

Water for pharmaceuticals

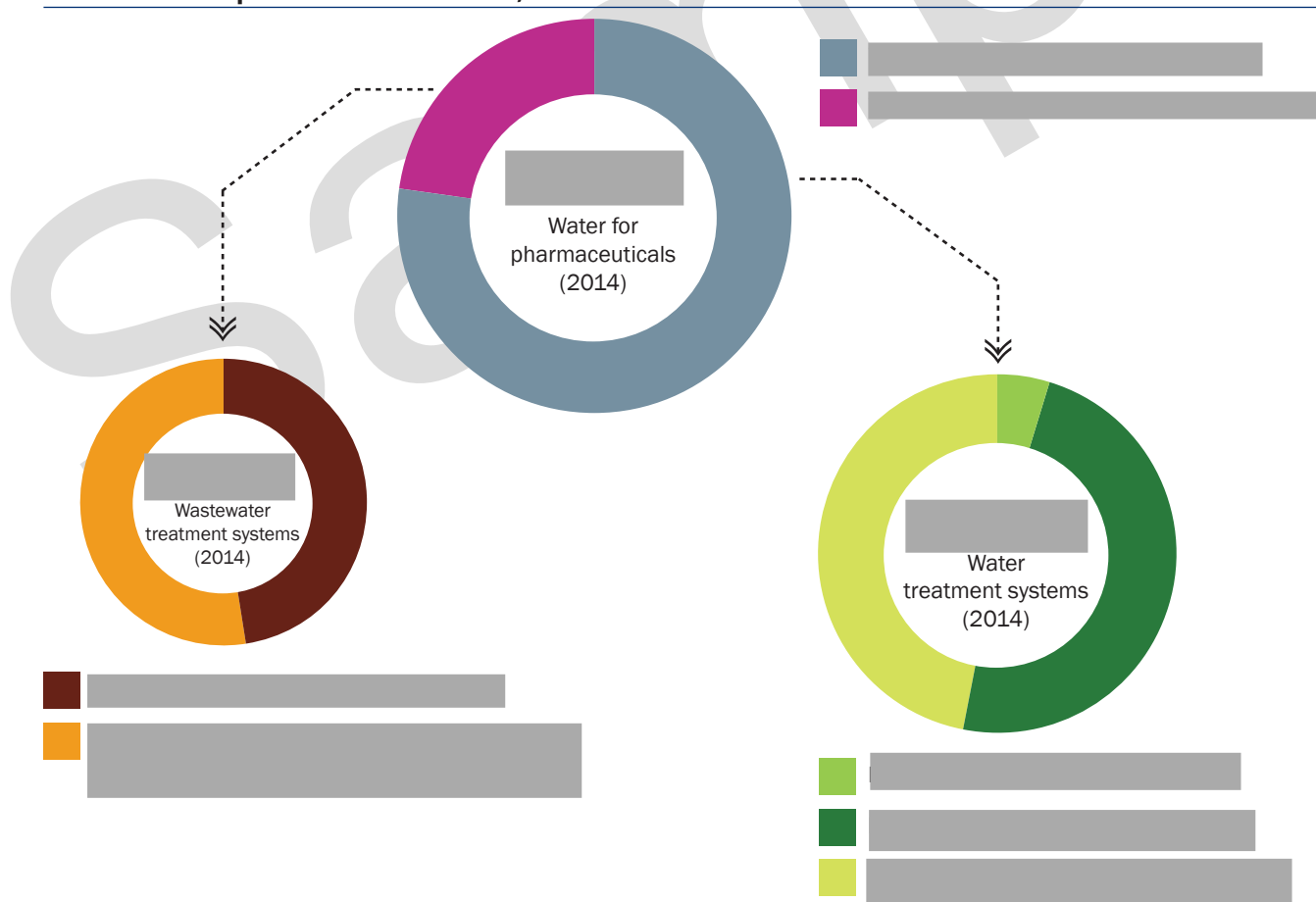
Opportunities in the developed and emerging markets

Executive summary

Current status

- The severity of the patent cliff has ravaged the pharmaceutical industry. It has necessitated the use of drastic business models to combat the lasting effects on profits. As blockbuster drugs continue to expire, major pharmaceutical companies will consolidate their activities to maintain revenues and profits. Acquisitions followed by facility closures and downsizing are the standard within the industry.
- Pharmaceutical companies are on a quest to save money and preserve their profit margins. The cost-cutting measures have a trickle-down effect that is severely impacting the water for pharmaceuticals market. The new trend is for pharmaceutical clients to purchase the lowest cost systems. This results in profit margin erosion for the water technology providers and equipment suppliers. They have to significantly lower their prices in an attempt to win bids and remain competitive.

Global water for pharmaceuticals market, 2014



Source: GWI

- According to forecasts by IMS Health, global sales of pharmaceutical products will reach \$1.2 billion by 2017. The demand for pharmaceuticals will continue to increase, particularly in developing nations where healthcare expectations are rising. This demand will require an increase in manufacturing capacity, which will result in investments for both process water and wastewater treatment systems. The generation of pharmaceutical grade water involves potable water, purified water and water for injection treatment systems. Handling the wastewater streams involves basic and advanced wastewater treatment systems. In 2014, the water for pharmaceuticals market by water treatment systems is worth [REDACTED], with process water accounting for the majority.

Regional opportunities

- The developed economies of the United States, Western Europe and Japan currently represent half of all spending in the global water for pharmaceuticals market. We expect that these countries will remain the largest markets for water technologies in this industry over the next five years.
- In Western Europe and the United States, most investment will go towards upgrades and expansions at existing manufacturing sites. These regions have been most affected by the expiration of patents on blockbuster medicines. Spending on water technologies will see slow growth, especially compared with the boom period in the 1990s. We estimate that the US and Western European markets will be worth \$159 million and [REDACTED] respectively by 2018.
- Government support for increased use of generic drugs in Japan will require expanded production capacity. We estimate that investment in water technologies in this region will grow faster than in other developed markets, [REDACTED]. Reforms to guarantee premium pricing for new drug developments may help to soften the impact of the patent cliff.
- Water technology spending in India is expected to see phenomenal growth over the next five years. We predict that the value of this market will reach \$124 million by 2018, with an impressive growth rate [REDACTED]. The growth in contract manufacturing and outsourced API production will drive a significant proportion of these investments. The Indian government wants a dramatic expansion in pharmaceutical exports, to overtake domestic consumption of drugs by 2016.

Water for pharmaceuticals market by region, 2011–2018



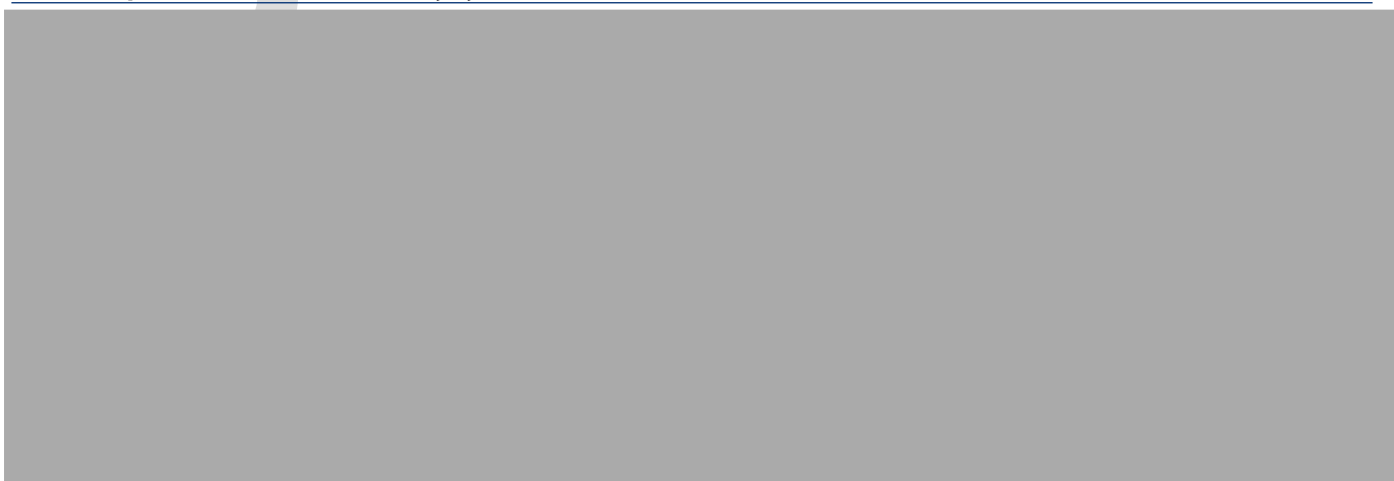
Source: GWI

- [REDACTED]
enormous population is rapidly becoming more affluent, driving healthcare expectations and spending on pharmaceutical products. Projects led by international pharmaceutical manufacturers may be the best way into this market for water technology providers.
- Growth in Brazil will be driven by the government's plans to encourage local production
[REDACTED]

Technology trends and opportunities

- As pharmaceutical companies prioritise low costs above system quality, water technology providers and equipment suppliers are moving away from the costly customised water treatment systems to offering a standardised solution. However, as the industry is already used to offers with customised solutions, offering just standardised systems will initially prove difficult.
- With the importance of cost savings within the industry, water technology providers are looking to help clients achieve more optimised operations. Running facilities more efficiently in terms of water use and energy consumption are key ways to reduce costs. Identifying low risk and low cost modifications to plants also holds opportunities in the market.
- The pharmaceuticals market is known as a typically risk-averse industry, so outsourcing in the water for pharmaceuticals market previously had limited scope. However, in light of the market changes, the industry has evolved and some pharmaceutical companies no longer consider the generation of pharmaceutical water a part of their core business. As such, there is an increase in the prevalence of engineering, maintenance and utilities contracts for process water as well as wastewater systems.
- Micropollutants are a key challenge and growing concern within the industry. As regulations change and strengthen around the world, pharmaceutical companies are looking ahead to combat this problem. Opportunities exist for forward thinking water technology providers that can identify the key systems that can handle micropollutants and the ideal sequences they should be used in to achieve the necessary pollutant level reductions.

Water for pharmaceuticals market by system, 2011–2018



Source: GWI

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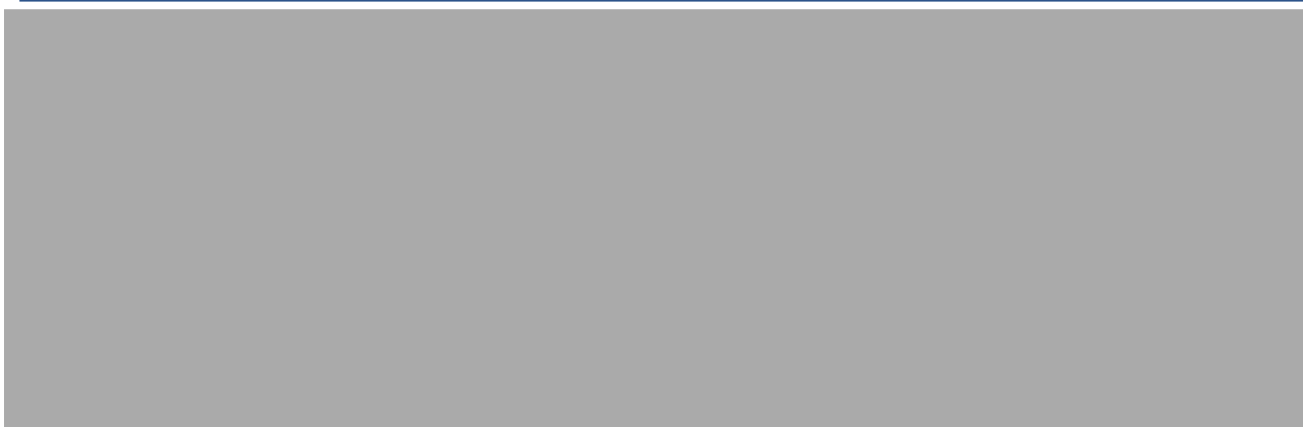
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1. Market overview

1.1 The pharmaceutical industry

The pharmaceutical industry has been in a state of flux following the start of the patent cliff in 2011. The 20-year exclusivity enjoyed by pharmaceutical companies for many blockbuster medicines is coming to an end. These drugs are so lucrative because they can generate at least \$1 billion for the company in sales annually. The following figure shows some blockbuster medicines with recent patent expiry.

Figure 1.1 Recent patent expiry of blockbuster medicines



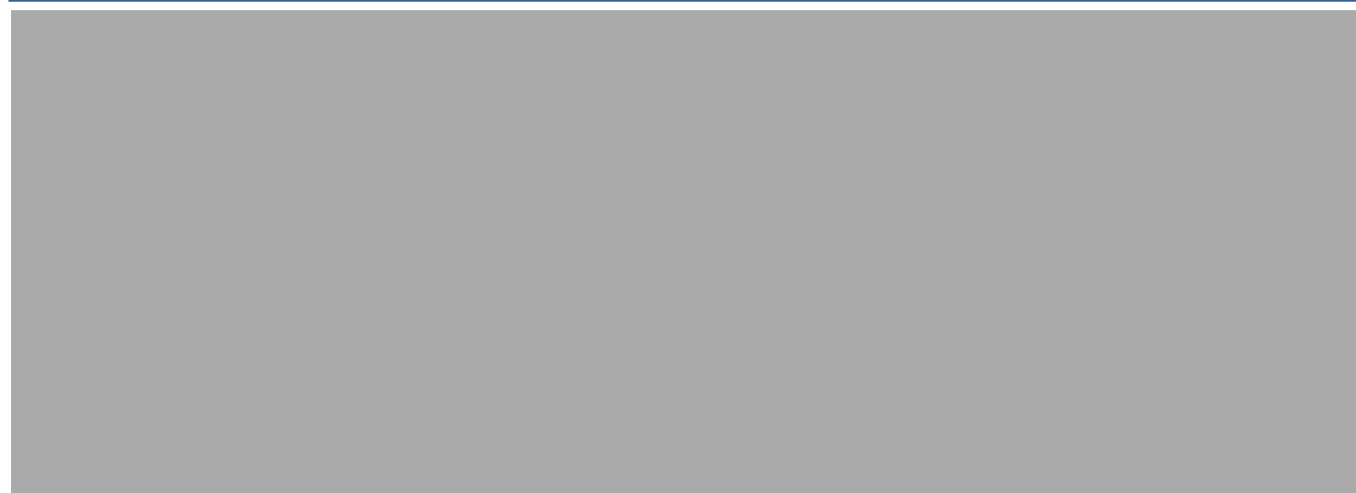
Source: Company annual reports; GWI

Blockbuster drugs are significant cash cows for companies due to their incredible profit margins. For example, Lipitor had a profit margin of 90%, resulting in astounding profits annually for the company. Taking into consideration that this is an industry where companies sometimes sell off product lines that fall below 60% profit margins, these blockbuster drugs are of key importance to achieving double digit growth rates.

As each patent expires, there are numerous generic drug companies such as Teva, Mylan and Abbott that are waiting for the opportunity to begin manufacturing and selling the same product. As the actual cost of manufacturing these products is not very high, this creates the huge profit margins enjoyed during the patent period. But as the generics begin to sell the same drug at a fraction of the original sale price, the main manufacturers must adjust their prices or adopt new pricing systems to remain competitive. This results in significant revenue losses and could result in the production of such lines being stopped. Following expiry, to limit the encroachment of generic versions, Pfizer has dropped their price of Lipitor by as much as 80%. In the UK, the use of the generic version of Lipitor costs \$3.80 (£2.26) from the original price of \$47.50 (£28.21) – a price decrease of 92%. Overall, patent expiry can result in medicines being sold for less than 93% of their initial price.

The following figure shows some of the blockbuster pharmaceuticals revenues pre- and post-patent expiry.

Figure 1.2 Revenues from blockbuster pharmaceuticals pre- and post-patent expiry



Source: Company annual reports; GWI

The factor of patent expiry on its own is not enough to cause significant market upheaval, as the 20-year patent period is an industry standard. The severity of the patent cliff came about because numerous patents were expiring in the same companies within a very short time frame. For example, Pfizer had three blockbuster medicines expire between 2010 and 2011. The pharmaceutical companies were slow to realise the full extent of the issues that these large-scale expiries would cause. With enough time, the companies ideally could have combated the loss in revenues by developing new lines of blockbuster drugs. However, as the approval of new drugs take many years, any new products would not be on sale in time to cover these losses. As such, more drastic market restructuring would be required to minimise the haemorrhaging of profits. The need to placate and reassure investors and shareholders has become paramount within the industry.

1.2 Market dynamics

1.2.1 Market consolidation

To cope with the huge revenue losses, there has been significant market restructuring within the industry. The global giants of big pharma are going through a period of strategic acquisitions, consolidation and downsizing. In an effort to consolidate their production, companies are closing down extraneous facilities. When acquisitions take place, downsizing is the major consequence, which results in an oversupply of traditional pharmaceutical manufacturing capabilities.



Pfizer, with their strategic acquisitions, have left a significant impact on the industry. As they have acquired very large pharmaceutical companies over the years in the US and Europe, combined with extensive consolidation and downsizing, the success in terms of profit margins has been noticed and is driving their competitors towards this model.

So far, Pfizer has acquired the following companies:

