



# Water Treatment

## Scarcity and Sustainability Drive Growth

Urgent demands to reduce industrial water use, increase recycling, improve energy efficiency, and increase supplies for drinking water and agricultural applications will drive demand for water treatment specialty chemicals and services above global GDP and industry growth rates, producers say.

The market for specialty chemicals and services in water treatment is worth \$8 billion-\$10 billion/year, according to producer and analyst estimates. Leading producers have set aggressive growth targets for water treatment chemicals and services, generally in the high-single digits or above. "There is a lot of economic uncertainty currently out there but the beauty of our business and the model is that, regardless what happens, we have a strong value proposition," says David Flitman, executive v.p. and president of the global water and

process services unit of Nalco, a subsidiary of Ecolab. "Unless there's a catastrophic economic event like we saw a few years ago, demand for water will increase."

The sector has proven resilient, producers say. "Even in times of economic difficulty, demand for water has to be met," says David Cartmell, chairman and CEO of BWA Water Additives. "We don't get the cyclical booms and busts that you see in other sectors...You can't stop consuming water."

Growth rates are likely to remain above industrial and GDP growth rates as the sector

continues to expand beyond asset preservation. Customers historically wanted onsite water-consuming utilities such as steam, boilers, and cooling water to last forever and require very little maintenance, says Paul Raymond, senior v.p. and president of Ashland's water business. "Given the increasing need for clean, reusable water, the associated cost, and regulations imposed on industry, that view has evolved." Customers significantly want to reduce use of water, energy, and chemical products to improve their overall efficiency, he says.

“Scarcity of water, a higher profile for sustainability, and regulatory enforcement and policies continue to drive demand,” says Kevin Cassidy, chemical and monitoring solutions commercial leader/water and process technologies for GE’s power and water business. Customers are also placing more emphasis on water when planning long-term strategies to improve efficiency, profitability, and sustainability. “That is raising awareness around water reuse, being able to keep more of the water you have, and tackling tough-to-treat water,” Cassidy says. All of those factors expand opportunities for the business, he says. “The amount of money spent on water management is a small percentage of costs at a major manufacturer but it is a huge lever for productivity improvement,” Cassidy says.

Global consumption of water management specialty chemicals is expected to grow over the next five years by an average 3.2%/year, reaching \$12.4 billion in 2015, according to IHS Chemical. North America is expected to contribute 2.9% average annual growth, South America 5.0%, Europe 2.2%, Japan 0.8%, and China 6.1%. The rest of the world is expected to contribute 3.5% average annual growth. The U.S. remains the largest

market for specialty water treatment chemicals, using them more intensively than other regions, says Ray Will, principal analyst with IHS Chemical.



**FLITMAN:** Broader approach to challenges.



**RAYMOND:** Process opportunities strong.

Global water management growth is dependent on regulatory drivers, industrial development requiring high-quality process water, and the need for drinking water, especially in high-growth economies where drinking water is scarce, Will says. These include the Mideast where funding for projects has been available and China where a lack of water may constrain industrial growth. The market continues to have growth potential as a result of rising regulatory standards, and increasing awareness of drinking water health and purity issues in all geographic markets, especially in developing regions, Will says.

The U.S. municipal water treatment sector has struggled due to budget constraints, Will says. “If it’s not saving money there’s not strong interest in new products,” Will adds. Industrial applications overall remain attractive, including high-growth areas such as hydraulic fracturing. Desalination in the Mideast also offers strong opportunities.

### Emerging opportunity

The U.S. remains by far the largest mar-

ket, but producers are investing heavily in higher-growth emerging markets. Water scarcity and the need to improve water quality are more pronounced in countries where industrial growth is highest, notably China, India, and the Mideast (p. 20). Nalco, which has the largest market share in water treatment chemicals and services at around 21%, has opened R&D centers in Brazil, China, and India as part of its “BRIC-plus” strategy. Modernization in those markets is expected to drive water treatment growth at a rate faster than industrial production growth, Nalco says. There are broad global themes and challenges that drive the business but the specific “solutions that customers ask for are different geographically based on the quality of water available, regulatory and environmental policies, and the spending strategy,” Flitman says.

Large water treatment firms are also broadening offerings, continuing to increase service, equipment, monitoring, automation and control offerings. Companies in India and China have been told that they can increase production but cannot use any more water to accomplish that, Flitman adds. These challenges have forced Nalco “to become more holistic in our approach,” drawing across chemicals, equipment, monitoring, and diagnostics. The need to reduce overall water use and increase water recycling, as well as the pressure to reduce the amount of discharges while at the same time making those discharges less harmful, requires an approach that draws on know-how in chemicals, equipment, automation, and monitoring. “It’s a broader swath of challenges and we have found ourselves evolving in a way that is responsive to needs of customers,” Flitman says.

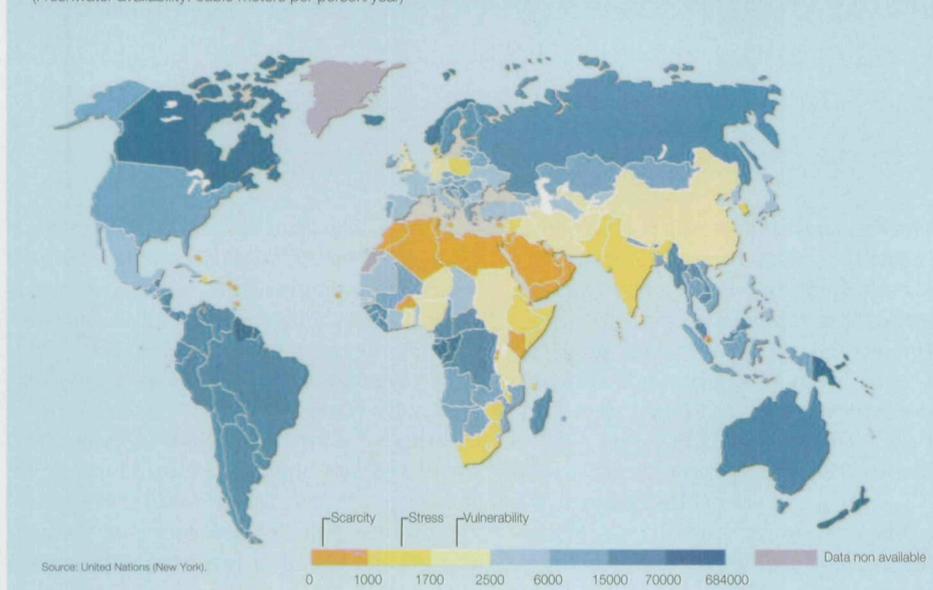
The increasing demands are generating increased revenues. Nalco’s target growth rates have doubled from 3%-4%/year, to 6%-8%/year over the last few years, Flitman says.

Opportunities are strong in higher-growth economies where water is scarce and water quality can be poor. “China has 20% of the world population and 7% of the world’s fresh water,” Flitman says. “The equation does not add up” and improvements in water management are needed to ensure that sufficient water is available, he says.

Consumption of water increases dramatically as economies industrialize, Flitman says. “Water for industrial use can increase from less than 10%, to 50%-60% of the incremental increase for water consumption as economies mature,” Flitman says.

## Water Scarcity

(Freshwater availability: cubic meters per person/year)



Governments are more likely to target industrial uses when regulating water use because other primary uses, agricultural and municipal water use, are more difficult to restrain. "Countries will always grow food and provide water to drink so the easy place to regulate in order to ease some of that burden is by targeting industrial applications," Flitman says. "The amount of money spent on reducing industrial water use increases dramatically as economies evolve. We're seeing that today."

### Sophistication increasing

Producers say that customers are becoming more sophisticated in their approaches to water treatment. Customers are demanding verification of not just chemical use but the contribution the products can make to performance, Raymond says. "We're being asked to optimize performance," Raymond says. "We find that we are bringing to bear chemistry blended increasingly with more sophisticated equipment and analytical capability," he says.

Ashland says its strategy is shifting to focus more on the distinct needs of each market. "We are increasingly moving toward tailored offerings in areas like refining and power, mining, petrochemicals, and food and beverage," Raymond says.

Ashland says it believes the highest growth rate will be in process industries, including development of new chemistries, and it is focusing R&D and other investment there. Services, equipment, and utilities will remain important but "the process segment of the business is really unlimited in terms of how fast you can grow. You're mainly limited only by what you can invent," Raymond says.

At an investor conference in November, Raymond told analysts that Ashland expects sales to grow at a rate of 5-6% per year, in excess of the overall market. "We are concentrating our efforts on the higher-margin, higher-growth pulp, mining, and food and beverage markets," Raymond says.

BWA Water Additives, with a focus on desalination and industrial applications, expects double-digit growth to continue. "We're expecting another positive year," Cartmell says. "We're coming off 15% growth in 2011 and we don't expect a much different year in 2012. New products are gaining traction and that's what's helping our business grow."

Long-term trends continue to work in the sector's favor, Cartmell says. "Population growth will continue to drive growth for wa-

ter," he says. "And, second, [maintaining the] quality of water needed across the world is getting more difficult. The need to improve the quality of water and volume of water is why water is an attractive place."

Customer requirements are likely to become demanding. "Customers are seeking to get more water out of water," Cartmell says. In desalination, people want more salt out and to increase conversion. Increased use of gray water requires more effective treatment. "You are dealing with raw water inputs that are more difficult to process so you need a higher-performance product," Cartmell says. "Because the quality of water being input is going down, customers are pushing systems harder."

Dow Chemical says its water business has seen double-digit revenue growth in recent years. "We view water treatment as very much a specialty business," says Tracy Young, Dow water and process solutions associate R&D director. Dow sees strong opportunities in taking an integrated approach to bring together advances in chemistry, equipment, and automation to reduce overall water and energy use. "Water and energy are closely tied together," Young says. "It takes energy to produce water, and water to produce energy."

Dow's sustainability targets include an effort to reduce desalination costs by 35% by 2015. The company has worked on advances in ultrafiltration technology and reverse osmosis membranes to achieve that goal. Targeted improvements include technology that can increase the flow rate and salt rejection, and allow units to run longer.

BASF, a leading provider of water treatment chemicals, expects strong growth in the business, says Matthias Halusa, v.p. of BASF's water solutions business. "We are targeting higher performance, reduced energy, and smaller environmental footprint," Halusa says.



**CARTMELL:** Higher performance required.



**HALUSA:** New solutions needed.

The company is adding capacity in China for quaternized cationic monomers and cationic polyacrylamide flocculants, with the production unit expected to be fully operational by the third quarter of 2012. The company is also pursuing equipment offerings where there is a good fit with its chemical knowledge. BASF recently acquired Inge watechnologies (Munich), a leading provider of ultrafiltration technology. The purchase is an example where BASF believes it

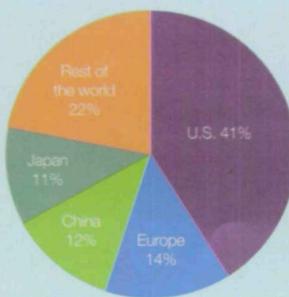
can deliver strong performance based on the combination of membrane technology with BASF chemical and water treatment application know-how. "We are venturing into the equipment area only where chemistry can enable a superior position or advantage," Halusa says.

BASF notes that it is in the business of manufacturing and providing water treatment chemicals as well as one of the world's largest industrial users of water. BASF has targeted a reduction in emissions of both

### Water Treatment Specialty Chemicals and Services

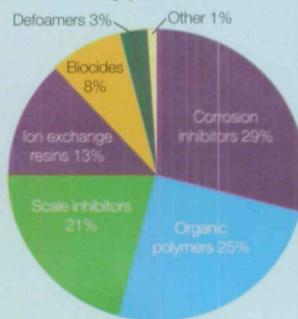
(2010 total: \$10.6 billion)

#### By region



Source: IHS Chemical.

#### By product



organic substances and nitrogen to water by 80% and of heavy metals by 60% by 2020 from a baseline of 2002. Those types of challenge underscore the need for continued development, producers say. "Water is a market that is growing and new solutions are required," Halusa says. "We are tackling some of the most fundamental issues and challenges the planet is facing."

—ROBERT WESTERVELT

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