The outlook for the chemical industry in the United States has shifted dramatically in the space of only a few years. Revenues currently stand at approximately $820 billion, and are expected to exceed $1 trillion before the end of the decade. Accounting for more than 80% of the overall chemicals market in the North American Free Trade Agreement (NAFTA) region, comprising Canada and Mexico as well as the United States, the space is seeing what is being dubbed by the Boston Consulting Group as a “once-in-a-lifetime renaissance.”

The driver behind this reversal of fortunes is the shale gas revolution, which has provided the United States with a low cost feedstock to rival its main competitors in China and the Middle East, as well as helping to offset the decline in production from conventional gas reservoirs. Advancements in hydraulic fracturing and horizontal drilling technologies, more commonly known as fracking, have facilitated significant productivity increases. Although it was estimated that the United States was sitting on a host of untapped shale deposits during the time of the global financial crisis, it took another five years for the impact of the country’s abundance of natural gas reserves to make its way downstream: wells drilled in January 2014 produced more than nine times as much gas per day as five years previously, according to analysis by market intelligence company ICIS, if all 20 projects to date were to be implemented.

The EIA’s most recent projections for 2016 and 2017 indicate a 20% increase in total oil and gas reserves, with significant growth in the Appalachian basin, which was previously thought to have been depleted, have the potential to satisfy demand for natural gas in the entire northeast of the country. Across the United States, shale gas reserves are expected to support requirements for almost a century.

The phoenix rises

From being a high-cost manufacturing destination a decade ago, the United States is now the most cost-advantageous region for chemical production outside of the Middle East. The chemical manufacturing sector, having undergone a mass relocation to Asia when the industry was in free fall, is now rejigging China and India in favor of the United States. In the first five years of the decade, companies in the top three positions respectively, Texas’ own Barnett shale play is not only the largest in the country, but was also the first deposit to be drilled horizontally; Pennsylvania’s Marcellus shale reserve, which also runs through West Virginia and New York, saw an increase of 10.4 trillion cubic feet of proved reserves added in the last year, out of an additional 50.5 trillion cubic feet in total. The deposits in the Appalachian basin, which were previously thought to have been depleted, have the potential to satisfy demand for natural gas in the entire northeast of the country. Across the United States, shale gas reserves are expected to support requirements for almost a century.

Two decades of stagnation and decline between 1990 and 2010 created a vast hole in the availability of qualified personnel not only to build the new facilities, but also to provide the expertise required to staff them in the future. With limited manufacturing capacity in the country and no prospects of it ending, a generation of young people saw limited prospects in studying for the technical skills the chemical industry might require. Between 2010 and 2014, however, job growth increased 10% in industrial engineering and by one-third in the petroleum engineering space; the market was woefully ill prepared for such a draw on human resources. The issue is compounded by the fact that the two fields have a higher proportion of their workforce nearing retirement than other areas. A quarter of workers are in the 55-years-and-older bracket, compared to 19% across all occupations. Although the ten years to 2013 saw engineering graduate numbers increase by almost 44%, petroleum engineering in particular is still suffering a shortfall. Economic Modelling
Although domestic demand for chemicals is set to double, research by management consulting firm A.T. Kearney shows consumption of plastics, such as polyethylene, polypropylene and polyvinylchloride, has already reached its peak in the United States and Europe. Thus an increase in the western world’s wealth as they emerge from recession will not spell an uptick in consumer demand. Globally, however, the middle class is still on the increase, with U.S.-headquartered Chemours Co. estimating almost five billion people will fall into that bracket by 2030, up from two billion people at present. This will be seen most strongly in Asia, particularly in highly populated China and India, as well as the emerging Association of South-East Asian Nations (ASEAN) region.

Formerly, the majority of the chemicals produced in the United States were destined primarily for use by domestic companies; exporting product was the exception rather than the rule. As traditional supply and demand markets invert, supply chains must also adapt to the new world order. Companies must now examine their distribution methods and impose greater product stewardship from beginning to end. The ports of both New Orleans and Houston are evolving in line with the increased traffic expected from the Gulf Coast’s new and existing chemical operations. Their expansion projects, which will see a new 500,000 square-foot facility at the former and $275 million injected into upgrade work at the latter, will coincide with the completion of the Panama Canal’s expansion in 2016. The installation of a third set of locks will double the capacity of the link between the Atlantic and Pacific oceans and enable supertankers and modern container ships to traverse the canal.

The U.S. chemical industry has seen a dramatic reversal in its fortunes during the first half of this decade. Chemical companies have quickly recognized the opportunities available to them and invested in both modernizing their existing capabilities and constructing new ones. But two decades of neglect are not easily rectified and, in order to fully capitalize on the advantages that shale gas is bringing, industry, government and local communities must work together to solve infrastructure and personnel problems in the near term for long-term benefit.
How important will the imminent TSCA
Substances Control Act (TSCA). We have
Environmental Protection Agency (EPA)
their sustainability efforts. In the chemi-
areas of air, water and waste, we work in
in seven offices across the United States.

resource law, litigation and alternative dis-
in which you work?

BEVERIDGE & DIAMOND P.C.
Attorney at Law

UNITED STATES CHEMICALS 2016

Could you introduce Beveridge & Dia-
mond and explain more about the areas
in which you work?

Beveridge & Diamond is a boutique law
firm focusing on environmental and natural
resource law, litigation and alternative dis-
persal of chemicals. We are over 1,100
pros in seven offices across the United States.
In addition to the traditional environmental
areas of air, water and waste, we work in a
wider variety of related areas, including
product restrictions, design and disposal.
Furthermore, we work with companies on
their sustainability efforts. In the chemi-
cals area, we have been working with the
Environmental Protection Agency (EPA)
regarding the implementation of the Toxic
Substances Control Act (TSCA). We have
played a significant role in the efforts to
modernize this piece of legislation, which
takes effect in 2017.

How important will the imminent TSCA
reforms be for the chemical industry and
what impact will they have on the way
the EPA operates in future?

At present, the EPA has 90 days to review
a pre-manufacture notification for a new
chemical; if it takes no further action,
the chemical can subsequently be manu-
factured commercially. Under the TSCA,
legislation currently under discussion in
the Senate, the EPA would have to make an
affirmative determination that a new
chemical is likely to meet the safety stan-
dard. High-priority chemicals would be
reviewed against certain scientific criteria
in a set timeframe. If the chemical does not
meet the required standard, the EPA would
be required to regulate that chemical until
it does.

The preferred outcome for the chemical in-
dustry is that individual states would feel
less pressure to adopt state restrictions
on chemicals in products. For many years,
states have perceived a vacuum at federal
level and have viewed the EPA as ineef-
itive in regulating chemicals that are of
concern to them. The state-specific require-
ments tend to be inconsistent and lacking
the scientific review process normally
conducted by the EPA.

Even more significantly, in a country where
products are sold both nationally and in-
ternationally, any state restriction on the
content of a product has, at the very mini-
um, national implications for companies
that manufacture and distribute products.
Thus, it is understood that the EPA is addressing
chemical issues on a prioritized basis, the
requirement for them to spend their limited
resources on the adoption, implementation
and enforcement of product regulatory pro-
grams lessens.

The TSCA reform effort began in 2005.
Could you outline activity in attempts
to reform the TSCA legislation during the
last 15 years and explain what is hap-
pening at present?

The Act applies to tens of thousands of
chemicals, used in a number of different
ways but predominantly in industrial
activity with minimal consumer exposure.
The safety standard in the earlier legisla-
tion was one of ‘reasonable certainty of
no harm’, which was widely considered by
the industry to be inappropriate for the chemi-
als under consideration. Until 2013, no
comprehensive bills addressing various issues
in the wording of the legislation achieved
bipartisan support. Beginning in 2013, a
fresh approach was launched which has
now resulted in legislation that is close to
desirable. The House of Representa-
tives passed its version of the legislation in
June 2015, and the Senate passed its
version in December. Once the two ver-
tions are reconciled, final legislation will
be passed by both Houses of Congress and
sent to President Obama for signature. He
is expected to sign it.

What will be the consequences for man-
ufacturers and distributors on a nation-
wide level?

They will face more challenges regard-
ing regulation and greater scrutiny on new
chemicals. However, manufacturers and
distributors may have the opportunity to
influence the EPA’s selection of high prior-
ity chemicals and to have input into their
subsequent evaluation or restriction. Ad-
ditionally, manufacturers and potentially
processors will face increased fees for a
wider variety of activities in order to help
pay for TSCA administration; limited fees
are currently in place, but these are capped
at $2,500 and are only applicable if certain
conditions are met.

Looking towards the future, what are
the principal sustainability issues you
will be tackling and how is this area of
the industry regulated?

Sustainability considerations have been
a major stimulus to innovation in the
industry, highlighting the importance of
removing unnecessary barriers to inno-
vation. The EPA has been promoting
green technologies through its ‘Design
for the Environment’ Program. This is,
however, a hazard-based program that does
not take exposure into account, eliminating
risk as a decisive factor. The mere presence
of a chemical that has toxicological issues
varied widely with at least some level render-
ing in that program, regardless of
whether the low levels of use would create
risk. It can be detected in the parts
per trillion level, it is unlikely to have any
significant health or environmental impact,
because at this level of disclosure many chemi-
icals are affected. TSCA legislation is risk-
based, but it is much easier to administer
a hazard-based program and explains why
this approach is favored at the state level.

Could you introduce us to KPMG’s
Chemicals and Performance Techolo-
gies segment on a global level?

MS: We provide audit, tax and advisory
services to the chemicals sector. KPMG
has professionals in every major market
worldwide focusing solely on providing
services to our clients. Paul and I spend a
lot of time travelling to different parts of
the world to meet with our clients and to
gain first-hand understanding of the sec-
ctor.

PH: The energy practice within KPMG,
of which the Chemicals and Performance
Technologies segment is a part, is a strat-
egic priority to the company. We are ex-
tremely strong in areas such as transfer
cost reduction and process efficiency; and
supply chain management. As a company,
we perform external audit services for
32% of chemical companies around the
world worth more than $1 billion, and we
provide either tax or advisory services for
the vast majority of the remainder.

What are the main differences between
the chemical industry in the United
States as it stands now versus other re-
gions worldwide?

MS: The United States is now the num-
ber one strategic focus area in the world.
Although China is bigger in terms of
output, the focus is on the United States
from a strategic and investment perspec-
tive. Although the sudden drop in the price
of oil has somewhat levelled the playing
field, the low price of natural gas means
the United States is still the most cost-
advantageous region for the production
of chemicals outside of the Middle East.
We are also seeing the return of manufac-
turing, taking advantage of cheaper raw
materials.

PH: If you had asked us three years ago if
we would ever see a world-scale commod-
ity chemical plant being built in the United
States again, we would have categorically
said no. Our expectations for growth lay in
the emerging markets of China, India, and
Brazil, in that order. Now, although China
remains at the top, India and Brazil have
fallen off the list, to be replaced by the As-
sociation of South-East Nations (ASEAN)
states, for example. The U.S. automotive
industry is more energy efficient and sus-
tainable technologies are required.

Petrochemicals are seeing a resurgence
in the United States. How are the dy-
namics between low oil prices globally
and high volumes of feedstocks playing
out?

PH: The U.S. petrochemical industry is
booming, which will have a severe det-
imental impact on petrochemical pro-
duction in Europe. Currently, the decline
in the price per barrel of oil is only attrib-
uted to a small but perceptible renaissance
among European manufacturers; they remain
cost disadvantaged to the United States
by around 12 months. Yet it remains to be seen how long oil prices
remain at this level.
**GLOBALLY POSITIONED: GROWTH STRATEGIES OF MULTINATIONALS**

Focusing on Core Competencies and Sustainable Innovation

Journalist: Harriet Bailey

The shale gas renaissance has given the United States a new lease of life in terms of attractiveness to global chemical companies. More affordable and abundant feedstocks, particularly in comparison to Europe, have affected the strategies of household names such as The Dow Chemical Co., BASF Corp., and DuPont, resulting in increased investment in North America and even company-wide shake-ups. While spin-offs are nothing new – GenCorp, Inc. spun out Omnova Solutions in 1999, while LANXESS Corp. was formed from Bay- er’s chemical division in 2004 – companies are increasingly looking to divest non-core business units in order to focus on their strengths. The second half of 2015 saw two high-profile, standalone companies formed from peripheral divisions: The Chemours Co. was previously DuPont’s performance chemicals segment before being cut loose in July, while Covestro emerged from what had been Bayer MaterialScience in September. W.R. Grace & Co., meanwhile, will complete the spin-off of its construction chemicals and packaging business units in early 2016, creating two public companies. Multinationals have also stepped up investment in their U.S. operations, with the availability of shale gas as the cherry on top of a densely packed cake. “North America is important to us for many reasons: it has an abundance of great universities, including six of the ten highest-ranked universities in the world; nine of the ten most active cities in the world for start-ups are here, drawing in the brightest minds from around the world; and the United States spends more than any other country globally on research and development (R&D),” explained Theresa Szelest-Shah, president of North American market and business development at BASF, which has decided to increase investment in the region from around $500 million per year in 2012 to $1 billion in 2015. In addition to relying on the hydrocarbon resource, global chemical producers have to innovate in order to remain at the top of their respective markets; new solutions are a differentiator as far as clients are concerned. “Innovation remains a significant competitive advantage, as well as the ability to provide tailor-made solutions,” said Anne Noonan, president of performance chemicals at Omnova. “We are seeing the specialty chemical industry develop around consumer-driven industries, such as the automotive, personal care, construction and electronics markets. Specialty chemical growth is also driven heavily by the trend for sustainability and eco-friendly products.”

Large chemical companies are increasingly focusing on developing chemicals with high-value-added properties and departing from their previous strategies surrounding bulk industrial chemicals. Both DSM and Dow are following this path, with DSM having divested its polymer intermediates and composite resins business to private equity firm CVC Capital Partners in 2015, in order to focus on its nutrition and performance materials businesses. Joe Harlan, vice chairman and chief commercial officer at Dow, said: “Some chemicals may have begun their lives as specialty products, but have commoditized over the last couple of decades. Since 2005, Dow has divested $15 billion in revenue of products that had commoditized, including for example poly-carbonates, styrenes and polystyrenes, chlorine and epoxy.” Dow was forced to exit these businesses due to the dramatic increase in production of these chemicals by companies in typically low-cost markets, such as India and China. Here, operations are generally subsidized by the state and have different return on capital requirements, leading to over-production and a subsequent critical loss in value. To replace depleted revenue streams, the company has since acquired $17 billion in special offerings.

**Growth trends**

As well as having rich shale plays across the country, the United States also plays host to certain industries seeing growth on the back of chemical innovation. The automotive industry is seeing a resurgence, thanks in no small part to the Chinese automotive industry and a return of manufacturing to the country, while the construction industry is expanding to keep up with growing demand on both housing and new industrial sites. “Cars today require far more chemicals than 15 years ago, with for example carbon fiber replacing steel and plastics and other composites replacing aluminum. With urbanization, newer housing is more energy efficient and sustainable technologies are required,” said Mike Shannon, global chair of KPMG’s chemicals and performance technologies segment.

“Cars today require far more chemicals than 15 years ago, with for example carbon fiber replacing steel and plastics and other composites replacing aluminum. With urbanization, newer housing is more energy efficient and sustainable technologies are required.”

Mike Shannon, Global Chair, Chemicals and Performance Technologies, KPMG

Going green

While global megatrends help drive innovation, the chemical industry also recognizes the role that sustainability and eco-friendly measures can play in R&D opportunities. Although viewed by many outsiders as the cause of environmental issues, the chemical industry also recognizes that sustainability and eco-friendly practices are a key driver for a lot of the innovation within this industry. The message that many companies want to broadcast is that specialty chemicals are really part of the solution in meeting the requirements for making our environment cleaner and safer.”

Covestro, for example, tests all products in its pipeline against sustainability measures to ensure that they will have a reduced environmental impact compared to their predecessors. “One example of this sustainable innovation is our Dream Production proj...

For more information, visit chemtura.com.

We help our customers grow by delivering sustainable competitive advantages through cutting-edge technologies and a deep understanding of the end-use applications. Chemtura’s lube oil additives help meet demanding emissions and fuel economy standards and facilitate clean wind-turbine energy, and our refrigeration oils are compatible with non-ozone depleting refrigerants. Our brominated products reduce mercury emissions from coal-fired power plants and play a critical role to depleting refrigerants. Our high-purity metal organics are used in high-brightness LED lighting and thin-film solar panel applications. Our commitment to sustainability is embedded in our purpose: ‘We create chemistry for a sustainable future.’ Sustainability for BASF really represents the balance between our core values and strengths such as innovation. With globalisation of our research and development (R&D) function, we now have in North America more than 1,800 people at 27 R&D locations, including six major hubs. With this set-up, we are uniquely situated to support development of products and services for our customers and partners in the specialty chemicals market.

Industry Explorations

Chalup, COO at Basstech International.

Basstech can help businesses like ours find a secondary application for the mate- rial which they sell to other industries. This does not detract from the producers’ primary sales and turn-by-product, which had been a liability, into an asset,” explained Alan Chalup, COO at Basstech International. In this case, a problem surrounding sustain- able operations has been the driving force behind innovation and has had a positive impact across the supply chain. Basstech clients initially sold the waste product to their existing customers, negatively affect- ing sales of its main products. By providing this solution, Basstech is able to take this problem out of its clients’ hands as well as create an additional revenue stream.

The combination of negative perspectives of the chemical industry and the benefits to companies across the supply chain by solv- ing sustainability issues indicates “green chemistry” will continue to push innovation into the future. Increasingly, sustainability is underlying companies’ daily operations, said Teressa Szelest-Shah, BASF Corporation’s President, Market and Business Development, North America.

Could you explain how BASF has refined or expanded the focus of its specialty chemicals segment since the industry fal- ter of 2012-13?

Much has changed in the last three years, both within BASF and also within the in- dustry as a whole. What we see continuing to drive change is the impact of shale gas. For a company such as BASF, the recent affordability of some of the base chemicals that feed into the value chain with BASF’s commitment to sus- tainability is embedded in our purpose. We create chemistry for a sustainable future. The sustainability issues are embedded in our purpose, our mission and our strategy for the specialty chemicals segment since the industry falter of 2012-13.

How is BASF progressing in the targets for sustainability that it set itself in 2010?

Our commitment to sustainability is embed- ded in our purpose: ‘We create chemistry for a sustainable future.’ Sustainability for BASF really represents the balance between our core values and strengths such as innovation. With globalisation of our research and development (R&D) function, we now have in North America more than 1,800 people at 27 R&D locations, including six major hubs. With this set-up, we are uniquely situated to support development of products and services for our customers and partners in the specialty chemicals market.

How do your facilities in the United States play a part in BASF’s global corporate strategy for the specialty chemicals seg- ment?

A key element of our strategy is to be present where the demand is. North America is incredibly important to us for many reasons: it has an abundance of great universities, including six of the ten highest-ranked universities in the world; nine of the ten most active cit- ies in the world for start-ups are here, draw- ing in the brightest minds from around the world; and the United States spends more than any other country globally on R&D. By 2020, 25% of our R&D activities will be done here under the global Bioscience Re- search platform, which is headquartered in Research Triangle Park, North Carolina. We opened our new North America Headquar- ters building in Flushing Park, NJ in 2012. This building is our showcase for sustain- able construction, in which many BASF- enabled products are used. We also have nearly 100 manufacturing sites in North America, including two integrated Verbund sites in Freeport, Texas, and Ces- sna, Louisiana. We have made significant investments in new plants over the last few years, including a new dispersions plant manufacturing acrylonitrile polymer for the coatings, constructions chemicals and adhesives industries, which began operating in Freeport this year. We made upgrades to the BASF TOTAL Petrochemicals LLC 2009 steam cracker in Port Arthur, Texas (one of the world’s largest), adding a tenth furnace and improving feedstock flexibility to take advantage of lighter, natural gas-based feed- stocks. Our R&D site in Beachwood, Ohio, has completed a $25 million investment to add new cathode materials research and chemi- cal and process engineering capabilities.

How is BASF progressing in the targets for sustainability that it set itself in 2010? Overall, BASF continues to see the specialty chemicals market as a whole as attractive and in line with our core values and strengths such as innovation. With globalisation of our research and development (R&D) function, we now have in North America more than 1,800 people at 27 R&D locations, including six major hubs. With this set-up, we are uniquely situated to support development of products and services for our customers and partners in the specialty chemicals market.

Could you talk about some of your part- nerships with companies, research institu- tions and universities?

These collaborations are at the epicenter of our focus on innovation. The ability to find the right partners – both for long-term and short-term research – aligns with BASF’s thoughts. We can tap into the best solutions for some of the global challenges we are cur- rently addressing, on urban living, smart manufacturing, BASF, and we think beyond that. We just looked internally. In March 2013, for example, we launched a collaborative research initiative with Harvard University, the Massachusetts Institute of Technology (MIT) and the University of Massachu- setts (UMass) Amherst to create the North American Center for Research on Advanced Materials (NORA).

Looking forward, you plan to invest around $5 billion in North American capital projects over the next five years. Where do you expect to see BASF by 2020?

BASF will continue to innovate and drive sustainable solutions with our customers and partners and further strengthen its raw materials and feed stocks and innovation throughout our value chains. It will lever- age the abundance of talent in this region. In 2015, BASF celebrated its 150th anniver- sary because of its ability to continuously reinvent itself, innovate, and collaborate, and we plan to continue in this fashion for the next 150 years – creating chemistry for a sustainable future!
Texas two-step

As the United States switches its position from a net importer to a net exporter of natural gas, a host of new construction and expansion projects are underway on the Gulf Coast to double the nation’s polypropylene capacity by the end of the decade. Braskem is the third largest company worldwide in terms of polypropylene capacity, but is currently investing in a small specialty polyethylene plant in Texas, aiming to capitalize on the export market. “Our supply chain concerns are therefore very different depending on the product,” explained CEO Nuna. “Polyethylene requires a greater focus on port access and exporting challenges in the Gulf Coast region, while polypropylene concerns cover rail infrastructure nationwide.” ExxonMobil Chemical is building two, new 650,000-ton-per-year (mt) polyethylene plants in Texas, without any access to the rail network. This suggests that they will be used in large part to service their overseas gas supply contracts, rather than for the domestic market.

Houston-based petrochemical manufacturer LyondellBasell is planning to inject up to $4 billion into construction and expansion projects along the Gulf Coast by 2020. Three existing ethylene projects are set to expand the company’s capacity by roughly 360,000 mt each, while the company’s large Channelview complex is building an entirely new polyethylene production facility in 2020 when oil prices dipped will all reach completion by around 2017, which could have a significant impact on service companies, as expansion efforts make themselves felt downstream. “We expect to see a significant increase in maintenance work as a direct result of the increase in the number of plants,” outlined Tony Spencer, CEO at third-party personnel company CertifedSafetly. “But these better-designed facilities should be able to run longer and require less intervention.”

“Polyethylene requires a greater focus on service companies, as expansion efforts make themselves felt downstream.”

The shale-up in the petrochemicals space and demand for product has even seen new players enter the market. Altiva, a specialty chemical company focused on iron-based salts and phosphine derivatives, ventured into the petrochemical space with its acquisition of Haverhill Chemicals in November 2015. Haverhill, the third largest producer of iron and acetone in 2008, was forced into bankruptcy after being cited by OSHA for 23 safety violations following the death of a worker in 2014. Altiva CEO Michael J. Buscabasch stated that he expects the business to grow organically as global commodity markets recover, and inorganically through acquiring the non-core assets of larger petrochemical companies.

Asian persuasion

The resurgence in the U.S. chemical industry has also opened up the market for foreign investors like never before. APM’s Hockstasd said: “More than 60% of the announced investment is coming from companies outside of the United States.”

“Foreign investors will likely continue to have an interest in investing in the United States due to its favorable feedstock, capital expenditure, and demand environment,” said Andrew Walberer, partner in A.T. Kearney’s industry practice. “(Japan-based) Mitsui, for example, has been a co-investor in new Gulf Coast projects.”

With North America competing globally with its natural gas liquids, China shifting from naphtha to coal, and the Middle East having access to low-cost naphtha, countries outside of these regions will lack to tap into one or more of these areas. According to PwC partner Vijay Suratne, the Japanese and Korean chemical industries are not far behind as well, neighboring China. “They are looking for ways to become involved in the U.S. shale revolution to mitigate the effect of the temporary fall in the price of oil has had on their crude oil-derived naphtha sources,” he said.

On the flip-side, Asia’s exceptional demand for chemicals for its growing middle-class has meant that Chinese companies directly investing in their own chemical projects in the United States. The Shandong Yuhuang Chemical Co., for example, held a groundbreaking ceremony at a $1.85-billion site in Louisiana in September 2015. Crucially, the company claims that it is cheaper to ship methanol from the United States to China than using more expensive natural gas sources on its home turf. Taiwan’s Formosa Petrochemical Corp. is considering plans for a $9.4-billion petrochemical complex at a adjacent site. Increased Chinese investment into the United States also opens the door to two-way trade partnerships. The U.S. petrochemical industry is now switching to long-term thinking as a result of the shale gas revolution. The first wave of projects may have been built at a premium, but will still benefit from being the first movers in the market, having had the pick of location and taken advantage of low-cost feedstock years ahead of their competitors. Smower movers, on the other hand, have had the opportunity in 2015 to re-group and focus on their financials, while still seeing new plants come online before the end of the decade.

“The rise in petrochemicals is organic in nature, but will still benefit from being the first players to market.”

With North America competing globally with its natural gas liquids, China shifting from naphtha to coal, and the Middle East having access to low-cost naphtha, countries outside of these regions will lack to tap into one or more of these areas. According to PwC partner Vijay Suratne, the Japanese and Korean chemical industries are not far behind as well, neighboring China. “They are looking for ways to become involved in the U.S. shale revolution to mitigate the effect of the temporary fall in the price of oil has had on their crude oil-derived naphtha sources,” he said.

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The shake-up in the petrochemicals space and demand for product has even seen new players enter the market. Altiva, a specialty chemical company focused on iron-based salts and phosphine derivatives, ventured into the petrochemicals space with its acquisition of Haverhill Chemicals in November 2015. Haverhill, the third largest producer of iron and acetone in 2008, was forced into bankruptcy after being cited by OSHA for 23 safety violations following the death of a worker in 2014. Altiva CEO Michael J. Buscabasch stated that he expects the business to grow organically as global commodity markets recover, and inorganically through acquiring the non-core assets of larger petrochemical companies.

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