand for chemicals in the agriculture subsector will continue to grow based on several factors. Africa has 25 percent of the world's arable land and 60 percent of the world's uncultivated arable land. Africa's current low crop yields per hectare represent significant growth opportunities and even with existing cultivated land, a doubling of cereal yields would turn Africa into a major food surplus region. In addition, the agribusiness value chain including storage, logistics, packaging and processing will add more opportunities for investors.



Annual crop production growth (2015–30)



Source: Economist Intelligence Unit, 2012

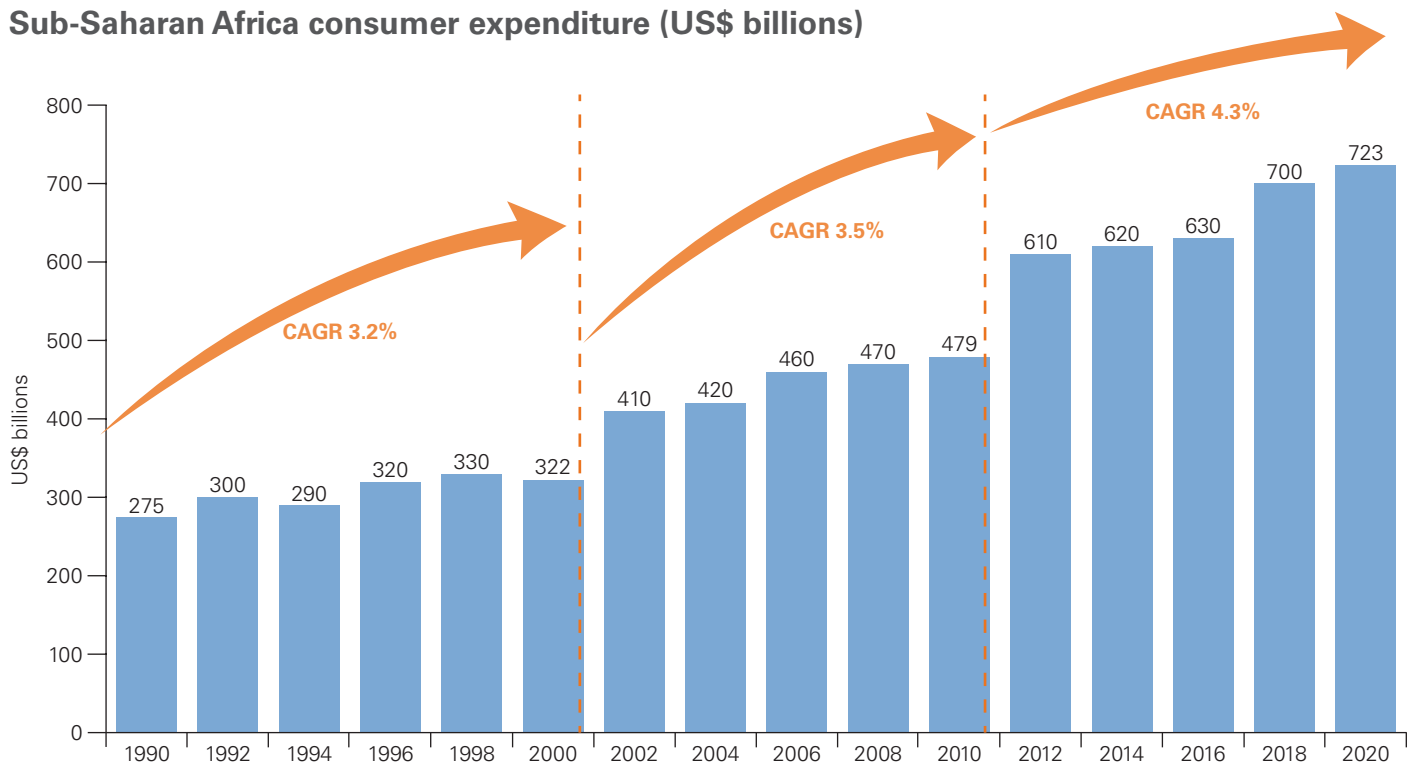
¹ Population Reference Bureau, www.prb.org

² *Africa's population: The baby bonanza*, The Economist, 27 August 2009

³ Statistics in this section from US Energy Information Administration, cited in *Oil and Gas in Africa: Africa's Reserves, Potential and Prospects*, KPMG, 2013



Sub-Saharan Africa consumer expenditure (US\$ billions)



Source: Euromonitor 2011

The consumer subsector will also see strong growth in the years ahead because of favorable demographics and rising consumer expenditures.

With two-thirds of its population under 25, Africa is the youngest continent in the world. The median age in Africa is 20, compared with 30 in Asia and 40 in Europe. Africa's middle class continues to expand. Since 2005, Africans living on less than US\$1.25 per day decreased from 51 to 39 percent. The working population (15 to 65 years old) accounts for an average of 52 percent of Africa's

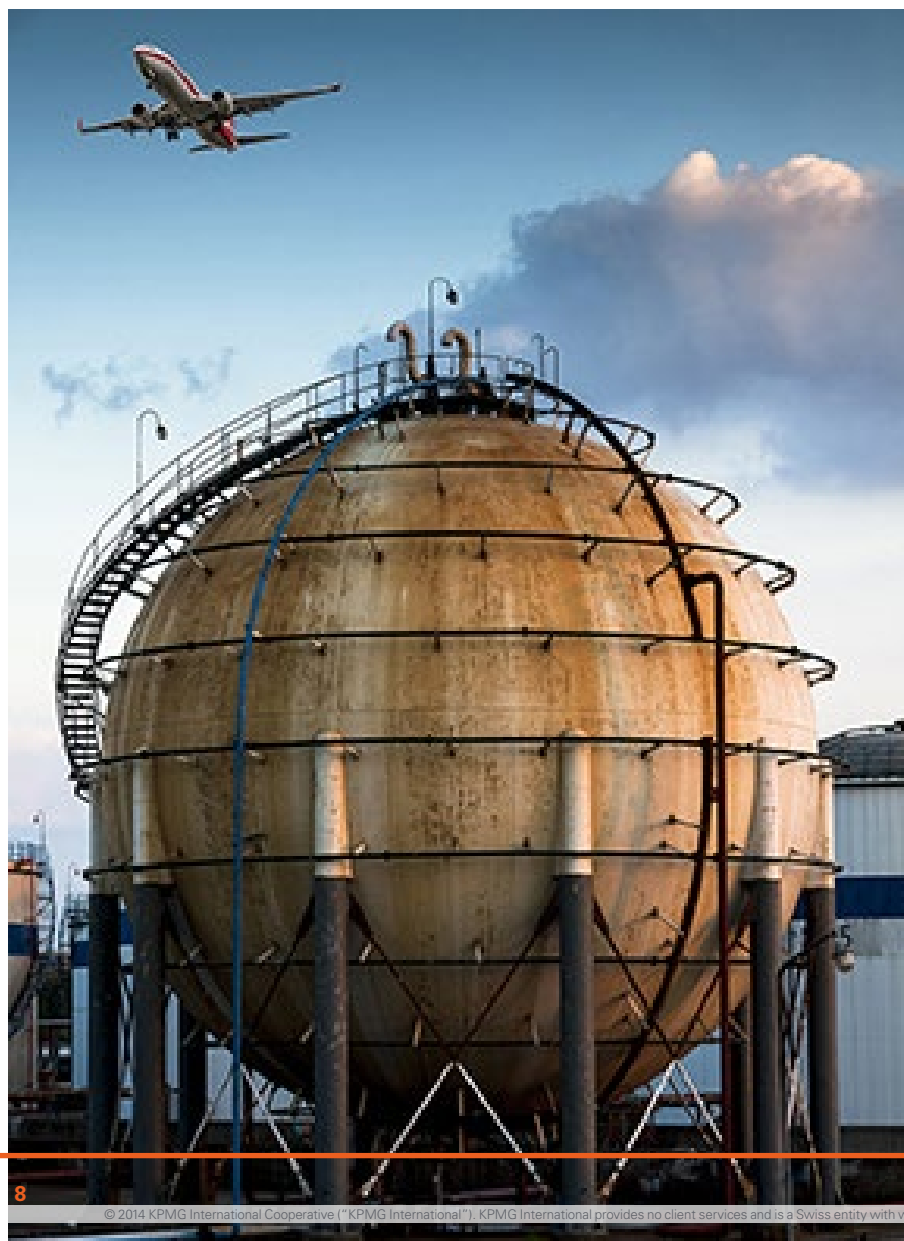
population and between 300 and 500 million people can be classified as middle class. By 2015, the number of Africans with an annual income of US\$3,000 is expected to reach US\$100 million.

Consumer spending in Africa totalled US\$1.3 trillion in 2011, which is comparable to US\$1.2 trillion in Russia and US\$1.3 trillion in India. Consumers now spend about US\$25 billion in each of the five largest African cities. Assuming consistent growth, overall

consumer spending for the continent will top US\$1.4 trillion by 2020.

For the infrastructure and construction subsectors, growth is required at almost every level. For example, electricity generated by the entire continent is roughly equal to the power output of Spain, a country of only 45 million people. Africa will need to spend US\$93 billion annually to close its infrastructure gap and infrastructure development has been increasing recently due to increased government focus and funding.

Key risks of doing business in Africa



In general, Africa's operating environment remains relatively risky compared with other regions. The continent remains one of the most conflict-ridden regions in the world, with the number of conflicts increasing in recent years, although of lesser intensity than in the past.

Income inequality – which is high and growing higher – is a factor driving some of this conflict. Africa remains one of the most unequal regions in the world. Income inequality in Africa, as reflected by the Gini index, increased from 42 in 2005 to 46 in 2010.⁴ Youth unemployment is also high, at 37 percent and growing, potentially increasing the risk of social and political unrest.

Regulatory uncertainty, accompanied by corruption and red tape, is another risk for economic development, with some countries having little or no oversight and others imposing regulations that hamper growth.

Equally important is the current state of Africa's infrastructure. With the exception of telecommunications, infrastructure is still inadequate. Density of the road network lags far behind other regions, at 204 kilometers of

⁴ The World Bank, <http://data.worldbank.org/indicator/SI.POV.GINI>

road per 1,000 kilometers of land area compared to the global average of 944 kilometers per 1,000 kilometers of land. Electricity generation per capita is also quite low.

Finally, the sheer complexity of African society is a constant challenge. Around 2,000 languages are spoken across the continent. South Africa alone has

11 official languages. English is widely used in business, government and media, but only a small portion of Africans are fluent in the language. Religious, cultural and racial differences add even more complexity. A business model or product that is successful in one country or demographic group might not succeed elsewhere. Importantly, each market needs to be approached on its own terms.

Innovative strategies for risk mitigation

Despite the challenges above, both African countries themselves and foreign investors have recently been finding innovative ways to cut through long-standing barriers to investment and development.

Many countries are making regulatory and political stability a priority. Since 1991, 30 ruling parties or leaders have been voted out through democratic processes and 40 out of 54 countries in Africa have achieved democratic rule. Regulations have been eased in sectors where government approvals have a repeated and significant impact on business operations. More businesses are finding the opportunity to locate operations in countries with relatively stable political environments, often using these countries as regional hubs for product distribution or expansion into other countries.

Countries are also focusing on improving business practices, governance and legal frameworks. According to the World Bank's *Doing Business* report of 2013, Sub-Saharan Africa has the highest number of legal rights reforms of any region. Countries are also supporting the privatization of inefficient, state-owned enterprises. Between 1991-12, over 2,000 of these enterprises were privatized in Africa. New measures promoting foreign investments were introduced by 40 African countries in 2006 and most African countries have removed barriers regarding 100 percent foreign ownership in most sectors.

For infrastructure development, African governments now spend about US\$45 billion per year. Approximately one-third of this amount is contributed by donors and the private sector.⁵ At the same time, foreign investors are supporting infrastructure initiatives by forging strong relationships with domestic suppliers or vertically integrating their businesses. Other successful development strategies include locating businesses close to sources of raw materials and outsourcing distribution to reliable third parties. In areas that lack a reliable source of electricity, investors are considering alternative power and hydro.

Another strategy to mitigate business risk involves using local knowledge, experience and expertise. For investors, this includes engaging experts with the requisite local knowledge and setting up in-house research units to constantly seek and gather relevant market information. Businesses are also attracting and retaining top local talent by offering competitive salary packages and robust training programs. In addition, they are aggressively recruiting Africans overseas along with foreign expatriates with requisite experience in local markets. Many foreign investors are also reducing the use of equity and intercompany loans and increasingly using local debt sourced from the host country.

“Many countries are making **regulatory and political stability** a priority. Since 1991, **30 ruling parties** or leaders have been **voted out** through democratic process and **40 out of 54 countries** in Africa have **achieved democratic rule**.”

⁵ Infrastructure Consortium for Africa, icafrica.org

Current developments

“ Overall, South Africa remains the **most developed economy** and, accordingly, has the **most developed chemical industry**. ”

In 2012, there was over US\$50 billion of foreign direct investment (FDI) in Africa. While energy and natural resource investment was the main area of focus, investment is increasingly being spread across a broader number of sectors than at any time in the past.

For the chemical industry in particular, however, investment remains small scale and generally focused on a small number of segments in a small number of countries. Overall, South Africa remains the most developed economy and, accordingly, has the most developed chemical

industry (see page 13). Elsewhere, a number of global majors are taking a focused approach to African strategy development.

Bayer believes parts of Africa have above average growth potential, though starting from a low level. DuPont is investing in a technology hub in South Africa to serve the wider region. BASF is aiming to double chemical sales in Africa to US\$2.5 billion by 2020 through extending current activities in Northern and Southern Africa into parts of Eastern and Western Africa.⁶

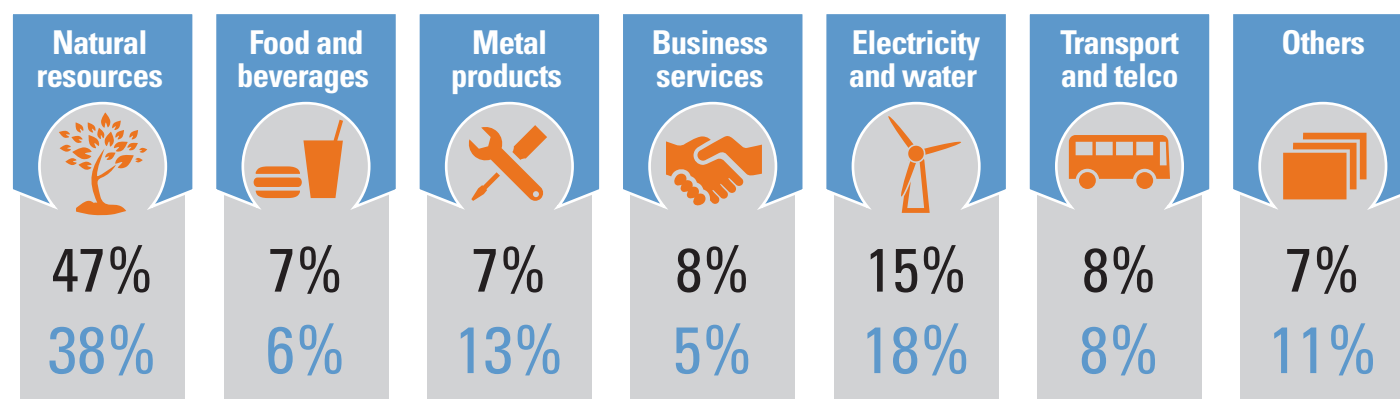
FDI flows to Africa by region



Source: World investment report, 2013

⁶ Company annual reports

FDI flow to Africa by sector



■ 2011 ■ 2012

Source: *World investment report, 2013*

Nigeria: Potential growth held back by chronic problems

Nigeria's petrochemicals sector, 2010–17 ('000 tonnes per annum (TPA), unless otherwise stated)								
	2010	2011	2012	2013	2014f	2015f	2016f	2017f
Ethylene capacity (000TPA)	300	300	550	550	550	550	550	550
Propylene capacity (000TPA)	125	125	125	125	125	125	125	125
LLDPE capacity ('000TPA)	240	240	240	240	240	240	240	240
PE capacity (000 TPA)	240	240	240	240	240	240	240	240
PP capacity (000TPA)	95	95	95	95	95	95	95	95
Urea capacity (000TPA)	1,000	1,000	1,000	1,000	1,250	1,250	2,650	2,650
PET capacity ('000TPA)	na	na	75	75	75	75	75	75
Ammonia capacity ('000TPA)	300	300	300	300	430	430	430	430

Source: *Nigeria Petrochemicals Report 2014*, Business Monitor International

Nigeria has the potential to be a major petrochemicals producer in Africa, but is held back by weak infrastructure, a lack of experienced, local workforce and continued geopolitical uncertainty in the region.⁷

Despite enormous oil reserves, Nigeria is limited by a lack of competitively priced and reliable feedstock supplies. The country's refineries suffer from recurrent disruptions and cannot process all of the nation's crude output or provide sufficient low cost naphtha

on a reliable basis. Government-based and indigenous operators control the refining and petrochemicals, but they lack the expertise and management skills to ensure supply. Electric supply is intermittent, property rights are not always enforced and many branches of the government are characterized by widespread corruption. Equally significant are continued security problems in the Niger Delta and the Gulf of Guinea.

However, massive growth in refinery, fertilizer and polymers capacities are

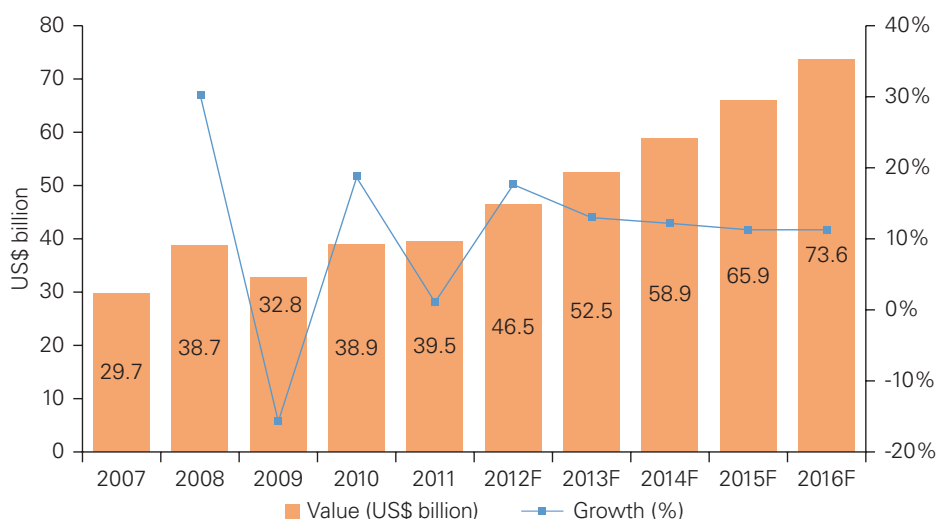
being proposed. The government is attempting to attract FDI into the country's petrochemicals sector, including recent investment initiatives with China. Nigeria can point to a growing economy, virtually no debt, recent banking sector reforms, some improvement in anti-corruption efforts and a pro-market government. For the time being, however, many investors remain wary, adopting a wait-and-see attitude until more progress has been made, especially in the petrochemicals sector.

⁷ *Nigeria Petrochemicals Report 2014*, Business Monitor International

South Africa:

A regional leader facing growing pains

South African chemical industry value (US\$ billion)



Source: Chemicals in South Africa, datamonitor, June 2013

South Africa has long been the leader in chemical production for the continent. The chemical industry accounts for about 25 percent of the nation's manufacturing sales, with synthetic coal and natural gas-based liquid fuels and petrochemicals dominating the sector.

South African chemical producers are currently facing poor domestic demand and a volatile exchange rate that hampers exports. The country's plastic and basic chemicals output declined throughout 2013. In the first 10 months of 2013, plastic output fell 19 percent year over year (y-o-y) and basic chemicals declined 9 percent

y-o-y.⁸ On the upside, synthetic rubber production increased 9 percent while rubber production grew 9 percent.

Chronic problems include ongoing uncertainty about the outcome of wage negotiations, potential electricity supply shortages and slower growth in consumer spending that is undermining confidence within the petrochemicals sector. Nevertheless, domestic producers have benefitted from both a weak rand, which has sustained competitiveness, and relatively cheaper costs when factoring in transportation of imports, which has helped maintain current production levels.

⁸ Statistics in this section from South Africa Petrochemicals Report Q1 2014 Business Monitor International



African opportunities:

An interview with **Paul Victor** of Sasol Limited Group

Sasol is an international integrated energy and chemical company based in South Africa. As its acting chief financial officer and executive director, Paul Victor brings a unique perspective to the African chemical industry. Reaction Magazine recently asked him to share his views on current conditions and future opportunities for chemical companies and investors across the continent.

Victor identified a number of key industry subsectors, including explosives, agriculture products, such as fertilizers, and polymers. He also pointed to the growing importance of oil and gas reserves, especially in Mozambique, that will drive new growth and development.

He stated that exports will remain the most important market for African chemical products for now, but he expects domestic markets to become increasingly important in the near future. He mentioned significant market activity in Mozambique, Botswana, Angola, Namibia, Ghana, Gabon, Libya and Nigeria.

Victor listed a number of challenges for the chemical industry in Africa, such as demonstrating compliance with local regulations, addressing government policies and protecting investments with proper financing. In addition, foreign investors need to understand that, much like China, patience is required to establish good relationships with government and business stakeholders. He also stressed the importance of maintaining a commitment to social welfare and the well-being of local communities, a commitment that is especially important to Sasol.

Asked to name the single greatest advantage that the African chemical industry now enjoys, Victor put economic growth at the top of the list. "Africa has a strong rate of growth and the industry will benefit from our expanding markets and trade well into the foreseeable future."

KPMG chemicals outlook

“ Every morning in Africa, a **springbok wakes up**. It knows it **must run faster** than the **fastest lion** or it will be killed.

Every morning a **lion wakes up**. It knows it must outrun the **slowest springbok** or it will **starve to death**.

It doesn't matter whether **you are a lion or a springbok**. When the sun comes up, **you better start running**. ”

African proverb

Africa has been a long-neglected continent within the dynamics of the global chemical industry. Historically, the lack of market opportunity and the multitude of challenges associated with doing business on the continent have inhibited interest and constrained growth. Even now, as some of these underlying issues are beginning to be addressed, the abundance of opportunities offered elsewhere within the industry – such as in high growth Asian markets or through cheap feedstock in the US – mean that when senior chemical industry executives are making decisions about the deployment of capital, Africa remains low on the priority list. Detailed discussions about ‘African strategy’ remain the exception rather than the rule.

Significant challenges still remain – Africa consists of 54 countries with very different dynamics, such that developing a continental strategy is difficult; infrastructure and education are a long way short of minimum global standards; legal, political and regulatory regimes remain complex; business practices in many instances are not transparent.

However, these challenges are no different than those faced by global chemical companies when they first entered China or India a generation ago. With nearly one-fifth of the world's population, Africa is too big to be ignored. To be successful, there are three key factors companies need to adopt:

1. Take a country-by-country and segment-by-segment approach to understand the market opportunity.
2. Take time to understand the risks (but do not overplay them) and develop detailed risk mitigation strategies.
- 3 Do not go it alone. Develop a strong network of local partners and local advisors to help navigate the challenges.

More so than at any point in the past, Africa is very much open for business and offers opportunities which will only expand as the continent continues to develop. The chemical industry will necessarily be at the forefront of that – providing the products that enable development. The chemical companies who benefit will be the ones who are first to understand the opportunity.



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Tax opportunities

for chemical companies with the
shale gas revolution

By
Frobert van Zijl
Jeroen Kuppens



Today's business news is filled with stories about the 'shale gale' of natural gas now available through hydraulic fracturing (fracking) and horizontal drilling in the US. For chemical companies, shale gas is a major game changer that involves feedstocks; research and development (R&D), the value chain; and logistics and distribution. Less noted – but equally important – are new tax opportunities arising from the shale gas revolution that can have a significant impact on the financial and competitive positions of global chemical companies.

“Those **cheap feedstocks** are reshaping the **global competitive landscape** for **petrochemicals**.”

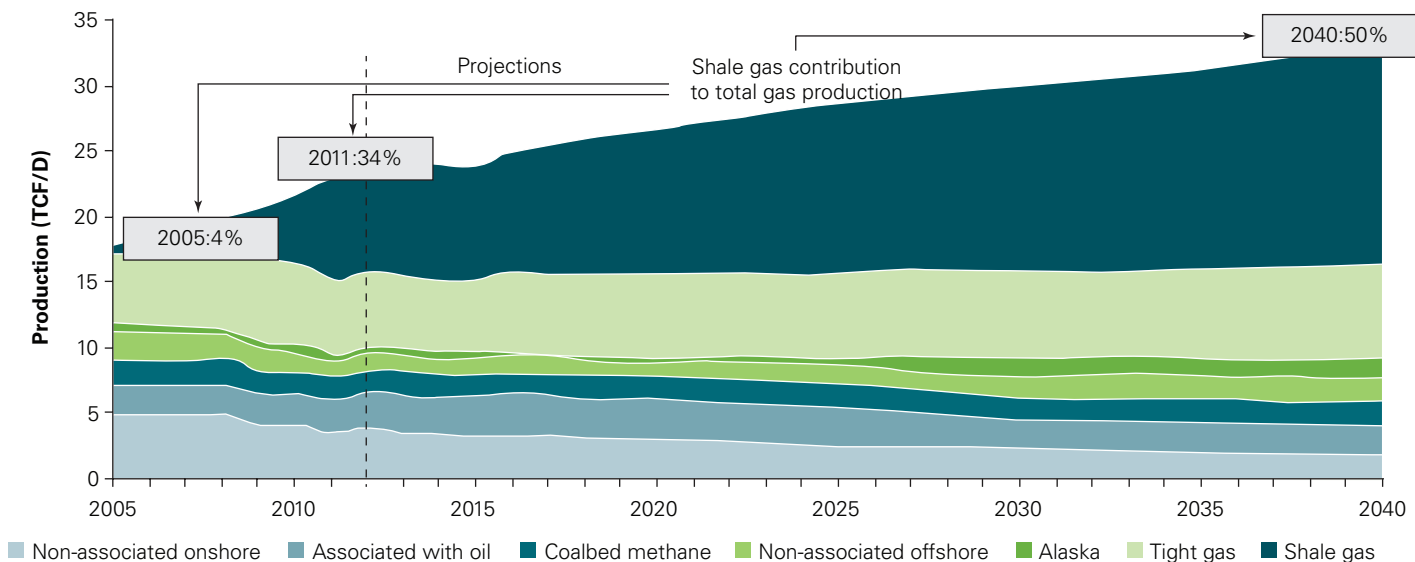
FinancialTimes¹

According to analysts such as Kevin Swift of the American Chemistry Council, the global chemical industry is undergoing its greatest change in 75 years, largely because of capacity increases from shale gas.² Simply put, natural gas supply is moving to North America while demand continues to increase in Asia.

According to the US Energy Information Administration (EIA), US shale gas production has increased

12-fold over the past decade and the estimated unproven though technically recoverable, resource is 482 trillion cubic feet (TCF). By 2035, the EIA projects that shale gas production will rise to 13.6 TCF, representing nearly half of all US natural gas production.³ The US petrochemical industry plans to add 40 million metric tons (MMT) of new capacity by 2018 and IHS estimates that the US could add another 45 MMT by 2030.⁴ Most of this first wave of new capacity will come online by 2018.

Natural gas production



Source: US EIA; US Department of Energy

Note: TCF/D is trillion cubic feet per day

¹ 17 December, 2012

² US shale gas sparks a chemical revolution, Financial Times, 17 December, 2012

³ US Department of Energy, accessed 15 November, 2013, <http://energy.gov/articles/producing-natural-gas-shale>

⁴ Low-Cost Shale Gas Gives North American Petrochemical Producers Advantages Over Europe, Standard & Poor's Ratings Direct, 23 April, 2013

A changing industry landscape

The availability of shale gas and a dramatic drop in US gas prices is changing the use of feedstocks as well as the competitive positions of regional markets around the world.

North American steam crackers have shifted to lighter feedstock, driven by the cheap shale gas. Ethane is steadily increasing as a feedstock of choice for ethylene, displacing heavier slates (C3+). The European petrochemical industry is currently driven by naphtha feedstock and higher slates with a smaller percentage of natural gas. However, a number of producers in Europe are considering the importation of ethane from the US, which is expected to increase ethane

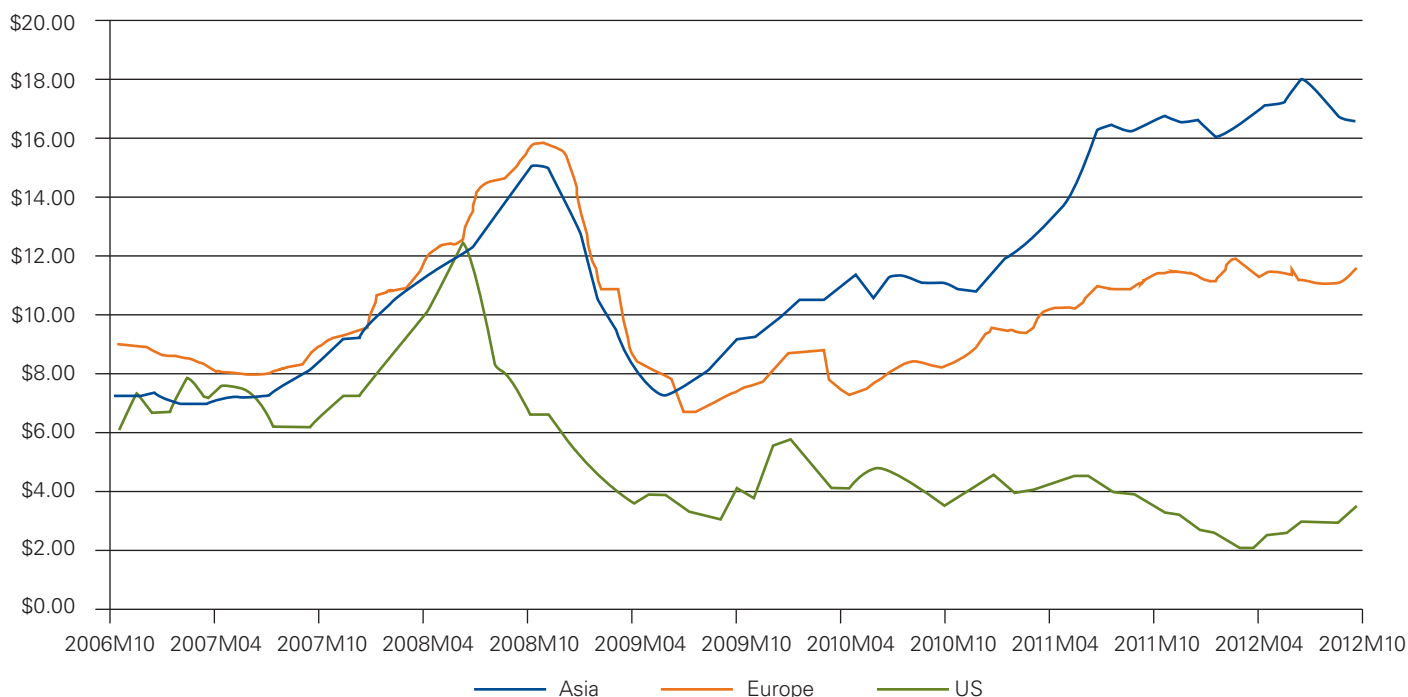
consumption as a feedstock for European chemical manufacturers – although currently only four of 45 steam crackers in Europe are capable of consuming ethane in significant quantities.

Middle Eastern products will be undercut in cost by US products based on domestic shale gas, although the Middle East would still have a cost advantage over Europe. In Asia, most of the petrochemical production capacity is naphtha based. The ongoing development of Chinese coal-to-olefins (CTO) is expected to change the dynamics in the future, reducing the need for natural gas imports.

“ This shale gas is a **‘game changer’** that is **rejuvenating** America’s chemistry industry. ”

American Chemistry Council⁵

Natural gas price (\$/MMBTU)



Source: World Bank Commodity Price Data (Pink Sheet)

⁵ www.americanchemistry.com/ShaleGas, accessed 13 November, 2013



Heavier feedstocks in short supply

“A number of players in Europe and farther afield are looking at **possibly importing** ethane from the **US** and **US Gulf Coast ethane exports** are likely to be considered.”

ICIS⁶

The transition to lighter feedstock based on shale gas has tightened the production of other critical petrochemicals such as propylene, butadiene and benzene. These products are produced in large quantities only when naphtha or heavy liquids are cracked.

Propylene is the second largest consumed olefin after ethylene. The increased use of ethane as a feedstock in the US and the Middle East, coupled with decreased operating rates in the West, has led to demand-supply imbalances. For example, US production of propylene has dropped by 40 percent, from 5.9 billion kilograms in 2005 to 3.4 kilograms pounds in 2012. To meet growing demand, new technologies

are being developed, including propane dehydrogenation (PDH) and CTO in China. These technologies are expected to add 3 million metric tons (MMT) and 17 MMT by 2016, respectively.

A shortage of butadiene is also predicted in the US, resulting in rising prices and more imports. On-purpose and bio-based technologies are expected to help increase supply, although not enough to fully meet demand. Benzene is impacted the least because 70 percent of this feedstock comes from refineries and the extraction of coal tar. However, the ongoing feedstock shift due to shale gas will also result in a shortage of this product.

⁶ www.icis.com, 20 May, 2013



Expansions and shut downs

Due mainly to shale gas, the US is seeing a surge in investments. Around 135 chemical projects worth over US\$90 billion have been announced through December 2013.⁷

In some cases, cost advantages have led several US chemical manufacturers to relocate plants that had been moved offshore back to the US. For instance, Dow Chemical is planning to construct a new ethylene unit along the US Gulf Coast by 2017, reopen an idled ethylene plant in Louisiana this year and build a new propylene facility in Texas by 2015. Shell Chemicals is constructing a petrochemical refinery in the Appalachian region and the company has announced plans to build an ethane cracker in Pennsylvania.⁸

US shale gas has also attracted overseas investors, with over 50 percent of announced investments from non-US firms. These firms

include Formosa (Taiwan), INEOS (Switzerland), Sasol (South Africa), Indorama Ventures (Indonesia), and Braskem (Brazil).

In contrast, shale gas has led to severe stress in other markets. Over 80 percent of global plant shutdowns from March to May 2013 occurred in Europe, due mainly to increased capacity in the US.⁹ Recent closures and rationalizations include:

- Artenius Hellas: 80 thousand tons per year (kt/y) polyethylene terephthalate (PET) plant closure.
- LyondellBasell: 100kt/y polyethylene (PE) plant closure.
- SABIC Europe: 210kt/y olefin plant closure.
- Total: 250kt/y cracker and 510kt/y high-density polyethylene (HDPE) plant closure.

- Versalis: 790kt/y to 490kt/y cracker rationalization.

KPMG believes that plant shut downs in Europe as well as Japan will eventually lead to the delocalization of the global petrochemical industry. European investors are now focusing more on emerging markets and shale-based investments overseas. In the Asia-Pacific region, recent expansion includes 16 CTO projects with a total capacity of around 10 mt/y, due to come on stream by 2015. The South American petrochemical producers are considering investments outside the region, either in the form of joint ventures (JVs) or through assets acquired outside of their own countries. Major investments include Braskem's (Brazil) polypropylene investments in Europe and the US; a possible JV of Mexichem (Mexico) with Oxychem (US); and expansion in the US by Oxiteno (Brazil).

⁷ American Chemistry Council, Economics and Statistics, December 2013

⁸ What the Shale Gas Boom Means for American Chemical Manufacturers, The Motley Fool, 8 December, 2012

⁹ KPMG research

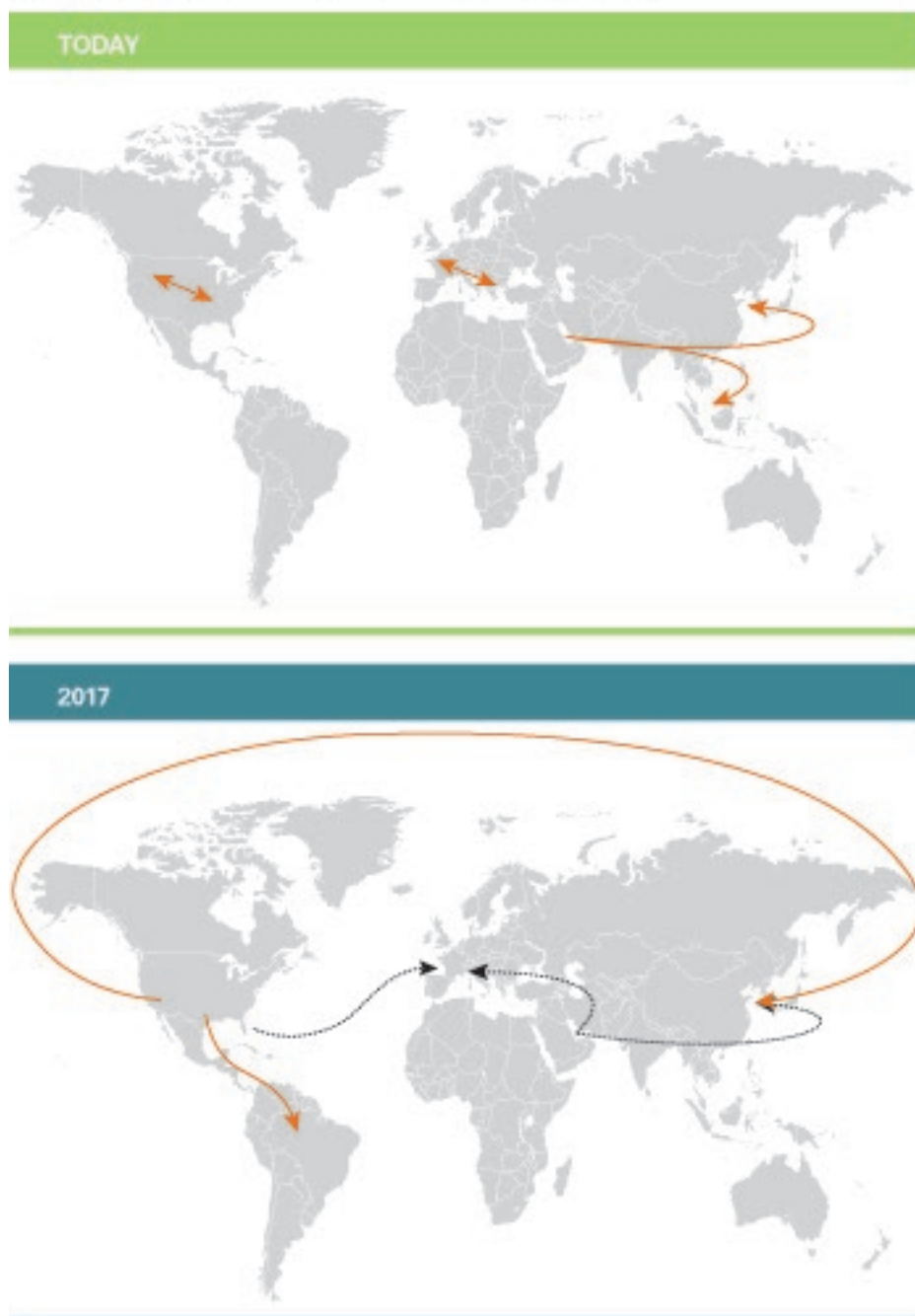
US gas exports on the way?

The shale gas boom has completely overturned the liquefied natural gas (LNG) market outlook. US dependence on imported natural gas has dropped from 18 percent in 2005 to 6 percent in 2011. At the same time, current Henry Hub prices are in range of US\$3 to US\$3.5/MMBTU in comparison with Asia's spot LNG prices of US\$11 to US\$13/MMBTU.

As a result, US companies that initially set up LNG regasification terminals are now planning to convert these into liquefaction terminals to export gas (as LNG) to the global demand markets. According to the Department of Energy, around 20 proposed export terminals or potential sites were announced in the US (with a combined capacity of 27.9 billion cubic feet per day [BCF/D] and six terminals in Canada (with a combined capacity of 6.42 BCF/D).

However, significant costs and regulatory hurdles are associated with LNG exports from the US. Converting regasification terminals into liquefaction terminals can cost US\$2 billion to US\$8 billion per terminal, depending on the LNG capacity, according to the Oil & Gas Journal. Other than Cheniere Energy with the Sabine Pass Liquefaction Project in 2012, only ConocoPhillips with its Freeport LNG terminal has received approval to export natural gas from the US. The debate as to whether or not to export has become highly politicized, with no conclusion in sight.

Supply moves West as demand moves East



Source: KPMG analysis

— Petrochemical trade flows

Possible tax opportunities for chemical companies

Most, if not all, of the developments described above will impact chemical companies for years to come. At the same time, companies need to consider possible tax implications of the shale gas revolution, including major shifts in profitability across regions; potential trapped losses due to possible shutdowns of non-profitable assets; and tax advantages under the arm's length principle.

KPMG believes that the shale gas revolution presents significant tax opportunities for chemicals companies setting up any of the following four entities:

Intellectual property (IP) companies

These companies would operate as the economic owner of IP and its intangibles (not necessarily the legal owner). IP companies may be entitled to an arm's length return in which a lower tax rate can apply. IP may include new CTO technologies, bio-based technologies and new production technologies for propylene, butadiene and benzene production processes.

For optimal tax advantages, IP companies need to carefully manage the development, maintenance, enhancement and legal protection of their IP. In some cases, they can contract R&D services from other entities in other locations.

The economic IP owner is entitled to intangible-related returns. The owner should be located in a low-tax environment. Many tax-favorable IP regimes are now available for technology-related IP. If the IP is moved to a new location, care should be taken

to mitigate exit tax risks in the country where the IP was located.

The manufacturer and/or other group entities pay a tax-deductible royalty for use of the IP and it should be ensured that little or no royalty withholding tax is due. The manufacturer and/or other entities can also take steps to avoid controlled foreign corporation (CFC) legislation, supporting tax-efficient profit repatriation.

Lease companies

Group lease companies might be planning to invest in a US petrochemicals asset base, LNG export facilities or other investments in logistical assets. If established in the right location under the right circumstances, the lease companies may be taxed at a lower rate.

The lease company takes on the functions and risk profiles that are in alignment with an operational leasing business. The lease arrangement is typically a true operational lease, so the residual value risk is retained by the lease company. The lease is based on a sustainable internal rate of return (IRR) as a benchmark. We note that at arm's length, the lessor only commits to the investment if it can recoup the total investment cost and earn the IRR over the lifetime of the leased assets. This may lead to risk for the lease company and more risk requires a higher expected return.

The manufacturing company pays a tax-deductible, arm's length lease fee and should avoid the withholding tax on the lease fee.

“ If established in the **right location under the **right circumstances**, the lease companies **may be taxed at a lower rate.** ”**

Procurement company

Supply security is becoming a key strategic risk for some downstream operations. Managing the procurement risk as a profit center may warrant a higher return, especially when depending on scarcer future feedstock such as propylene, butadiene or benzene. Tax opportunities may be available by centralizing or relocating a newly set up procurement company to a low-tax environment. In addition, companies should adopt a buy-sell transactional approach in order to maximize benefits.

The procurement company negotiates and contracts with vendors and manages suppliers and key procurement risks. It also ensures the security of supply, purchases products and/or services for resale to the manufacturing company and retains margin on resale to the manufacturing company in a low-tax environment.

The manufacturing company buys feedstock and services from the procurement company. The purchase price is set at the precentralized or lower level where costs savings are shared with the procurement company.

Principal company

Centralizing the management of key value-adding processes typically attracts residual profits. In some cases, this could involve trapped European losses due to plant closures. The company must make sure that sufficient profitability is available in the entity where closure costs are recorded, using methods such as consolidating upstream or downstream profits, other business unit profits, other function's profits or other geography profits.

Tax opportunities might involve major business restructuring in order to be able to assume profits from other areas. This approach requires a careful set up to mitigate one-off restructuring (exit)

tax risks, and ongoing taxable presence (TP)/permanent establishment (PE) risks. Set up may require considerable time and may involve working with an IP company as well.

The principal company should have the right management on board to manage the business from which it assumes the (residual) profits across the whole value chain. The company manages the key value drivers of the business including the key entrepreneurial risks and valuable intangibles. It also supports a buy-sell transactional model, the ownership of raw materials, works in progress and finished goods. In addition, the principal company sells directly to customers or through limited risk group distributors, agents or representatives.

The manufacturing company pays tolls for the principal company or acts as a contract manufacturer. The manufacturing company has a limited risk profile as a cost center.



Summary

The implications of the shale gas revolution will affect chemical companies worldwide in several aspects and companies need to be aware of the tax implications resulting from major shifts in profitability across regions, potential trapped losses due to shutdowns, changing risk profiles and value-driving IP and intangibles. Chemical companies can possibly

realize tax opportunities in four areas: assuming IP profits in a value chain located in a low-tax environment; leasing returns if a capacity company is set up; procurement risk that drives profitability assumed in a low-tax environment; and the major centralization of the value chain for a principal company in low-tax jurisdictions.

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Portfolio rationalization:

Key strategies for
chemical companies

By
Marc Summers



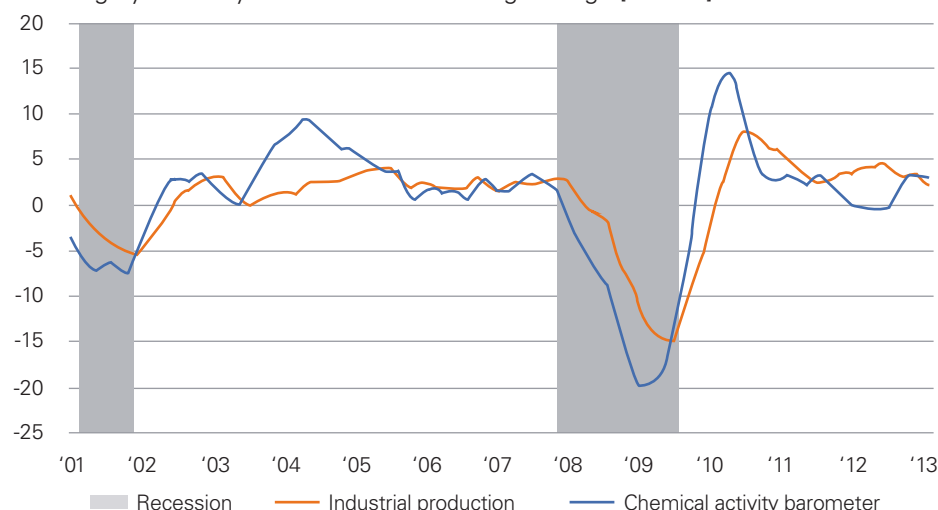
We all remember 2008. Faced with massive declines in volume, especially in developed markets, many chemical companies recognized that strong medicine was required to survive the shock of a global recession. Senior management took a hard look at their portfolios in terms of performance, growth and strategic value to the organization and divested assets that were underperforming or incurring unnecessary costs. This rigorous approach helped sustain many organizations and position them for better times ahead. Once the immediate financial crisis passed, some companies developed inertia in regards to the rationalization process. However, successful players continue to support rationalization as an ongoing part of an effective portfolio management strategy.

“In a recent **KPMG Global Diversified Industrials** survey, four out of **10 executives** stated they plan to **exit non-core businesses** or product lines in the **next 2 years**.”

US chemical activity

Chemical activity barometer versus industrial production index

% change year-over-year three-month moving average [3MMA]



Source: American Chemistry Council, March 2014

During the global recession, the chemical industry faced volume declines that reached 30 to 60 percent or more,¹ especially in developed economies. Many chemical companies responded by initiating job cuts, released warnings of reduced profits and began the painful but necessary task of divesting assets to reduce costs and gain liquidity during those troubled times. For those companies that made the hard decisions, those actions enabled them to resist calls for price cuts, improve their competitive advantage and even become key players in certain markets.²

As the economy improves, rationalization has also become a favorite strategy for many chemical companies to divest their commodity-based assets and shift toward higher-margin specialties. In a recent KPMG Global Diversified Industrials survey, four out of 10 executives stated they plan to exit non-core businesses or product lines in the next 2 years.³ Companies considering a divestiture should proceed with prudent and careful analysis, recognizing the unique and sometimes unforeseen challenges involved in selling an asset.

¹ *Volumes Down, Spirits Up*, Chemical Logistics, September 2009. See also *The Future of the European Chemical Industry*, KPMG, 2010

² *Market outlook: Global chemical growth to be driven by the US, Asia*, ICIS Chemical Business, 18 October 2013

³ *2014 M&A Outlook Survey Report: M&A expected to rebound in 2014*, KPMG, 2013

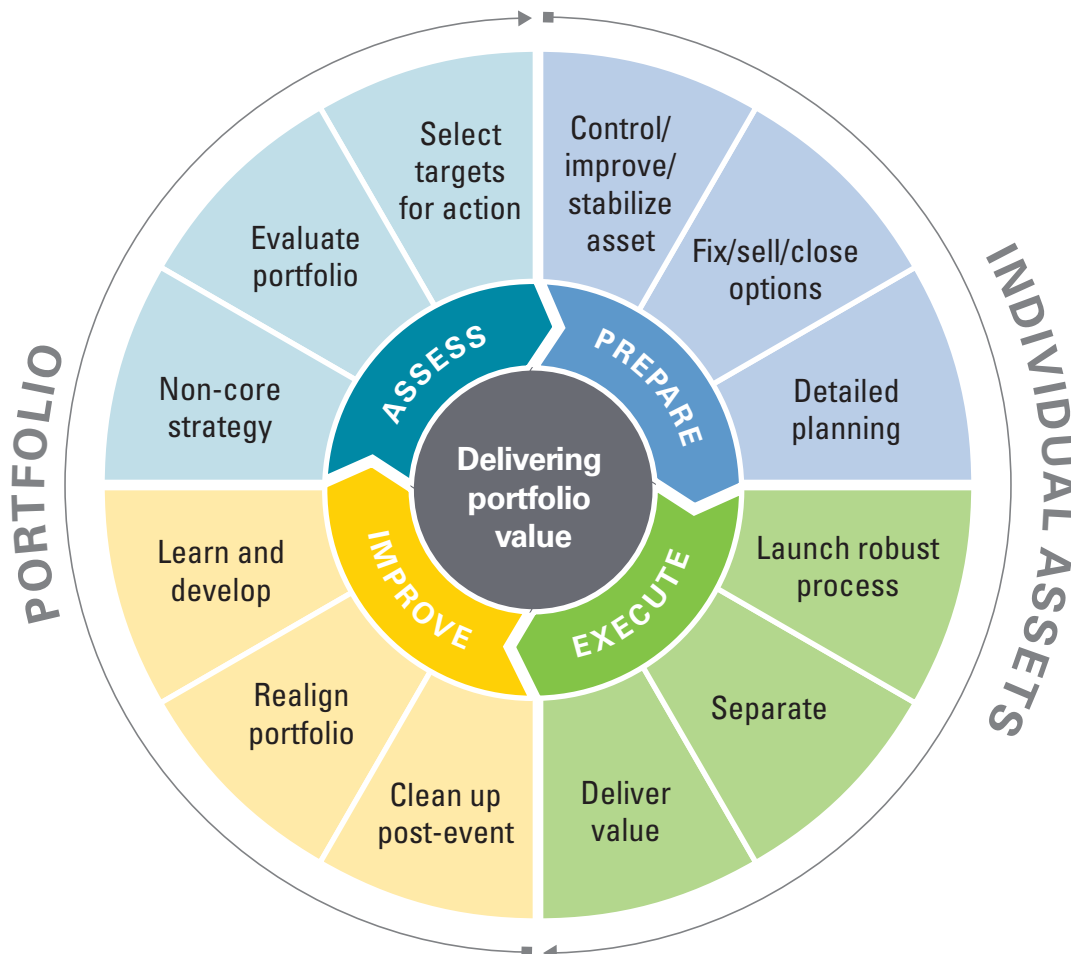
Delivering portfolio value

Although rationalization is sometimes considered only in terms of divestiture, the process is really about delivering optimal value to the portfolio. Accordingly, management should consider any of the five options available for asset rationalization:

1. Buy a new asset with available cash, with divestment proceeds or through financing to gain greater revenues, expand product lines, enter new markets or develop synergies with other assets.
2. Sell existing assets to divest underperforming units, reduce overhead or align the business to new strategic directions with greater focus.
3. Fix the asset by altering the business model, investing cash or resources, changing management, streamlining the supply chain, increasing R&D or making changes in finance and control.
4. Enter into partnerships, alliances or joint ventures with distributors, suppliers or other business entities.
5. Close the business when this provides the optimum strategic value for the group.

In reviewing these options, management should keep in mind the relative merits of immediate versus long-term benefits. Rationalizing is

driven by many triggers including the equity markets, analysts' viewpoints, a new CEO or active shareholders in the company demanding higher value. Internally, the company itself might be under pressure to increase liquidity or restructure cash flow. These drivers are often focused more on short-term gains rather than long-term strategic value for the company. Management should always take a measured approach that acknowledges the need for change but avoids premature actions that can lead to unnecessary expenditures, lost opportunities, misalignment between products and markets or disappointing results when an asset is put up for sale.



Source: KPMG International, 2014

“The ripple effects are now being felt in markets worldwide and businesses will have to adapt their strategy to react now and for the next 5 to 10 years.”

Asking the following questions can help management maintain a strategic direction during the rationalization process as they look to define which business they should be in:

- 1. Who is the best owner for the asset?** Sentiment or management inflexibility might prevent a company from recognizing that a different owner might operate the asset with greater efficiency, effectiveness and profitability. In fact, the value of that asset to the company might have already peaked, but a buyer can drive out further value. An objective assessment supported by data and analysis and driven by the group's strategic vision is required to accurately determine the best owner of the asset.
- 2. What about the asset's market?** Is the market attractive on multiple levels? Does it support growth, attractive margins and other business advantages? Are any significant market changes expected? For example, North American shale gas has become a major market changer for the chemical industry in the US. The ripple effects are now being felt in markets worldwide and businesses will have to adapt their strategy to react now and for the next 5 to 10 years.

- 3. Does the company have the time, resources and expertise to successfully undertake a transaction?** Dedicated expert resources are critical to the successful implementation of an effective non-core program. A well planned and resourced project team can minimize this distraction to the business (in both the core and non-core areas) and free up the right management to focus on the right opportunities.
- 4. Will our new portfolio fully support our company strategy?** The impact of the rationalization needs to be understood in terms of one, three or even 5 years in the future. Businesses which are core now may not be in 5 years and assessing how and when to maximize value is a key element.
- 5. What will we do with the income from the sale?** Will proceeds be distributed to shareholders or will they be used by the company to make new investments? All assessments should 'start with the end in mind' and this is a key early question which can be overlooked, but can definitely impact the assessment of increased value that will be achieved.

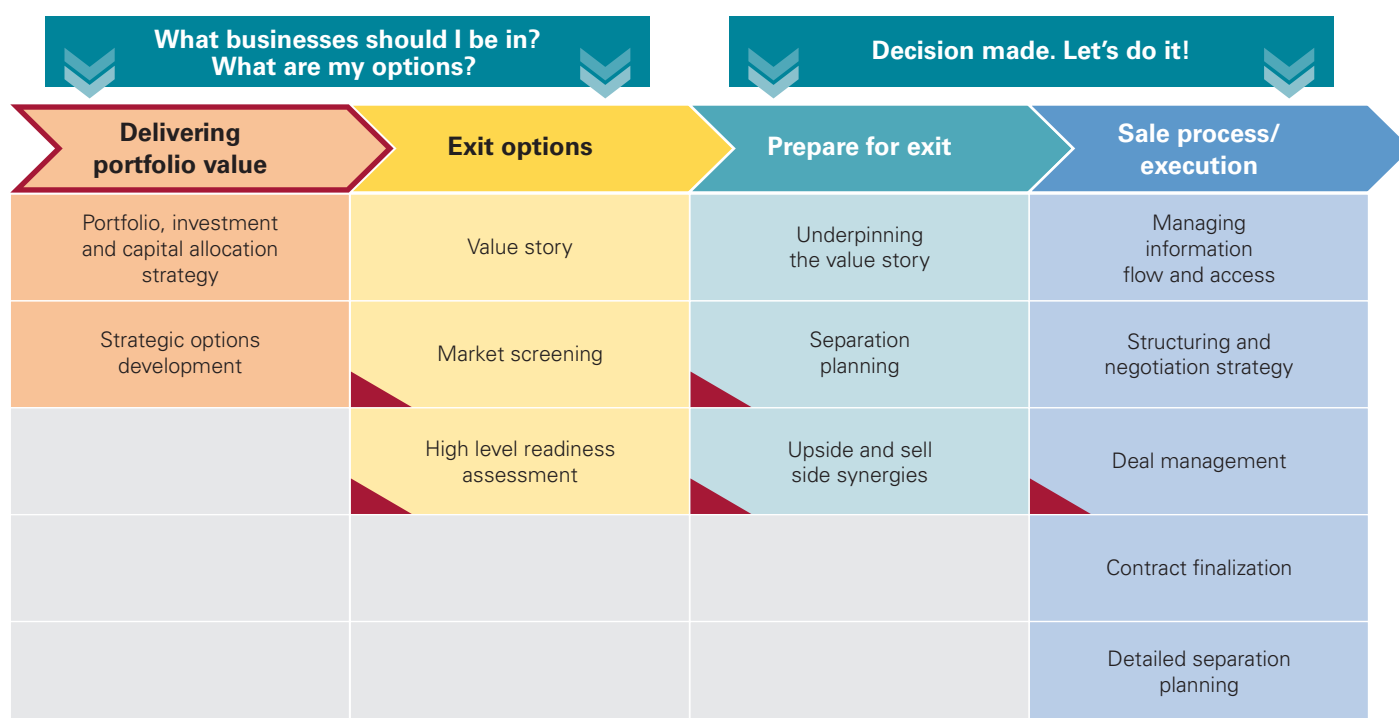
Areas to consider when planning and executing a divestiture

Unlocking the value from non-core assets is quite possibly one of the biggest challenges faced by chemical companies that want to keep pace with global trends in the industry. Once the decision is made to exit a non-core business or part of a business, then the focus turns to maximizing the value that can be derived from these assets which no longer fit with the overall strategy.

Properly planned and executed divestitures can maximize value through the price achieved, the capital freed up to be used more efficiently elsewhere and the distraction it removes.

Any divestment process should be carefully tailored to the specific transaction. The process should also incorporate a set of proven practices to reduce time and costs associated with the sale, avoid surprises and deliver optimal value. In addition, the sale needs to be completed with a minimum of disruption to the company's operations.

Divestments take longer than acquisitions, with extensive assessments and preparation required at the beginning to ensure the option chosen is right and, once the process is launched, to ensure it is efficient and credible.



An early assessment of the assets' readiness for sale provides a solid start to the process. Knowing the key issues a buyer will raise and analyzing what information is available and what needs to be created protects value. The analyses should address business and legal areas such as the perimeter of the transaction (what is included in the sale and what is retained), tax implications, profit and loss of the asset as a standalone entity and the readiness and ability of management and the information available to stand up to due diligence on financial, tax, legal, operational and commercial areas of the business being sold.

Divestiture value also depends on how the business is related to the rest of the company. If the business is a standalone entity, for example, the time and costs involved with a divestiture are usually less than those involved with carve-outs. The value proposition of a standalone asset is also easier to present to prospective buyers.

If, however, the business is integrated, then separating a business is a complex procedure that needs to be mapped out in great detail and unforeseen complications can arise

every step of the way. A separation blueprint should be created that determines: how each functional area within the business is expected to operate through the transaction; the nature and extent of transitional and long-term agreements required to ensure operational integrity; a transitional timeline; the head count implications; and the cost impacts of the divestiture.

To showcase the business in its best light, developing the value story of the business is critical. It will demonstrate its strengths and opportunities as a standalone entity or flourishing in another group. Underpinning this with the right analysis, showing the upside plan for the business and tailoring synergies to the specific potential buyers are all part of demonstrating the value of the business.

Finally, expect the unexpected. In some cases, management might develop a strategy for selling multiple assets to a single buyer, but finds that they need to sell to multiple parties. As a result, companies need a great Plan A – but also a great Plan B and Plan C ready to use. Flexibility is key and early planning and preparation allows this.

“As a result, companies need a great **Plan A** – but also a great **Plan B** and **Plan C** ready to use. **Flexibility is key and early planning** and preparation allows this.”

Increased activity in 2014

“At the same time, **private equity firms** and many chemical companies have **fairly large amounts of cash** that can be **applied to acquisitions**.”

This year should be a strong one for M&A, divestitures and other transactions in the chemical industry. As of January 2014, about 22 deals worth US\$11 billion⁴ have been announced or completed in the last 18 months.⁵

For buyers in need of cash, credit markets continue to increase lending for buyers, the cost of debt remains low and financing is expected to be relatively cheap for the year. At the same time, private equity firms and many chemical companies have fairly large amounts of cash that can be applied to acquisitions. Specific industry sectors are particularly attractive for investment, including oil and gas chemicals, food ingredients, personal care, consumer electronics, batteries, water treatment and agrochemicals.⁶

In Europe, the largest M&A in 2013 was the acquisition of Germany-based oxo-alcohols specialist Oxea by the Oman Oil Company from private equity firm Advent International

for US\$2.4 billion (EUR1.8 billion).⁷ Asia-Pacific remains a key market for acquisitions, especially for buyers from developed markets who want to enter new markets or at least establish a presence in local markets.

However, most deals currently completed or in the pipeline involve divestitures – in many cases the sale of energy-intensive, cyclical assets. Often, these divestitures represent trends that began several years ago. In 2010, Dow Chemical sold US\$8 billion worth of businesses, including its styrenics business, to private equity firm Bain Capital. In 2011, the chemical giant sold its polypropylene business to Brazilian chemical maker Braskem. In 2013, Dow began separating a significant portion of its chlorine value chain (chlor-alkali/vinyl, chlorinated organics, epoxy) that represents over US\$5 billion of total annual revenue.⁸ Last year, the company also divested its global polypropylene licensing and catalysts business to W. R. Grace & Company for US\$500 million.

Assets for sale or divestiture

Company	Businesses	Sales
Dow Chemical*	US chlor-alkali, global epoxy, global chlorinated organics	US\$5 billion
DuPont**	Performance chemicals (TiO ₂ , fluoro products)	US\$7 billion
Ashland	Water technologies, elastomers	Water (US\$1.7 billion), Elastomers (US\$300 million)
LANXESS	Monofilaments, rubber additives, nitrile butadiene rubber	EUR500 million
Chemtura	Agrochemicals	US\$435 million

*Businesses being carved out for future transactions

** Spinoff planned

Source: Companies, ICIS

⁴ Includes divestments where value is available

⁵ Source: Company releases; IHS Chemical Week

⁶ Op. cit. Outlook 2014: global growth accelerates

⁷ *Oman Oil Company acquires Oxea to integrate in chemicals*, ICIS, 10 October 2013. See also OUTLOOK '14: Streamlining, affordability to drive Europe M&A, 30 December 30, 2013

⁸ Dow Chemical press release, 2 December 2013



Like Dow, Solvay Chemicals is reducing its exposure to energy-intensive businesses and focusing on high-margin products. The company and INEOS are combining their European chlorvinyls activities in a 50-50 joint venture to form a polyvinyl chloride (PVC) producer ranking among the top three worldwide.⁹ Clearance from the European Commission is expected in the first half of 2014. Solvay has also entered into an agreement with Brazil's Braskem to sell its 70.6 percent stake in Solvay Indupa.¹⁰

Clariant began a rigorous program of restructuring in 2008 and by 2011, the company had cut 20 percent of its workforce and shut down 20 production sites. Then, in 2011, Clariant paid US\$2.6 billion for Germany's Süd-Chemie, a specialty chemical maker.¹¹ This acquisition enabled Clariant to enter new markets in areas such as catalysts, battery materials, water treatment and industrial enzymes. Afterwards, Clariant began divesting assets, including the sale of its textile

chemicals unit, to private equity firm SK Capital Partners for US\$550 million. The firm has also announced deals to sell its detergents and intermediates operations to International Chemical Investors Group and its leather services business to Dutch competitor Stahl.

As these companies move away from energy-intensive commodities, other companies are using divestitures to focus more on core-business areas. DuPont announced that it will divest a big portion of its traditional

⁹ Solvay press release, 7 May 2013

¹⁰ Solvay press release, 17 December 2013

¹¹ *New Ways to Grow*, CEN.ACS.org, 11 November 2013

chemical business, including its Teflon fluoropolymers brand and its titanium dioxide pigment unit. In February 2013, the company completed the US\$4.9 billion sale of its automotive coatings unit to the private equity firm Carlyle Group.

In 2013, BASF announced the sale of its subsidiary Industrial Water Management France SAS headquartered in Lyon, France to Degrémont Technologies, a subsidiary of Suez Environnement.¹² Also in 2013, BASF signed a contract to sell its non-core Vinuran PVC modifier business (acrylate based) to Kaneka Belgium NV, a subsidiary of Kaneka Corporation, Japan. Both of these actions are designed to strengthen the company's performance products segment by the

addition of plastic additives, pigments, water, leather and textile chemicals.

PPG Industries has announced three deals over US\$1 billion since 2012 – two divestitures and one acquisition – that leave the company firmly focused on coatings.¹³ Revenues in its US\$13 billion coatings business will account for 90 percent of sales once the sale of its stake in Transitions, a producer of photochromic lenses, is complete in the first half of 2014.

Rockwood has entered a definitive agreement with Huntsman Corporation to sell its Titanium Dioxide Pigments business and four other non-strategic assets. The company also closed the sale of Clay-based Additives, a business in the performance additives segment, to Altana Group.

Summary

Active portfolio management, including divestitures, is a powerful tool for addressing economic crises, but it should also be a part of a company's ongoing strategy. A portfolio rationalization should be done at least once, if not twice, a year, factoring in recent shifts in the business landscape,

regulatory developments, actions by competitors and adjustments in company business goals and requirements. Combined with other strategies, rationalization will help chemical companies maintain a competitive advantage in today's ever-changing markets.

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Webcast

Our upcoming Reaction 13 webcast, on 8 May is on portfolio rationalization featuring Marc Summers.

Visit kpmg.com/chemicals

¹² BASF press release, 30 September 2013

¹³ PPG Industries: *Sharper focus on coatings core*, Chemical Week, 23 December 2013



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KPMG in the industry



Working for chemical and
pharmaceutical businesses

KPMG in the UK recently hosted a table at the CIA's Annual Dinner in London. It was also an opportunity to meet and have some topical discussions with members of the UK chemicals community.



KPMG in the US recently hosted a table at the 81st Society of Chemical Industry (SCI) Chemical Industry Medal Award Dinner in New York City. The Chemical Industry Medal is considered one of the Chemical Industry's most prestigious awards.

REDBURN

Paul Harnick, Global Chemicals COO, recently spoke on seismic shifts in global chemicals at the 2014 Chemical Conference, organized by Redburn, in the UK. The aim of the conference was to provide investors with industry insights beyond routine access to quoted companies and speakers who addressed topics such as the changing global chemical landscape and shale gas opportunities for the European chemicals industry.



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