The Future of Chemicals
An Overview
Contact Information

Beirut
Ibrahim El-Husseini
Partner
+961-1-336433
ibrahim.el-husseini@booz.com

Berlin
Matthias Bäumler
Principal
+49-30-88705-852
matthias.baumler@booz.com

Caroline Thiedig
Senior Associate
+49-30-88705-862
caroline.thiedig@booz.com

Dr. Joachim Rotering
Partner
+49 211-3890-250
joachim.rotering@booz.com

São Paulo
Arthur Ramos
Partner
+55-11-5501-6229
arthur.ramos@booz.com

Dr. Sven Uwe Vallerien
Partner
+49-211-3890-260
sven.vallerien@booz.com

Frankfurt
Dr. Marcus Morawietz
Partner
+49-69-97167-467
marcus.morawietz@booz.com

London
Richard Verity
Partner
+44-20-7393-3436
richard.verity@booz.com

McLean, VA
Eric Spiegel
Partner
+1-703-902-3813
eric.spiegel@booz.com

Tokyo
Paul Duerloo
Partner
+81-3-3436-8615
paul.duerloo@booz.com
The crisis will force chemical companies to restructure their businesses, revise their strategies, achieve greater levels of efficiency, reduce net working capital, and minimize capital expenditures. The magnitude of the recession and the leading role that the chemical industry plays in global economic activities lead us to expect a major transformation of this industry over the coming years, resulting in changes to the competitive landscape and global value chains. This Perspective is the first in a Booz & Company series exploring the state of the chemical industry today. We discuss our expectations for how it will evolve over the coming 10 years, the industry’s most salient future trends, and the factors that will determine success or failure in the new chemical industry of the next decade.
In the last two decades, the chemical industry’s competitive landscape has been significantly restructured. In the early 1990s, traditional oil and gas players (such as Shell and BP) and large integrated chemical players (such as BASF, Hoechst, and ICI)—often spanning the entire chemical value chain from petrochemicals to pharmaceuticals—dominated the market. The picture is quite different now. Oil and gas players have largely divested or separated from their chemical businesses; for example, in 2005, BP sold Innovene to Ineos, and in 2006, Total spun off Arkema. Traditional large chemical companies are still in business, but with dramatically changed portfolios. Some players have arrived at this point by disaggregating their value chain; for instance, Hoechst has mainly been absorbed into the pharmaceutical company Sanofi Aventis, while its agrochemical business was sold off to Bayer CropScience, its basic chemicals business was spun off as Celanese, and its specialty chemicals business was merged with Clariant.

Other companies have restructured and optimized their portfolios while building on the gains generated by integration—for example, BASF enhanced its portfolio by acquiring specialty producers such as Orgamol, Degussa’s Construction Chemicals, Engelhard, and most recently Ciba. Dow and Akzo Nobel undertook similar strategies. Additionally, new large players have emerged through targeted “buy-and-build” deals with which companies (Ineos, Hexion, and Lyondell Basell, among others) consolidated entire industry segments, often using access to private equity funding. And finally, Asian and Middle East companies, such as Saudi Arabia’s SABIC and Sipchem as well as China Bluestar, have gained strong competitive positions through organic growth—that is, by leveraging feedstock advantages or market opportunities—as well as targeted acquisitions (in 2007, for example, SABIC purchased GE Plastics).

These developments were largely a response to challenges that the established chemical companies began to face about 20 years ago. Among them are globalization, pressures on margins, commoditization, and changes in innovation.
Globalization
Because of production and labor cost advantages as well as strong regional demand growth in Asia (especially China), entire industry value chains have shifted to Asia or the Middle East. In turn, Asia has emerged as a chemical industry leader in some key customer markets—particularly textiles, white goods, and electronics. Petrochemical companies in the Middle East have begun to leverage their advantageous feedstock positions and Asian demand growth to substantially increase market share. The full impact of this trend will become apparent in the next decade, especially if Western countries go ahead with their threats to tax carbon-dioxide or greenhouse gas emissions. Such a policy will further impact the cost competitiveness of traditional chemical companies based in the West and move more value chains to Asia and the Middle East.

Margin Squeeze
Profits across almost all chemical segments are under severe pressure largely caused by consolidation among their customers and improved sourcing capabilities. For example, Cemex, by acquiring Southdown, RMC, and Rinker, has almost consolidated the concrete industry. To make matters worse, suppliers are also consolidating, allowing them in some cases to lock in higher prices, and specialty chemical companies are increasingly wrestling with aging product portfolios and high cost assets.

Commoditization of Specialty Chemicals
Specialty chemicals companies, such as DSM, Evonik, and Altana, enjoyed a period of prosperity until the early 2000s; they were able to realize higher margins than basic chemicals and had the opportunity to differentiate themselves from low-cost country suppliers. Recently, however, the financial performance of specialty companies got under pressure as many chemicals have become commodities and opportunities to realize premium prices have evaporated. Western companies with broad specialty portfolios are in the unenviable position of having to change their business models to reflect this sharp drop in pricing power for their products, and the situation is exacerbated by the overall margin squeeze.

The Changing Nature of Innovation
As customers demanded less expensive products, faster launches, and improved performance from their suppliers, the notion of innovation in the chemical industry shifted. Pharmaceutical and agrochemical companies must still focus on inventing new entities, but elsewhere in the chemical industry the focus has moved to optimizing processes (especially for basic chemicals), creating new formulations and blends for polymers and other specialty products, and developing new business models (such as pay-for-performance contracts or adding service elements to the initial product offering). This trend is especially strong in Europe, where it has been fostered by the introduction of REACH (registration, evaluation, authorization, and restriction of chemicals) legislation, which limits companies' ability to register new chemical entities. Thus, active product life cycle management has become a challenge in several chemical segments; consequently, investment in product innovations is under more and more pressure.
Clearly, the combination of this radical transformation of the chemical industry over the past two decades and the current economic crisis will only supercharge industry dynamics and trends. It is therefore now vital for Western chemical companies, in particular, to fully comprehend the challenges they are facing—and to begin to formulate strategies for regaining lost advantages. During the next decade, we see four developments as the most pressing:

**The Shifting Footprint of Global Chemical Supply Chains**

Petrochemical supplies from the Middle East could pose a significant threat to Western chemical companies. New Middle East chemical companies are expected to emerge, and Western companies will need to formulate their response to the challenge carefully; a proven success model has not yet come to the fore. Particularly in specialty chemicals, Western companies still have the opportunity to embrace upstream integration and thus gain a long-term competitive advantage. To achieve this, Western companies could establish a production base in the Middle East to supply Europe with cheaper products, perhaps through a joint investment venture with a basic chemicals company already there. This mutually beneficial partnership could shift technology and know-how to the Middle East and address the need for increasing the value-add of production activities in the region.

On the demand side, the Middle East will not become a substantial market for chemicals, but Asia will certainly remain a significant avenue for demand growth. Consequently, chemical companies must grapple with shifting supply to low-cost Asian countries to take advantage of potential sales in the region.

**New Definitions for Innovation**

A key challenge for chemical players will be to further increase their understanding of the drivers of real and relevant innovation in their segments, as today’s innovation will greatly differ from the past. How to best shape and target innovation to match customer needs and the changing face of the marketplace will be crucial.

We expect that short-term focused innovation in specialty chemicals will increasingly result from improvements of physical properties instead of new chemical entities. Renewable energy, white biotechnology, and fresh service offerings will provide additional sources of long term and more radical innovation which will help to establish new chemical business segments. It is vital for Western chemical companies to formulate strategies for regaining lost advantages. These developments will
prompt significant changes in R&D strategies and related capabilities as well as in marketing and sales. By contrast, innovation in petrochemicals and basic chemicals is expected to continue to result mostly from process improvements to regain lost competitive advantage.

Consolidation
Mergers and acquisitions have helped shape the chemical industry for the past two decades, and we expect this trend to continue. The key question under today’s conditions is: How can value be continuously generated? In other words, what will be the impact of increasing integration and the related value chain reconfigurations?

We believe that securing access to cheap feedstocks and achieving customer-centricity will be the primary catalysts for future M&A activity among Western chemical companies. In specialty chemicals, three types of players are likely to emerge from the current fragmented landscape. First is the portfolio manager, which follows an M&A strategy that combines “seeking size” and “pick and choose.” These companies will actively buy and sell businesses and consolidate chemical segments within a holding structure that manages businesses with minimal overlaps. The second type is the integrator, which acquires companies that enhance its horizontal position along the value chain. These companies will be driven especially by the down-stream integration of basic chemical companies, which will lead to integrated specialty majors. The third type is the technology boutique, which will primarily focus on organic growth in its niche and only selectively integrate value-adding technology positions.

Altered Performance Drivers
New business models are required to ensure outstanding performance as chemical companies grapple with accelerated commoditization. Building a culture that inspires the development of new offerings to generate additional value is mandatory. At the same time, in the few remaining real specialty segments, customer intimacy remains a key success criterion for sustaining the high margins and specialty character of the product. Success can be achieved through new types of offerings, such as performance-based solutions and services and new brands. Principally, established chemical companies need to ask themselves what true commercial and operational excellence means in a period when operating models are in significant flux.

Profits across almost all chemical segments are under severe pressure largely caused by consolidation among their customers.
All these changes will fundamentally redraw the contours of the chemical industry in three phases (see Exhibit 1).

Phase I
(“Survive as cash king”) can take companies through the current economic crisis via a strategy that encourages short-term cash optimization through manufacturing network efficiencies, improvements in procurement procedures to trim spending, capital expenditure freezes, and the like. In addition, the global recession will force Western companies to improve performance levels significantly and thereby ensure increasing consolidation that eliminates less profitable players or assets. Different chemical segments will deal with cash optimization in distinct ways, and customer demand will be a significant catalyst for how this plays out.

Phase II
(“Leverage the position”) will take place during the return to growth as the global economy stabilizes. Because of its integral value chain position, it is likely that the chemical industry will be one of the first to enjoy improved economic conditions. Chemical companies can take advantage of short-term margin opportunities during this period by deftly anticipating the demand dynamics in their own customer industries and ramping up their supply chain fast to meet renewed customer demand. This turnaround will be particularly marked in basic chemicals, typically the most commoditized part of the chemical industry. In specialty chemicals, a return to pre-crisis volumes and growth rates is also anticipated; however, it will be a challenge for companies to return to their historically high margins. Most important, this is the period when the future

Exhibit 1
Phases in the Future Development of the Chemical Industry

<table>
<thead>
<tr>
<th>Phase</th>
<th>Market Characteristics</th>
<th>Results</th>
</tr>
</thead>
</table>
| I     | “Survive as cash king” | - Margin pressure along entire chemical value chain from:  
- Demand drop, differentiated trends by customer industry  
- Suboptimal asset utilization, “Verbund” challenge  
- Restructurings, NWC reduction |
|       | - Reshaped competitive landscape:  
- Bankruptcies  
- Portfolio adjustments  
- Shutdown of assets  
- M&A opportunities  
- Achieved next performance levels through restructurings  
- Capex reduction/postponement |
| II    | “Leverage the position” | - Leverage of early preparation for recovery (“early indicators”)  
- Margin potentials within petrochemicals due to postponed investments and demand pull  
- Volume growth in specialties, but continuing margin squeeze and increasing commoditization |
|       | - Enhancing differentiation of players due to upturn leverage  
- Implementation of new strategies leading to:  
- Next wave of consolidation  
- Introduction of new business models  
- Innovations (beyond new chemical entities) |
| III   | “Emerge as winner” | - Emergence of new leaders in various chemical segments:  
- Three kinds of specialty players with different strategies, business models, etc.:  
- Integrated majors, specialty conglomerates, niche players |
|       | - Major recomposition of competitive landscape  
- Increased consolidation  
- New growth/performance potentials |

Source: Booz & Company
challenges that we identified will take hold of the industry, and in our view the best-positioned companies will be ready to actively drive change. They might do so by, e.g., looking for M&A opportunities, implementing new business models, or launching customer-targeted innovation.

**Phase III**
(“Emerge as winner”) will see a much altered chemical industry landscape, where only some currently established players will land on top. After a long period of crisis management and changing market conditions, we expect this phase to be marked by the dominance of companies that have addressed the challenges head-on.

Given the complexity of the chemical value chain and its customer industries as well as the disparate success factors that drive petrochemical, basic and specialty chemicals businesses, different sectors of the chemical industry will go through these three stages at different times and with different degrees of intensity, and they will have varying results in the coming years.

For example, in basic chemicals, the crisis may have a positive impact by taking capacity out of the market and allowing cash-rich players with strong balance sheets to consolidate and assert themselves in the market. In specialty chemicals, outcomes will depend on the industry sub-sectors and will be influenced by competing factors. In some specialty segments, consolidation will be of utmost importance; in others, developing business models that adroitly manage the costs of commoditizing specialties will be critical; and in yet other segments, innovative products, which can readily be called “truly special,” will be the most important success factor.

**Established chemical companies need to ask themselves what true commercial and operational excellence means in a period when operating models are in significant flux.**
During the coming months, Booz & Company will publish in-depth analyses of each of the challenges enveloping the chemical industry, in a series called “Future of Chemicals.” In these Perspectives, we will explore what these challenges mean for different companies at different stages of development and performance as well as key factors for success. We believe this series of Perspectives is important; it is more vital than ever for chemical companies to address the shifting landscape, and to anticipate rapid changes as the world emerges from the recession. They must create opportunities to shape their future.

It is more vital than ever for chemical companies to address the shifting landscape, and to anticipate rapid changes as the world emerges from the recession.
References


About the Authors

Dr. Marcus Morawietz is a partner with Booz & Company in Frankfurt. He focuses on growth strategies, supply chain optimization, and transaction support for the chemical industry.

Matthias Bäumler is a principal with Booz & Company in Berlin. He specializes in strategy and growth development, as well as operations restructuring efforts, for companies across the entire chemical value chain.

Caroline Thiedig is a senior associate with Booz & Company in Berlin. She specializes in strategy and operations, including postmerger integration, manufacturing, and supply chain management, for the chemical industry.
Booz & Company is a leading global management consulting firm, helping the world’s top businesses, governments, and organizations.

Our founder, Edwin Booz, defined the profession when he established the first management consulting firm in 1914.

Today, with more than 3,300 people in 60 offices around the world, we bring foresight and knowledge, deep functional expertise, and a practical approach to building capabilities and delivering real impact. We work closely with our clients to create and deliver essential advantage.

For our management magazine strategy+business, visit www.strategy-business.com.

Visit www.booz.com to learn more about Booz & Company.