

Volume 1, Issue 2 | Fall 2020

amane currents

Designing the future of water



**Residential & commercial water market:
growth, innovation and opportunities**

Progress in treating and recovering brine

**Sustainable investing: opportunities for the
water industry**

**Uncovering the true profitability landscape in
the global water industry**





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WELCOME to the Fall issue: A SEASON OF CHANGE



Welcome to the Fall 2020 issue of *amane currents*! We hope this issue finds all of our readers safe and healthy. It's a time when the seasons are beginning to change, but a change in seasons likely will pale in comparison to many of the dramatic changes that we have seen over the course of 2020. Here's hoping for some long-awaited normality returning in the near future – whatever that might look like.

A quick scan of our collection of articles in this issue shows that the water business is also undergoing significant changes in almost every segment and geographic region – despite its reputation as a very stable and conservative sector.

Our lead articles highlight the rapid developments underway in the residential & commercial water sector, as well as the very specific impacts that the COVID-19 pandemic is bringing to this corner of the industry. What once was seen as an afterthought to the larger water business has clearly emerged as one of the most interesting and dynamic segments worldwide, attracting the interest of consumers and investors alike.

We also look at how major advances in technology and best practices are driving rapid change in the desalination segment, helping to turn brine concentrate from an environmental concern into a useful resource. These advances, along with the ongoing fall in treatment costs, have the potential to accelerate the use of desalination to address increasing water supply and resiliency concerns in a number of regions.

With the water industry featuring such a complex ecosystem of participants along its value chain, it is often hard to identify where the most value is truly being created. In this issue, we share the results of an Amene Advisors analysis of nearly 150 global companies playing across all segments of the water business, to try and illuminate the real “profitability landscape” of the industry over the last five years. In addition to breaking down the performance differences, we also seek to identify the drivers for these differences and look ahead to see what shifts in the water profit pool may lie beyond the horizon.

This sort of information may be of particular interest to those investors who are discovering the unique role of the water business in maintaining overall sustainability. As more and more traditional investors commit to a mandate that includes sustainable or environmental, societal and governance (ESG) driven investing, there is more interest than ever in understanding both the impact and the economics of companies that provide products and services related to the treatment, transportation and storage of water and wastewater. We examine the opportunity that this provides for water sector companies to attract entirely new groups of capital providers.

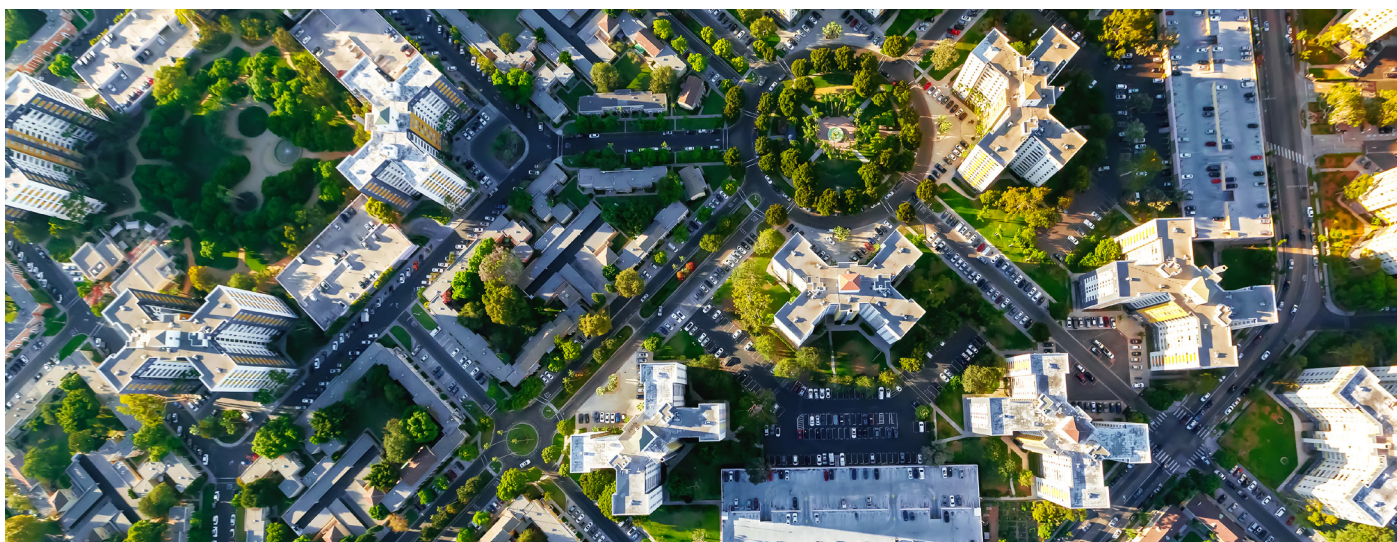
Finally, we again visit two of our Amene regions to check in on some of the local trends moving the industry there. From our Southeast Asia region, we look at some of the potential opportunities arising for public-private partnerships in the Indonesian market. And in Europe, we look at the challenges and opportunities presented by the emerging awareness of micropollutants in water supplies across the continent.

We hope you find the pieces in this issue to be both interesting and thought-provoking. As always, we welcome your input and feedback!

All the best,

Bill Malarkey





RESIDENTIAL & COMMERCIAL WATER MARKET: an outlook of growth, innovation and expanding opportunities

By Victor Ollivier



The residential & commercial water market is an important part of our industry, and one that is poised for significant growth. Amane Advisors estimates the global residential & commercial water treatment market to be worth \$33.5 billion in 2019. We anticipate 5.8% growth over the next five years, above that of the total water market, which will result in a market worth \$45.4 billion by 2024.

This market is also fragmented and specialised. The residential & commercial water market includes water treatment and services supplied to households; hotels, restaurants & cafés (Ho.Re.Ca.); offices; and other commercial and institutional premises such as

education, healthcare, retail, car washes, laundries, and gyms. Across these sectors, residential & commercial water treatment applies Point-of-Entry (POE) and Point-of-Use (POU) water solutions for the further treatment of municipal water, for both drinking and non-drinking water purposes.

The residential & commercial market is dynamic and undergoing many changes due to a number of factors. Following are some insights into the landscape and new opportunities in the residential & commercial market, based on our experience and taking the pulse of the market on an ongoing basis.



There is no ‘one size fits all’ when it comes to the residential & commercial market.”



Market drivers

We have identified four major drivers accelerating growth in the residential & commercial market:

- **More stringent sustainability demands and anti-plastic lobbying.**

Over recent years and through the COVID-19 pandemic, the global agenda on plastic pollution has been mounting. For example, the European Union is set to ban all single-use plastic, including drinking cups, by 2021 and recycle 90% of single-use plastic bottles by 2025. In addition, concerns about water quality, sustainability and carbon emissions contribute to a shift away from plastic packaging and certain products such as bottled water coolers (BWC), towards more sustainable solutions like bottle-free coolers (BFC) or multifunctional taps (MFT), which use mains-fed water.

- **Greater environmental awareness, including quality of drinking water.**

Particularly in developed regions, the general public are demanding improved water quality, heightened by large-scale water contamination events – such as the Flint water crisis in the United States – and campaigns around other micropollutants. This trend has been exacerbated by the COVID-19 pandemic, with an increased focus on health and sanitisation. This is accelerating interest and innovation in further treatment of drinking water, at the point of the end user.

- **Growth of middle classes in regions with low water quality.**

By 2030, the global middle class is expected to increase by 2 billion people according to the European Commission, with most of this growth in Asia. With this rise comes an increase in disposable income and interest in “designer” water, driving sales of water treatment equipment like under-the-sink (UTS) filters and softeners to improve the taste and quality of drinking water.

- **Changing demand in commercial spaces for employees and clients.**

Water dispensers are commonplace in offices and in Ho.Re.Ca., in addition to institutional spaces such as hospitals and schools. However, the strength of this demand may be tempered by the COVID-19 pandemic and transition to working from home (WFH) for a significant proportion of the office and education segments. We expect that the residential market will continue to account for nearly two-thirds of the total market and see high growth over the next five years, in part buoyed by the increased proportion of the workforce WFH due to the COVID-19 pandemic.

Market outlook

Whilst the residential market is anticipated to maintain the highest market worth and growth to 2024 ahead of the commercial sector, we anticipate that there will be a number of shifts in the total market over this period. They include:

- **Changes in geographic growth**

Currently, the United States represents the largest market at \$9.1 billion, but future growth will be driven by Asia Pacific. Specifically, the powerhouses of China and India will see growth rates of 14.6% and 8.1% to 2024 respectively, with a joint market value of over \$16.1 billion.

- **Products**

Softeners will remain a key solution. However, anti-plastic sentiment will drive consumers from BWC to more environmentally friendly drinking water solutions including BFC and MFT – especially in offices, Ho.Re.Ca., and affluent households.



Opportunities

The increased attention on the residential & commercial market creates numerous opportunities. These include:

- **Increased residential market spending**

The COVID-19 pandemic has had a strong impact on the commercial market, including spending on water services. Although potential bans of water dispensers have been avoided, as more consumers work from home, there will be growing trends for enhanced water and sales of associated products in the residential market.

- **Increased innovation and digitalisation**

Innovation in product design, specifically enabling digitalisation of products to avoid touch, will be critical. Examples include the introduction of a touchless feature for water dispensers, and

products, such as BFC, that have a smart application connection. Associated with this is the ongoing evolution of sales platforms, as the use of online sales channels for solution providers and distributors has become increasingly important due to COVID-19.

- **Opening up to new market players**

The market is expected to see an opening up, as a wider selection of players – including food & beverage companies and water bottlers – and investors look to engage in the residential & commercial water market due to its promising financial proposition, as well as its strong opportunity to gain market share from the packaged water market.

There is no “one size fits all” when it comes to the residential & commercial market, which is so diversified. With strong growth, we believe that this poses a host of new opportunities for the residential & commercial market in terms of innovation and expansion.



We anticipate 5.8% growth over the next five years – above that of the total water market, which will result in a market worth \$45.4 billion by 2024.”





THE IMPACTS OF COVID-19 ON THE RESIDENTIAL & COMMERCIAL WATER MARKET

By Melissa Antieul, Consultant and Researcher

Like all sectors of the water industry, the residential & commercial water market has felt the impact of COVID-19. But what are those effects on this highly fragmented market, and what are the key trends driving changes – and creating opportunities – as a result of COVID? Here are our thoughts on the five most pertinent developments:



1. Commercial water in decline, residential water poised to rise

The commercial and hospitality sectors are most affected by the COVID-19 crisis, with businesses pausing operations or operating at reduced capacity, if not ceasing trading altogether. Further, working from home (WFH) has formed part of the new normal for many companies. With a reduced workforce in offices and other commercial spaces, businesses may cut costs including water services, such as bottle water coolers (BWC) and bottle free coolers (BFC).

However, with a greater proportion of the workforce WFH, there is potential for a rise in the residential water market. People want the same level of water filtration, and variety of drinking options (e.g. carbonated, filtered or remineralised water at different temperatures) as they would have in their normal working space. A rise in interest in compact countertop systems, embedded filters (e.g. in the fridge), as well as reverse osmosis-based under-the-sink (UTS) and multi-functional taps (MFT) in more affluent households, may result.

2. Water coolers face an uncertain future

With significantly less commercial activity, products like BWCs and BFCs – which are commonly used in these spaces – have seen a fall in demand. BWC is likely the most heavily impacted product, as most revenues come from the quantity of bottled water consumed. In peak COVID-19 months to date, loss in revenue for BWC has been estimated to be between 30-50%.

BFCs have seen fewer impacts, as they follow a rental model and are typically used by larger businesses, with greater financial reserves. However, as businesses return to normal, they may negotiate discounts or cancel their contracts.

This decline in demand for water coolers is being aggravated by potential regulatory controls amidst concerns that they may present a risk in transmitting the virus. Local governments – in France, Switzerland and Greece – were recommending a ban of water coolers, although these have been paused, providing that strict advice on water cooler use is followed. In fact, many of the key water cooler providers have touch-free options, including foot pedal kits or “smart” dispensers that can be used via an app.



3. Installation requirements cause short-term rebalances of residential sales

With restrictions on who may enter individuals' homes, the ability to install products by plumbers and service teams has been limited. This has led to a rise in sales of simple point-of-use (POU) products – DIY solutions – which do not require installation. For example, in China, sales of countertop filtration products (including water pitchers and BFC) evidenced a 33% year-on-year growth in the first quarter of this year, according to All View Cloud. However, sales of other solutions – such as softeners, UTS, and MFT – which require installation may be limited by restricted entry to households.

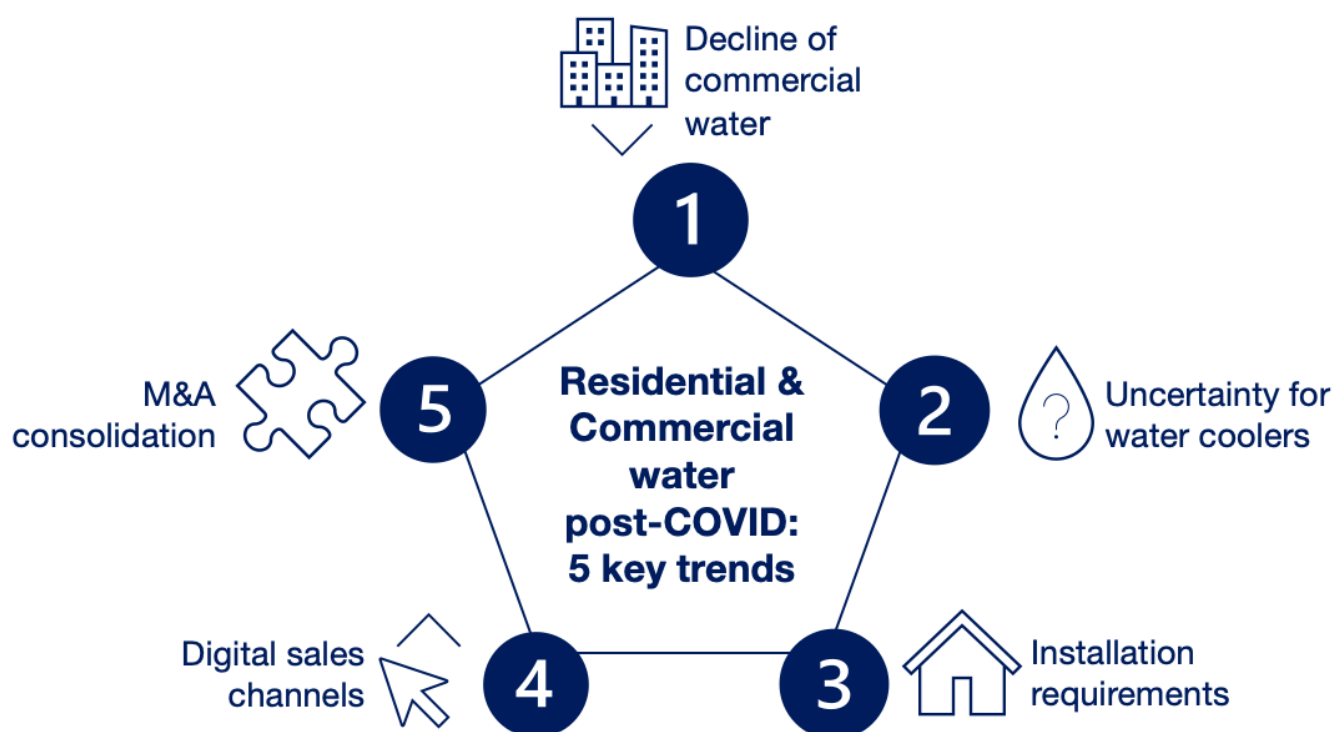
4. New sales channels are emerging

As customers are limiting contact and retailers have shut temporarily or reopened with many restrictions, the use of digital sales channels has increased. Subsequently, solution providers are increasing their digital presence – such as offering virtual consultations with technicians – and expanding online sales capabilities through their own or existing platforms (e.g. Amazon). However, there is uncertainty surrounding the permanence of these sales channels: Customers still value face-to-face contact when deciding to purchase premium and more complex solutions (such as MFT).

5. Preparation for an upswing in M&A activity

The residential & commercial water sector is highly fragmented, with many smaller dealers focused on their local geography. The negative effects felt by some small players may pose a great opportunity for investors and market leaders. Despite a slowdown in M&A activity since Q1 2020, we expect a rise in M&A activity such as tuck-in or bolt-on investments. Waterlogic has commenced this trend, with acquisitions of two bottle free water cooler providers in the United States in Q3.

In summary, the residential & commercial water market is adjusting to the new normal that COVID-19 has forced on businesses, workers, and consumers at large. While these changes pose challenges, they also present opportunities to both companies and investors in this very dynamic sector. For more information, we invite you to read our paper ["Key trends impacting residential & commercial water post-COVID"](#).



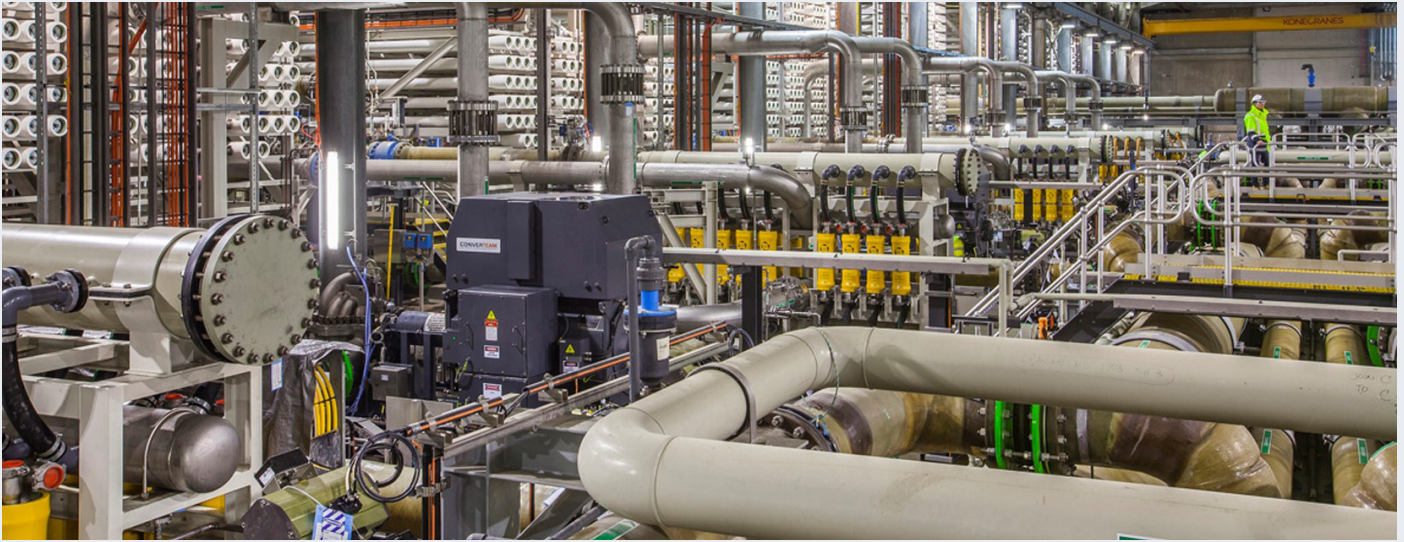


Photo courtesy of WDR

TREATING AND RECOVERING BRINE:

progress in transforming brine into a useful resource

By Geoff Gage, Managing Partner, and Ismail Alaoui, Principal



By 2025, Amane Advisors estimates that more than 140 million cubic meters (m³) of brine will be produced around the world each day. With desalination costs falling to new lows, largely due to the use of membrane technologies, more and more countries are accelerating the use of desalination to increase water security and address the rapid depletion of liquid freshwater resources.

Turning brine from an environmental concern into a useful resource is one of the major challenges in the water sector today. Fortunately, progress is being made with the use of advanced technologies and best practices.

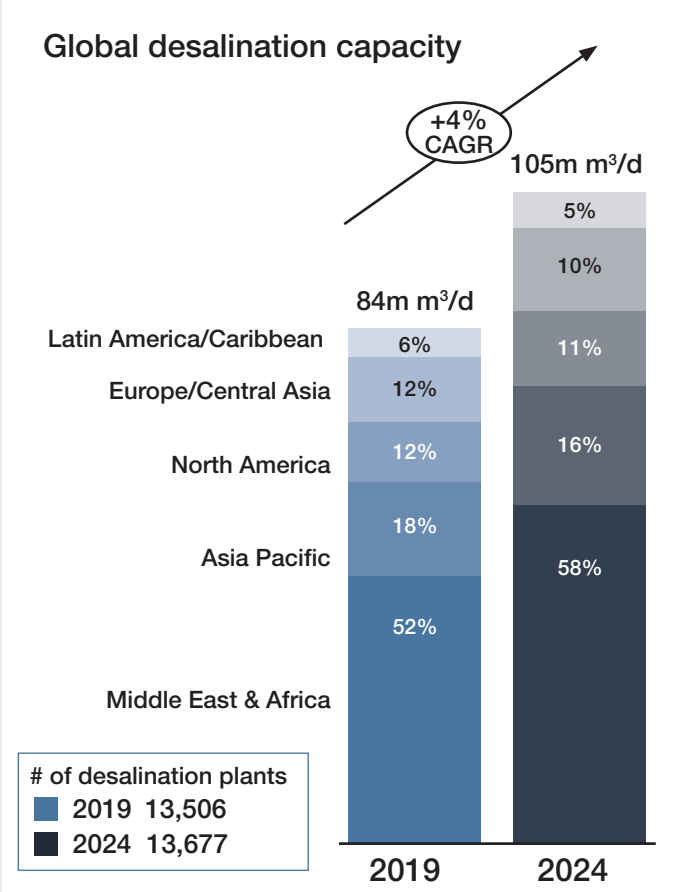
The volume of available freshwater is rapidly decreasing, leaving no other choice in many areas than to use seawater to produce drinking water. According to US Geological Survey, liquid freshwater represents less than 1 percent of the total water on earth and is set to decrease further under the increasing pressures from population growth, rapid industrialization, and the impact of climate change.

For example, countries such as Egypt, Jordan, and Morocco are faced with the challenge of rapidly depleting resources and fast-growing populations. The only option to address this issue is to consider nonconventional water treatment technologies, such as desalination.

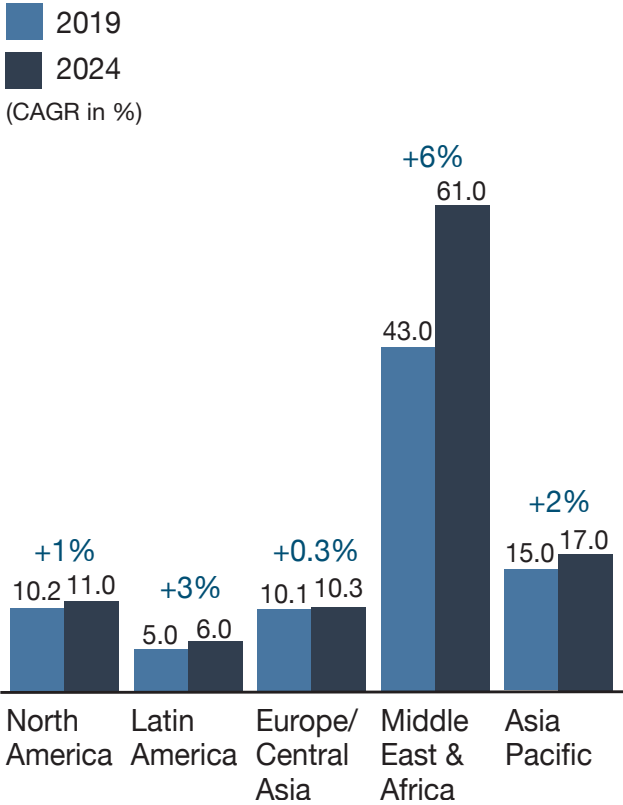


Desalination consists of removing salts, chemical residues and any other contaminants from saline water. In practice, desalination generates desalinated water on one side of the process, and a heavily concentrated solution containing all unwanted material – the brine – on the other side. Brine is a by-product liquid stream with higher concentrations of the feed water’s dissolved solids, some of the pre-treatment additives (including residual amounts of coagulants, flocculants, and antiscalants), organics, microbial contaminants, and other contaminants.

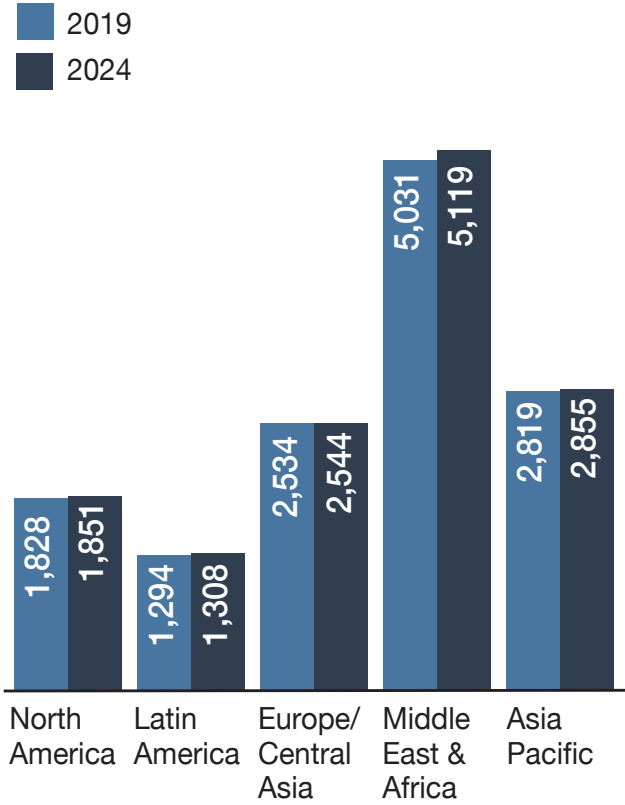
Globally, Amame estimates that every day about 110 million m3 of brine is produced, of which some 69 percent is attributable to the Gulf Cooperation Council (GCC) countries – the Kingdom of Saudi Arabia (KSA), United Arab Emirates (UAE), Qatar, Kuwait, Bahrain and Oman.



Desalination capacity forecast
2019-2024 (m m3/d)



Number of desalination plants forecast
2019-2024



The increasing use of desalination

According to GWI DesalData, some 13,500 desalination plants are now in operation all over the globe, producing approximately 83 million m³ of drinking water daily.

Desalination is mainly adopted in water-scarce regions where freshwater availability cannot meet the growing needs. Moreover, climate change (including frequent droughts, declining and/or erratic rainfall, and high evaporation rates) significantly impacts water supplies and causes countries to increase desalinated water in their potable water mix.

GWl DesalData reports that approximately 43 percent of the installed base is deployed in the Middle East where the KSA alone accounts for 15 percent of the desal capacity with 2,266 desalination plants. This is followed by the UAE (11 percent), Kuwait (4 percent), Qatar (3 percent) and Israel (3 percent). The United States (US) holds the second position globally with 12 percent of the installed capacity. In the US, 83 percent of desalination is focused on brackish water, which has a lower salt concentration than seawater.



As environmental awareness increases, public authorities are requiring desalination players to implement solutions in an effort to reduce the impact of their brine reject on the environment.”

Environmental impact

Environmental concerns are increasing globally due to a number of factors, including salinity gradients, effluent discharge speed, effluent dissolved oxygen levels, and toxic chemicals.

- Brine is denser than seawater; therefore, it sinks to the ocean floor. If brine is not properly diluted by natural surf or current conditions or by special outfall diffusers, it may damage the ecosystem in the vicinity of the discharge due to salinity gradients.
- Effluent discharge speed has many challenges, including the potential impact on marine larvae.
- Since brine carries less oxygen than the seawater, marine life might be vulnerable to suffocation due to effluent dissolved oxygen levels.
- A variety of possibly toxic chemicals, such as antiscalants and antifoulants, can negatively impact the surrounding environment.

However, as environmental awareness increases, public authorities are requiring desalination players to implement solutions in an effort to reduce the impact of their brine reject on the environment. Solutions include dilution with other streams and outfall pipes equipped with multiport diffusers to provide a higher initial dilution of the concentrate as it enters and mixes with the receiving water body.

Situational context is important when considering the potential impacts of brine. For example, in some scenarios, the minerals put back into the sea were there already. According to the article “Hydrological Cycle – Vol. II – Evaporation from the Surface of the Globe,” referenced in a 2009 UNESCO Encyclopedia of Life Support Systems (EOLSS) report, approximately 1.35 trillion m³ of seawater is evaporated each day, and brine volume represents less than 0.00001 percent. Because of this, the brine impact is small when compared to the natural water cycle of seawater evaporation.

The Carlsbad Reverse Osmosis desalination plant in California, US, offers an example of successful brine management strategies to cooling water, at around 20 percent higher salinity than seawater (versus less than 50 percent for typical brine discharge). Diluted brine is discharged through a single 50-meter-long pipeline channel into a man-made sea lagoon. A 2019 academic review, titled, “Biological and Physical Effects of Brine Discharge from the Carlsbad Desalination Plant and Implications for Future Desalination Plant Constructions,” found no significant changes in organisms living on the sea floor and other biological indicators.



Brine as a by-product

Most desalination players consider brine as a burdensome by-product and are looking for the cheapest and easiest solution to get rid of it.

Discharge into the seas is the traditional method for municipal seawater desalination plants, but it can be applied to all desalination plant sizes and is often the cheapest option. Indeed, the vast majority of brine today is discharged back into the sea, often through a pipeline extending between 100 meters offshore and up to a couple of kilometers – such as Ras Al Khair desalination plant in Saudi Arabia with its less than 4-kilometers-long disposal pipeline.

For small desalination plants, public sewer disposal is the most widely applied method when the dilution effect is enough to not disturb biological processes of the wastewater treatment plant.

In some situations, such as an inland location far from the seashore, desalination players have two options: Reduce the volume of brine to reduce transportation cost or resort to deep well injection.

To reduce the volume, brine can be partially (or even fully) dried in solar ponds to create a mixed salt, which is sold at around US\$150 per ton and typically used in the food industry. Evaporation ponds are artificial ponds used to host brine when sea discharge is not an option. However, since the depth is relatively small to maximize evaporation, this method requires large areas of land to increase the surface area where the water can evaporate.

Deep well injection is most suitable for medium- and large-size inland brackish desalination plants when soil condition as well as legislation allow it and the cost of brine transportation and disposal is high.

In some cases, players look to maximize the efficiency of their plant by recovering water as much as possible. This concept is called zero liquid discharge (ZLD). ZLD technologies consist traditionally of brine concentrators and crystallizers that use thermal evaporation to turn the brine into both a highly purified water and a solid, dry product ready for landfill disposal or for potential salt recovery.

ZLD methods are used mainly for inland small-size industrial plants to protect the groundwater aquifers around the plant while recovering as much water as possible. ZLD has not been observed for municipal desalination plants due to its economic viability. It is very energy-intensive and therefore, very expensive. The energy intensity required to extract water increases dramatically as the brine water content decreases.

Considering the costs, minimum liquid discharge (MLD) is an option for desalination players to go further than the conventional desalination plant recovery and choose to recover more water while keeping the CapEx and OpEx cost to a reasonable level. Indeed, CapEx and OpEx increase exponentially as water recovery grows. MLD is all about finding the right equilibrium between cost and performance. However, with this method, the brine becomes even more concentrated — making its disposal into the sea even more challenging. In either case, MLD and ZLD do not eliminate the salts, and disposal is still required.



Photo courtesy of Aquatech International





The opportunity for recovery of constituents in brine offers the potential of an added value resource — including brine mining and brine as a source for electricity.”

Brine as a valuable resource

Brine mining

Brine includes many useful ions, and recovering these materials economically could be one of the critical challenges for the water sector in the next few years.

Magnesium – (Mg) and sodium-based products such as sodium chlorate (NaClO_3) and caustic soda (NaOH) are believed to return the highest benefits. Additionally, lithium (Li) – an essential component of equipment used in human daily life, such as in the battery of our smartphones and laptops – is coveted by many industries and fuels the research and development teams of many start-ups and conglomerates. The widespread adoption of electric vehicles is expected to significantly increase the demand for Li and increase its price, which is already traded at \$7,500 per ton. Other useful materials include calcium, used for soil amendment, in construction industries, and as a fertilizer; and potassium in fertilizers.

Water technology companies are developing new technologies to advance brine mining, including eutectic freeze and membrane crystallization. Eutectic freeze crystallization is a low-temperature crystallization technique where the brine is cooled to the eutectic temperature. Both salts and iced crystals are formed

before being separated due to the density difference. Membrane crystallization is a variation of standard membrane distillation, which is a process where a solution becomes saturated and then supersaturated and the obtained crystals are then collected in an external crystallizer using a microporous hydrophobic membrane.

More conventional technologies such as evaporation ponds can also be used to recover valuable resources. However, multiple evaporation ponds will be necessary to rotate between brine evaporation and resources extraction.

There are also questions about the economic and technical feasibility of the new technologies. From the economic standpoint, market values must be higher than the CapEx and OpEx of the resource recovery, and disposal costs need to be higher than the mining cost to see an uptake. This is not yet proven. Meanwhile, from a technical standpoint, most of the technologies are at the laboratory or industrial pilot stage. What works well at lab-scale does not necessarily work well in the real world. To date, no proven technology is available for large-scale deployment.

In addition, the low concentration of valuable materials means that large volumes of water must be processed to extract even small quantities. Examples include potash 380 milligrams per liter (mg/L), lithium 0.17 mg/L, boron 4.6 mg/L, iodine 0.06 mg/L, bromine 65 mg/L, magnesium 1,350 mg/L, zinc, 0.01 mg/L, tungsten, 0.0001mg/L, uranium 0.003 mg/L, and gold 0.000004 mg/L.



In any case, brine mining remains a focus point in the industry, and there have been a number of initiatives put forth that encourage its development. Saudi Arabia is particularly active and leads the global thinking on how to solve the brine challenge.

- In April 2019, Saudi Arabia's Red Sea Development Company launched a competition, Brains for Brine Challenge, to come up with innovative ideas to manage the brine. The winners (Sebastian Castano, Shihan Lou, Indah Puspita and Nouran Bahgat) proposed a circular solution for brine, using technology to create a new, ecofriendly building material. Their solution relies on a bio-based desalination process in combination with a mechanical vapor recompression.
- Neom, a Saudi Arabian mega city that focuses on modernity, announced plans to build up to 1 million m³ per day of seawater desalination with no brine disposal in the sea.

In addition, Sandooq Al Watan, a UAE social initiative for sustainable development, is organizing a new Centurium Prize Challenge entitled "ReThink Brine" to discuss how to find an offsetting economic value for the brine discharge, to create construction material. The competition seeks to protect the Arabian Gulf ecosystem and marine life and enable an ecofriendly construction and real estate sector.

Historically, water companies disregarded brine mining and focused on recovering as much water as possible. Selectively recovering resources relates more to the chemical industry rather than water treatment. Because of this, it is more likely that a chemical company will develop a brine mining technology than will a water company.

Brine as a source of electricity

The industry is also exploring the use of brine as a resource to produce electricity, leveraging the salinity-gradient power. Potential technologies include Pressure Retarded Osmosis, which consists of converting the

osmotic pressure of a saline solution to hydraulic pressure, and Reverse Electrodialysis, which consists of converting salinity difference into electric current with ion-exchange membranes.

Next steps include pilot projects and scaling these technologies to test them together in series to maximize overall recovery rates and electricity production and value.

Addressing the brine challenge

As 2025 gets closer, the cost of discharging brine to the sea is expected to increase as public authorities are taking up the environmental issues and defining stricter regulations for seawater discharge. For example, Australia's Environmental Protection Act 1993 and Water Act specifies as its first priority that brine is to be treated to produce usable products wherever feasible, and then disposal must be done in accordance with strict standards that optimize environmental protections. To that end, a 50:1 dilution of brine discharge is required. Moreover, across the globe, US Environmental Protection Agency licenses are required to discharge into the marine environment with claims individually assessed. These fees are significantly higher than discharge into wastewater lagoons and inland waters or land other than a wastewater lagoon.

The salinity challenges are difficult to navigate, but as new technologies emerge and older technologies are refined, the future may hold solutions to make brine a resource or disposed of while mitigating any potentially negative effects.





SUSTAINABLE INVESTING: opportunities for the water industry

Dorothee Chabredier, Principal and Geoff Gage, Managing Partner



Few industries have as extensive and unique an impact on sustainability as does the water industry. Nevertheless, companies and municipalities in the water sector often face difficulty in obtaining capital to fund development of new technologies, build new infrastructure, accelerate their growth, and ultimately contribute to increased access to global water and sanitation by 2030 — as identified by the United Nations' (UN) Sustainable Development Goals (SDGs) — in both developed and developing nations.

The good news is that sustainable investing is becoming mainstream in financial markets, opening new avenues of opportunity for water companies to attract more capital including more “patient” capital that is invested with a longer-term view and potentially create higher valuations.

Growth in sustainable investing

Sustainable investing assets in the five major markets (Europe, United States, Japan, Canada, and Australia and New Zealand) stood at US\$30.7 trillion at the start of 2018, growing at a compound annual growth rate (CAGR) of 14 percent from 2014-2018, according to Global Sustainable Investment Review. This trend is expected to continue and is largely viewed by the financial sector as an opportunity to mitigate the asset management crisis after seeing low interest rates and increasing societal demand.

Due to an environmental, societal and governance (ESG) mandate, major private equity funds have committed to present more than 50 percent of their assets under management (AUM) by 2021 by signing the UN Principles for Responsible Investment (PRI). Today, more than 2500 investors, including 75 percent



of the top 100 AUM investors, have signed the PRI, and 65 percent of asset managers already practice sustainable investing.

As an example, BlackRock, the world's largest investor, recently issued letters to clients and companies' chief executive officers stating that sustainability is the "New Standard of Investing" and highlighted a "Fundamental Reshaping of Finance." Their portfolio companies are asked to publish reports that align with the Sustainability Accounting Standards Board Task Force on Climate-Related Financial Disclosure (SASB/TCFD), or disclose a similar set of data relevant to their business.

More recently, the European Green Deal's Investment Plan – the Sustainable Europe Investment Plan, presented in February 2020 – will mobilize at least \$1.1 trillion of sustainable investments over the next decade with the objective to make Europe climate-neutral by 2050.

Regulations in Europe are becoming more stringent on ESG both for investors and firms within the next 2 years.

That transformation is accelerated by the current COVID-19 crisis.

"The European Green Deal will be at the heart of the EU's economic strategy to "bounce forward" from the COVID-19 crisis"

*Ursula von der Leyen,
European Commission President*

Increased opportunities for the water sector

One of the benefits is that water companies will have access to more capital if they develop extra-financial reporting and clearly state their position on and relevance to the SDGs. Traditional investors are now allotting large amounts of capital for ESG and sustainable investments, and, according to The Morgan Stanley Institute for Sustainable Investing, the vast

majority (84 percent) are considering or are currently integrating ESGs into their investment process — usually as part of risk assessment. Of these, 49 percent are integrating ESG across their entire portfolio, and 78 percent seek alignment with the SDGs.

In addition, new investment models and financial tools create new avenues for funding. They include sustainability-linked loans and ESG bonds.

- Sustainability-linked loans already offer cheaper debt access by tying interest rates to sustainability key performance indicators. Companies that achieve their sustainability targets benefit from favorable interest rates. On the other hand, failure to reach the targets will lead to higher rates. Bloomberg, a US-based financial, data, and media company, has reported that sustainability-linked loans have been growing at a CAGR of 177 percent over the 2017-2019 period.
- Another financial option, ESG bonds are typically project-based, with specific expected social and environmental benefits. This market is being driven by green bonds introduced in 2007 representing \$258 billion in 2019, with CAGR of 51 percent according to US business and financial services corporation Moody's. Other types of ESG bonds include social bonds (first issued in 2010), sustainability bonds (2012), blue bonds (2018) for projects with focus on marine or ocean-based issues with social benefits, and lately, SDG-linked bonds (2019) that are focused on meeting SDG-related target(s) by set date.

The focus on sustainable investing also presents the opportunity to attract more patient capital for innovative water companies. Within sustainable investing, impact investors actively seek to have a positive impact on society or the environment through the mission statement of companies they are investing in. While some form of financial return is expected, fulfilling social or environmental goals is of equal importance, and there is a willingness to assume more risk and be more patient in order to achieve this objective compared to traditional investors.



Categories of Sustainable Investing

		Definition	Financial outcome	Social outcome
Sustainable investing	Traditional investment	Investment with sole pursuit of financial return	Sole focus to optimize investment return	Not considering social impact
	ESG investment	Investment using Environmental, Social & Governance (ESG) standards for investment screening	Primary focus remains to optimize investment return	Secondary focus as ESG considered in risk management but nothing binding
	Socially responsible investment (SRI)	Investment adding granularity to ESG with avoidance of harm by excluding certain segments (e.g. weapons, alcohol, tobacco, gambling, O&G...)	Primary focus remains to optimize investment return	Secondary focus with consideration of social outcome and impact on investor's reputation
	Impact investment	Investment actively seeking positive impact to society or the environment alongside with expected financial returns	Secondary focus but some form of financial return is expected	Primary focus with willingness to take on more risk to fulfill social/ environmental goals
	Philanthropy	Secondary focus but some form of financial return is expected	Not considering financial returns	Primary focus with willingness to take on more risk to fulfil social/ environmental goals

Water, sanitation and hygiene (WASH) has been the fastest growing sector of impact investing, just after infrastructure, growing at 43 percent CAGR over the 2014-2018 period, and representing an asset allocation of approximately \$28 billion US in 2018 per the Global Intermediary Identification Number 2019 Annual Impact Investor Survey. Still rather small in size and tickets, but fast growing, impact funds represent new opportunities to finance seed and series A & B funding of innovative water companies.

In addition, a strong ESG profile could, in the future, benefit from higher valuations by offering lower systematic risk and by attracting a larger investor base. Currently part of the risk assessment, a large number of studies point to a positive correlation between ESG and better financial performance, including higher and more durable returns, access to lower cost of capital, and better stock price performance. Ongoing research is focused on how to account non-financial performance (ESG) and include it in valuation.



Taking advantage of interest in sustainable investing

In our experience, water companies can take a number of steps to help them benefit from the opportunities that sustainable investing offers. They can:

- Incorporate the UN SDGs in their strategic objectives and develop extra-financial reporting with carefully chosen goals and key performance indicators to become more attractive for investors.
- Develop new offerings for their industrial and municipal clients to enhance their indirect impact. Examples include: less expensive equipment that is robust and easy to maintain in order to provide water to the base of the pyramid, or new business models, for example featuring new sales channels, mobile payment or remote monitoring.
- Work with other partners and associations on this topic, to help them benefit from their market and technical knowledge, and more actively promote their contribution to sustainability.

- Take advantage of innovative financial tools to drive value creation and emphasize the unique and far-reaching social and environmental impact water brings to the world.

To summarize, sustainable investing offers a great opportunity to drive further investment towards the water industry. However, the water industry needs to step up and better promote its vast and unique sustainability impact, which is primarily external through its clients, unlike other industries. As a result, most frameworks to assess impact currently are not completely able to cover the water industry. This requires the input of specialists who understand the whole value chain in order to unveil its potential.

If the water industry does take a proactive and assertive approach to promoting its effect on sustainability, water companies can attract more capital, cheaper and sometimes more patient capital, while potentially creating higher valuations and fully realizing the potential benefits of this trend.





UNCOVERING THE TRUE PROFITABILITY: the landscape of the global water industry

By Dezhong Xiao and Geoff Gage



We are often asked by investors and water companies where the highest profitability lies in the global water industry. The water sector is fairly complex, with many attributes making it less than straightforward to answer this question, including a large number of private players with limited transparency on their financial performance, and volatility of company performance from year to year.

Recently we looked at nearly 150 water companies around the world to shed some light on the real profitability landscape for our industry, looking at both EBIT and ROIC indicators over a 5-year period, with more than 1,500 data points in all.

In the following article, we share our analysis and thoughts on 1) profitability by type of company along the value chain, 2) individual company performance, 3) volatility in profitability by value chain position, 4) how profitability and size relate, and 5) how profitability and region of the world relate.



Profitability profile across water value chain

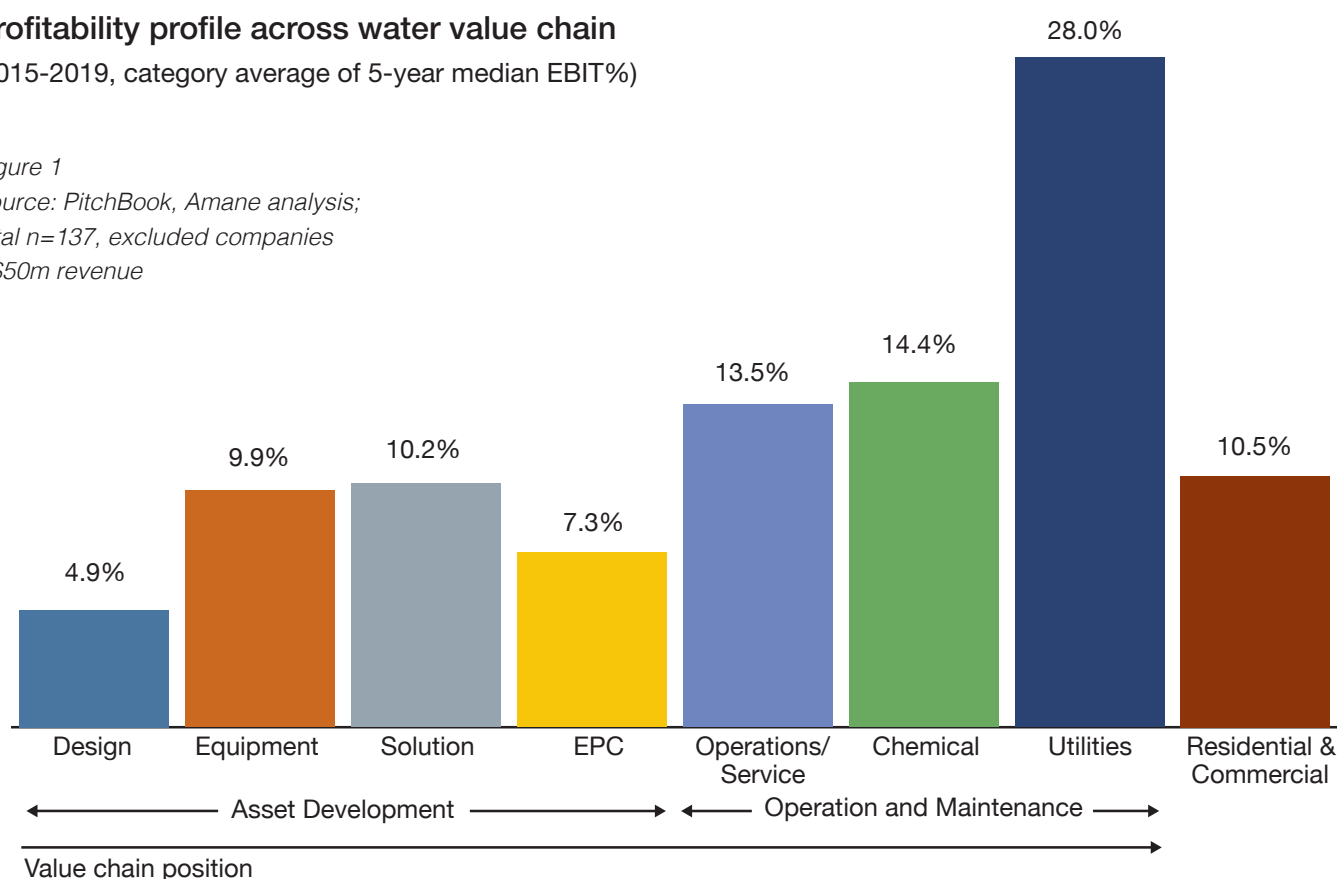
(2015-2019, category average of 5-year median EBIT%)

Figure 1

Source: PitchBook, Amame analysis;

total n=137, excluded companies

<\$50m revenue



1. Depending on where they play along the value chain, global water companies have different profiles of business profitability

Utilities have the highest average earnings before interest and taxes (EBIT) at 28%, reflecting their need to reinvest heavily into capital intensive businesses to maintain operations.

Excluding utilities, chemical and operations/service companies have the highest profitability across the seven value chain positions at 14.4% and 13.5% EBIT, respectively. These asset service-oriented water companies demonstrate better profitability thanks to the recurring nature of revenue that allows them to focus on improving the bottom line, as compared to asset development companies that rely more on projects and project-related one-off product and service sales.

Water equipment and solution businesses have very similar average EBITs of 9.9% and 10.2%, respectively.

Design and engineering, procurement and construction (EPC) firms typically have the lowest average EBITs at 4.9% and 7.3% respectively, reflecting the highly competitive nature of their activities, relatively comparable pricing, and high project risk.

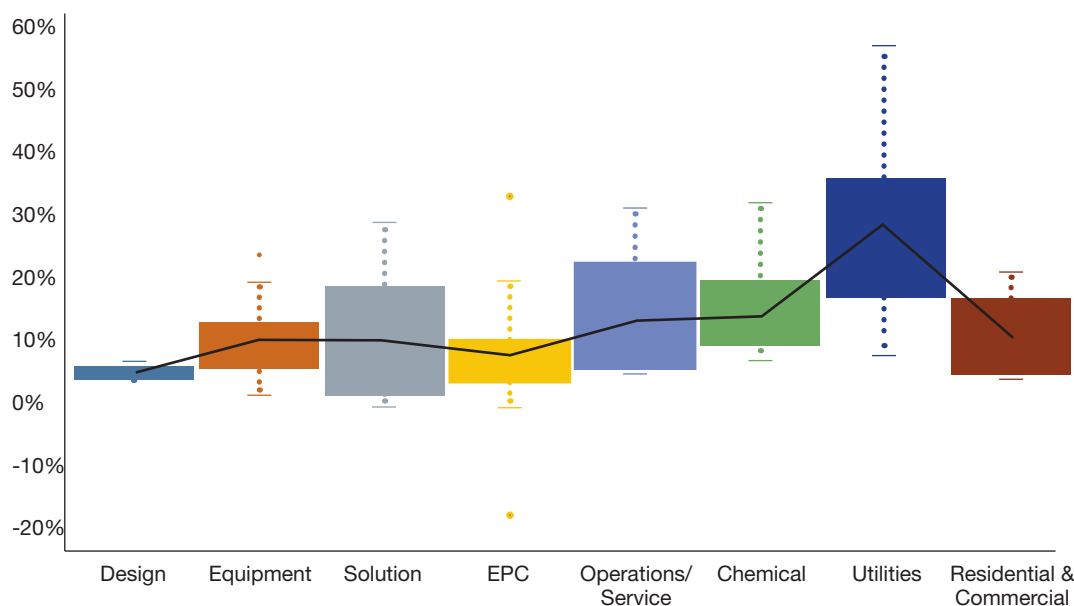
We have also looked at companies serving the residential & commercial water market as a separate category. These are providers of water treatment products such as filters, water coolers, softeners and related services to households and commercial spaces, that have a stronger business-to-consumer (B2C) business nature as compared to the others. They achieved an average EBIT of 10.5%, similar to solution providers for the municipal and industrial sectors.



Profitability profile across water value chain (2015-2019, category average of 5-year median EBIT%)

Figure 2

Source: PitchBook, Amane analysis; total n=137, excluded companies <\$50m revenue



2. Besides *where* a company plays along the value chain, *how well* it performs as an individual company is equally important, as there is significant variation within a category

We see high variation in profitability of individual companies in all value chain categories apart from design, suggesting clear “winners” and “losers” on profitability within each category.

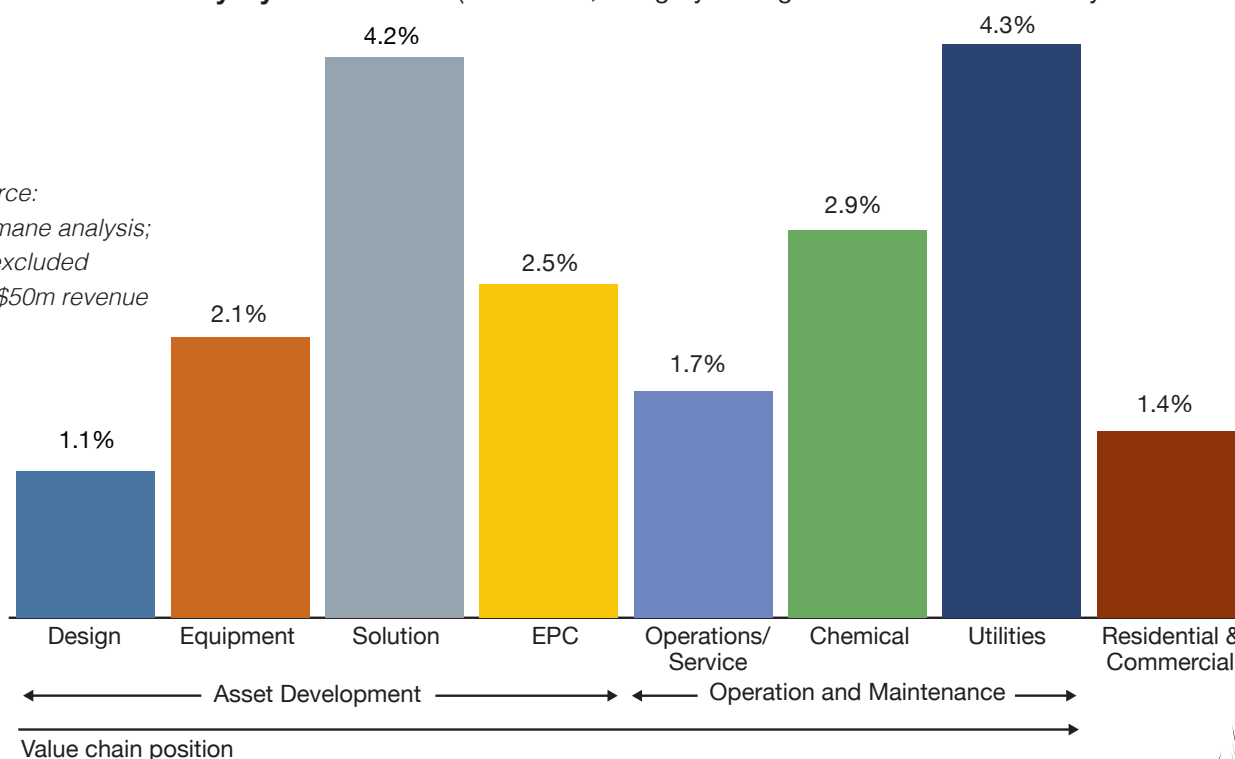
Utilities have the largest variation in profitability with a wide range from 8-66% EBIT, whereas the profitability band for design firms is much tighter within 4-7%. Solutions (0-28%), operations / service (5-30%) and EPC firms (-17-32%) also show large variation in average EBIT.

There could be many different potential market factors affecting an individual company’s profitability, such as industry vertical, specific water application, customer segment and geographic region in which the company operates. The main factors vary for different value chain positions as we have learned based on numerous projects that Amane has delivered through the years. Hence, it is important to carefully examine your target market through a tailored study to understand the specific market dynamics for any investment decision.

Degree of EBIT% volatility by value chain (2015-2019, category average standard deviation of 5 years EBIT%)

Figure 3 Source:

PitchBook, Amane analysis; total n=137, excluded companies <\$50m revenue



3. Different value chain positions also show varying degrees of profit volatility over a 5-year period

Standard deviations of each company's 5 years EBIT% are used to indicate the profit volatility. Among the different groups of companies, the highest volatility is in utilities and solution providers with 4.2-4.3% average standard deviation, as compared to the most stable category of design firms and residential & commercial companies with only 1.1-1.4% standard deviation.

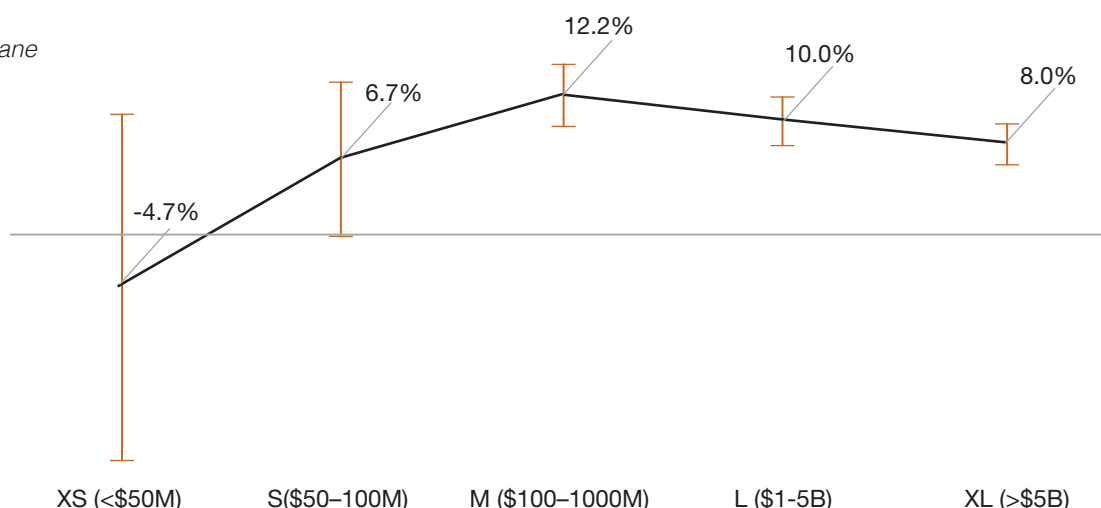
Because of the specialist expertise and know-how required, many solution providers are relatively small in size. As observed across all companies assessed, smaller size companies are more susceptible to business fluctuations (see our later analysis on

profitability by company size). However, the high profit volatility for utilities is rather unexpected considering the generally stable nature of the utility business and the large company sizes. The reason behind the volatility is geographical, with the high standard deviation value distorted by a few utilities, all from developing countries. This implies a more challenging management and operation environment for water utilities, likely due to fast changing social and economic development activities coupled with less mature utility operation in the developing countries.

Profitability profile by company size (2015-2019, category average of 5-year median EBIT%)

Figure 4

Source: PitchBook, Amane analysis; total n=114, excluded utilities



4. Small companies <\$50M have lower profits with significant volatility, while larger companies show modest profitability but with better stability

Excluding utilities, as their much higher EBIT% would have skewed the result, the average EBIT profits of the rest of companies improve from -4.7% to 12.2% as the company size increases from <\$50 million towards \$1 billion annual revenue (Fig. 4). Multi-billion revenue companies demonstrate a decline of EBIT% with increasing size. However, this observed pattern is distorted due to the composition of large company categories.

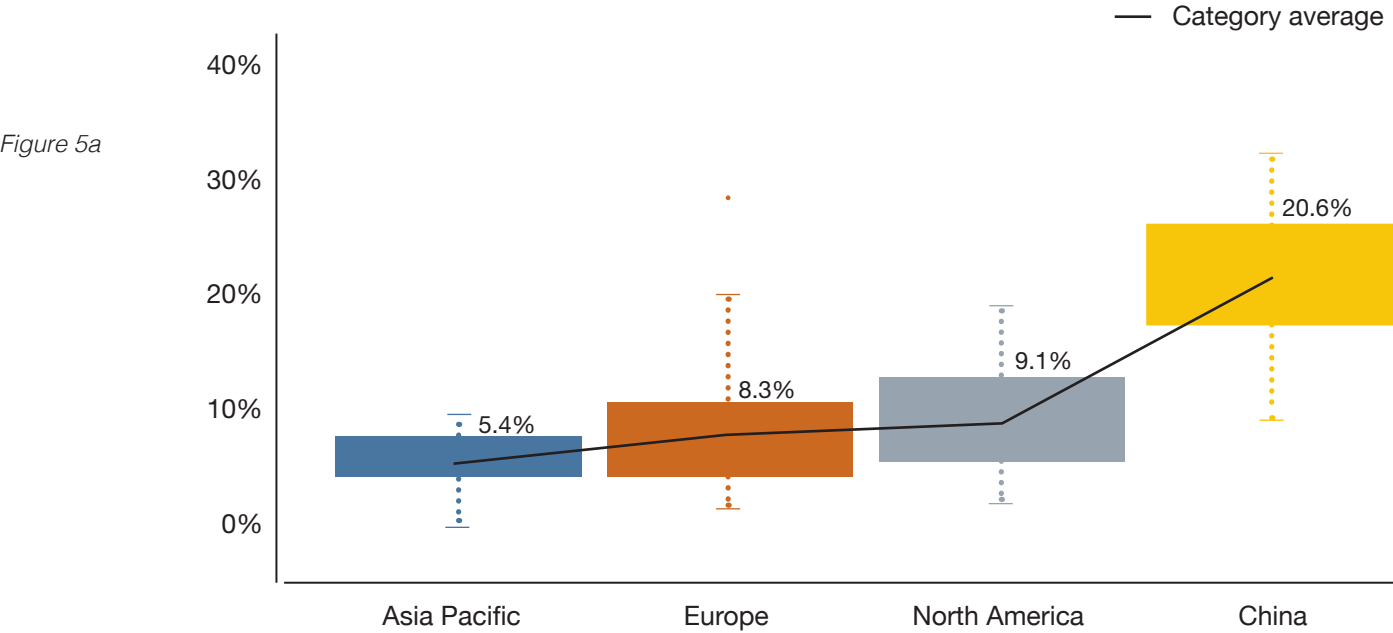
- The less profitable design companies (as shown in Fig.1) mostly fall under “L” and “XL” size categories, with 40% of >\$5B companies assessed being design or EPC, leading to the lower calculated average EBITs.
- Companies based in China, which also show higher EBIT% overall (see our later analysis on profitability by region), are mostly \$100-5000m in revenue, hence bringing up the average value for “M” and “L” categories.



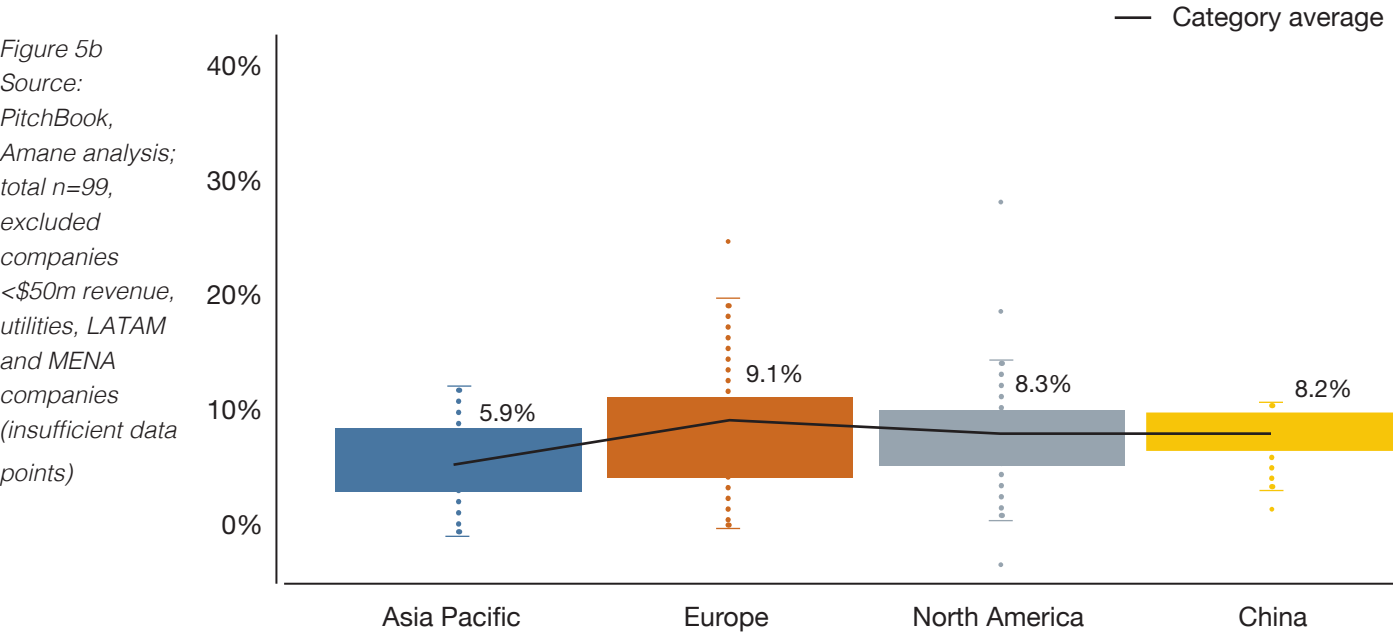
Excluding the above companies (i.e. utilities, design, EPC and Chinese companies), we can still see EBIT profit improvement with increasing size for companies below \$1 billion. But different from the previous pattern, the multi-billion revenue companies (L and XL in Fig. 4) achieve marginally higher average profits than medium size companies with increasing size.

On the other hand, the stability of profit shows a clear increase as companies become larger in size for both cases (i.e. the reducing volatility with company size), thanks to the breadth of portfolio, diversified business and matured management in those large companies.

Profitability profile by region (2015-2019, median of 5-year EBIT%)



Return on capital profile by region (2015-2019, median of 5-year ROIC%)



5. Across regions, Chinese companies have higher 5-year median EBITs, but returns on capital are more in line with the other regions

The 20.6% average EBIT achieved by Chinese companies is more than twice as high as the 9.1% from the next highest region, North America (Fig.5a), raising an interesting question – is the largest water market also the most lucrative one? Indeed, stringent local water discharge regulations have driven up the market demand for more advanced water treatment solutions, which typically allow suppliers to make better margin than commoditized solutions. We have also seen many fast-growing Chinese local companies catching up on product and service performance and quality with leading international competitors. However, the much higher EBIT% reported should still be taken with a pinch of salt, as few if any international companies report a much higher profitability for their Chinese business than other regions. Considering that the Chinese water

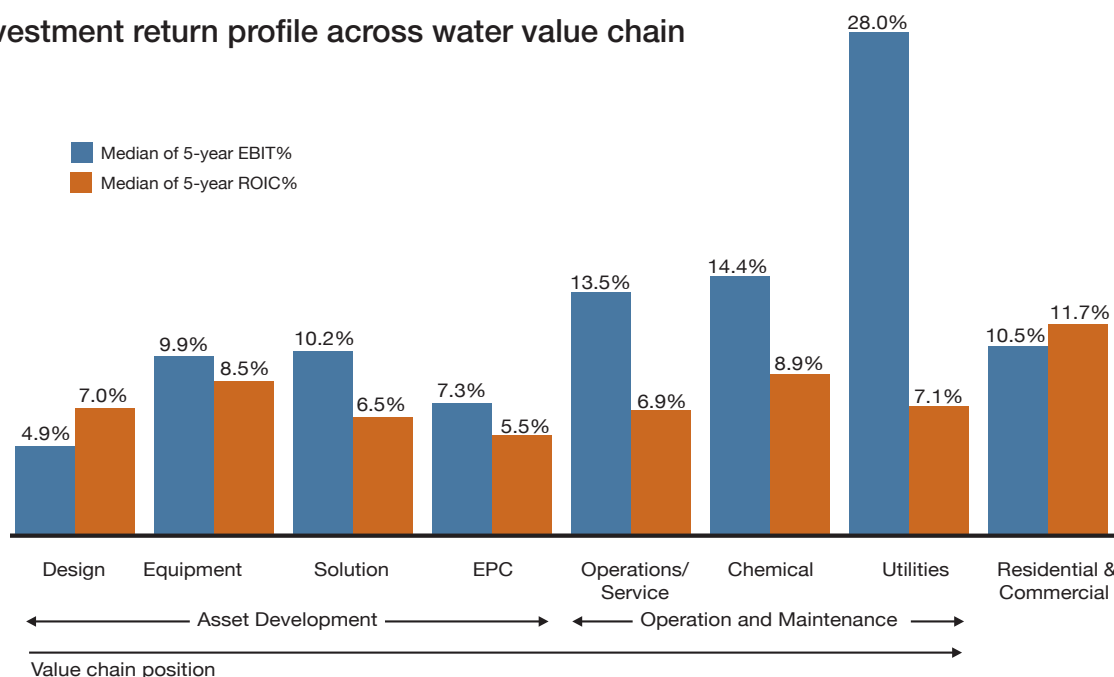
market is still in the development stage, we believe the view shown by ROIC% comparison (Fig.5b) is closer to the market reality with Chinese companies achieving 8.2% return on invested capital (ROIC) on par with their Western peers.

Other Asian markets, on the other hand, are highly fragmented with many low-cost local competitors. The low profitability of non-Chinese Asian companies also reflects the strong competition in this region.

Moving to the west, companies from Europe and North America show remarkably similar performance on both EBIT and ROIC, suggesting similarity between mature markets but also partially due to the fact that many of these companies have significant business presence in both regions.

Profitability and investment return profile across water value chain (2015-2019)

Figure 6
Source: PitchBook,
Amane analysis;
total n=137,
excluded
companies <\$50m
revenue



6. Broadly speaking, residential & commercial, chemical and equipment firms are the most “attractive” in the water value chain considering both EBIT profitability and return on capital

Residential & commercial companies provide the highest ROIC of 11.7% among all categories, indicating a high efficiency of cash generation with invested capital. Although the 10.5% EBIT achieved is only ranked average, considering its low EBIT volatility (Fig. 3), it is reasonable to conclude that the residential & commercial market is one of the best performing water company categories in terms of profitability. This also fits with the growing interest in this particular segment,

with a rising number of M&A transactions observed in recent years.

Chemical and equipment providers also demonstrate good profitability with decent ROIC and EBIT performance. Though having the highest EBITs, utilities only provide an average return on invested capital of 7.1% due the nature of a business that requires constant capital investment to drive cash generation.



Looking ahead

What will drive the profitability of water companies going forward, especially with the ongoing pandemic that has been changing every aspect of our industry and the world? It is a time of great uncertainty, but we can draw several conclusions based on analysing the most successful water companies and insights from conversations with our clients and other participants in the wider global water industry.

Several key profitability drivers from the pre-COVID world are likely to remain:

- The ability to generate stable and high-quality recurring revenue from service contracts and aftermarket sales will continue to give companies an opportunity to focus on improving their bottom line.
- Highly differentiated solutions and niche applications addressing customers' key operational issues are still sought after by the market. Examples of such solutions include energy recovery and other energy efficient solutions for desalination and wastewater treatment.
- High-profit customer sectors, such as healthcare/pharmaceutical, top tier semiconductor manufacturing, residential & commercial, and data centers, will continue to be attractive for water companies.

Performance-based water treatment and management services, and solutions improving business and operation resilience could be accelerated by the pandemic:

- O&M and value-added services that reduce customers' risk on their water operations from in-house workforce availability would become top considerations of many end users after experiencing this pandemic. Offerings with increasing levels of digitization combined with online platforms that give customers visibility and assurance should also be more appealing now. This is evident from the ongoing trend of large water technology companies offering enterprise-wide digital platforms, such as Evoqua's Water One and Ecolab's Ecolab3D.
- Improving resilience is also becoming one of the major topics across all sectors, including the global water sector. It is affecting both the top line and the bottom line of water companies, as there is increasing demand for solutions improving business resilience from both customers and from water companies themselves. Winners of the future markets will likely emerge from those who can master this challenge / opportunity.



The residential & commercial market is one of the best performing water company categories in terms of profitability...Chemical and equipment providers also demonstrate good profitability with decent ROIC and EBIT performance.”



REGIONAL INSIGHTS

SOUTHEAST ASIA



SOLVING THE WATER ACCESS ISSUE IN INDONESIA

By Pravi Bansal



With water networks mandated to be operated by the public sector and pressing needs for greater water access and operational efficiency, how can the private sector participate in the market?

An urgent need for investment

Water infrastructure in Indonesia is underdeveloped, with only 18% of the 270 million people having access to piped water. While the capital city of Jakarta and larger metropolitan areas continue to expand, smaller, less urbanized communities continue to struggle in terms of poor health and infrastructure. Existing infrastructure is also in need of upgrades to improve efficiency of operations, with water distribution networks on average plagued with high non-revenue water (NRW) losses of 33% nationwide.

The poor state of the water sector can be attributed to a lack of government funding for infrastructure as well as the decentralized responsibility for water to the local water utilities or PDAMs (Perusahaan Daerah Air Minum). PDAMs lack the operational expertise and capital investment needed to efficiently carry out operations of plants and networks. However, the government had written off all utilities' outstanding debts in 2016 to strengthen their ability to take on loans and attract private finance. This is expected to increase private sector participation in the market and drive their contribution toward the estimated \$18.7 billion required to reach 100% access to drinking water.



Private participation in the water sector

The role of the private sector in Indonesia changed when, in 2015, the regulatory regime for water PPPs was updated to mandate that the distribution network should be operated by the PDAM. As a result, there has been a struggle to inject the required capital to reach adequate operational efficiencies on the downstream side. Still, private parties can build and install pipe networks as well as provide technology and services under performance-based contracts. To date, all Private-Public Partnership (PPP) projects have been upstream in the form of bulk water supply.

The government expects to improve the underdeveloped water infrastructure with the National Medium-Term Development Plan put in place in 2020, targeting to have 30% of households with access to piped water by 2024. Many private players are looking into the various market opportunities but have had limited success due to lack of ability to assess project risks and move past contract development.

Local players have been aggressive and have dominated the market versus international players, which is a trend seen in neighbouring Southeast Asian countries like the Philippines and Vietnam. Local players tend to be better-positioned due to cost competitiveness, strong local knowledge and relationships, and greater ability to assess risk and execute PPP projects.



Creative solution sets must be developed

Since the enforcement of the new regulations, private players have had to develop creative solution sets to capture some portion of the market and contribute to addressing the sector's needs while ensuring a return on investment. The solution we see is to provide an end-to-end source to tap system, both upstream (treatment) and downstream (distribution), in partnership with PDAMs, covering the upstream with a Build, Operate and Transfer (BOT) contract and downstream market with a performance-based contract which could target the NRW losses, energy efficiency optimisation, billing and customer management. This enables private players to secure greater value in both upstream and downstream operations.

Private players can also look to business models that have succeeded in international markets, such as following in the footsteps of Miya Water in Puerto Rico, which won a \$300 million advanced water metering performance-based contract for 20 years with the local water authority in 2018. The contract was developed with strong financial commitment from JP Morgan to provide the majority of the financing needed, and a trust was put in place, which will collect payment directly from end-users and release payments to Miya and PRASA (Puerto Rico Aqueducts and Sewers Authority).

Winning partnerships

To address the issue of water access in Indonesia, it is necessary to forge strong partnerships with PDAMs and address their needs both upstream and downstream. This enables PDAMs to receive the needed investments and allows the private sector to make economic returns – a win-win for both parties.

REGIONAL INSIGHTS EUROPE



REMOVAL OF MICROPOLLUTANTS: a growing opportunity for the European water industry

By Victor Ollivier



The presence of micropollutants in water and wastewater streams is seen as a pressing environmental and health issue around the world. While presenting many challenges, removing these substances also presents a big opportunity for players in many sectors of the water industry. The need is there, and technologies and treatment processes are available and ready to implement. So, what is the lay of the land?

What are micropollutants?

The European Environment Agency defines micropollutants as substances that exist in very small traces in water, at micrograms to nanograms per litre. These anthropogenic organic or mineral substances come from a wide range of sources such as pharmaceuticals, cosmetics, personal care products, industrial chemicals, pesticides, detergents and household chemicals among others. However, there are

differences in classification at the country or institutional level, particularly in regard to the inclusion of heavy metals.

The issue of micropollutants is not new – some substances have been on the European Union's (EU) regulatory agenda for the past 50 years – however, they represent a mounting challenge for water operators. Globally, micropollutants can be found in increasing volumes in water and wastewater, and sources like the Water Quality Association estimate that up to 90% of oral drugs pass through the human body and end up in the water supply.

Across Europe under the EU Water Framework Directive, the Directive on Environmental Quality Standards lists 45 Priority Substances (and a further 15 on the watch list) with specific deadlines for their reduction and/or removal at wastewater treatment plants (WWTPs) and industrial outfalls. New substances



are continually added to the list with new associated deadlines for compliance, e.g. perfluorooctane sulfonic acid (PFOS) in 2027, creating a complex and evolving landscape.

Geopolitical landscape

Tackling the issue of micropollutants has been driven by growing public concern and political will in anticipation of regulatory development. Europe is at the forefront of efforts to accelerate regulatory action to address the issue, however, to date enactment at country-level is mixed.

A number of countries in Europe led by Germany and Switzerland are engaged in addressing the micropollutants problem. Germany and Switzerland are already implementing full-scale facilities for micropollutant removal. Switzerland is undertaking mandatory upgrades to its largest 100 WWTPs by 2035. In Germany, despite a lack of national regulation, WWTP upgrades to ‘fourth stage’ polishing treatment are becoming more widespread following initial adoption in its more industrialised federal states. Other countries such as the Netherlands, Sweden and Denmark are following suit, and France is also responding to the environmental concern.

Countries like the UK are further behind in their journey. In early 2020, the UK set up a taskforce led by British Water to examine supply chain initiatives for wastewater treatment solutions, in the face of potential action in subsequent Asset Management Periods (AMPs). Spain and Belgium have historically faced a number of infringement procedures due to failures in compliance. A similar situation exists in Eastern Europe where most countries – for example Poland, Slovenia and Czech Republic, as well as aspiring EU members – have a long way to go before achieving the advanced treatment needs for micropollutants. That said, we are seeing investment taking place in many of these countries now. Thus, significant opportunities exist for EPCs and financing across Europe both in the short-term for the proactive countries, and in the medium term in countries which are falling behind the curve.

Technology portfolio

There is no ‘one size fits all’ approach for removing micropollutants from water and wastewater streams – different micropollutants require different removal technologies. This technology portfolio includes activated carbon (heavily relied upon by Germany and Switzerland), ozonation (preferred in France), ion exchange (IX) and membrane treatment such as nanofiltration (NF) or reverse osmosis (RO), ultraviolet (UV) (which is often thought of in terms of disinfecting but in fact has the ability to kill a wide range of substances), and advanced oxidation processes (AOP) (as trialed in the UK).

Cost and energy use are two further considerations in selecting technologies, which, when taken together with effectiveness, leave much room for improvement for technology providers. The question is: who will have the best technology to remove a broad spectrum of micropollutants for municipal treatment, not only specific substances? Municipalities must deal with a multitude of substances that originate from a variety of sources, whereas industries have to deal with specific micropollutants.

Next steps

The threat of micropollutants is only gathering pace especially in Europe where increasing concentrations are expected alongside an ageing population more reliant on pharmaceuticals, and where strong political support towards enforcing environmental regulations exists. Ultimately, we are still in a market that anticipates stricter regulatory changes and can expect this trend of facility upgrade to apply universally across WWTPs as polishing becomes Best Practice.



ASK AMANE:



WHAT DOES AMANE LOOK FOR IN A NEW HIRE?

Insight by Bill Malarkey

At the risk of starting off with a cliché, there is no one template for what we are looking for in an Amane consultant. Obviously, we have consultants here who have studied business and environmental science, but we also have others who have studied law, archaeology and zoology. While we do like to see some previous exposure to consulting – even through a summer internship – much of what sets a good candidate apart comes down to attitude. We look for people who are smart, energetic and willing to take some initiative. We are a small firm, so there is not the option to just sit back and observe at first. New consultants will need to roll up their sleeves and get right into the game.

We are also fast-growing, with the stated goal of doubling in size in the coming years, so our consultants are given significant responsibility very quickly. And although we are specialized on the water sector, even junior consultants will be exposed to a wide variety of different players along the entire water value chain. They also will have the opportunity to work with senior management at some of the biggest name clients in this industry, helping them on their most pressing strategic issues, so a certain level of self-confidence is a must. For candidates who are passionate about exploring new and diverse challenges, this would be a great fit.

Most importantly, we look for people who will be a good addition to the unique Amane culture that we have developed here. We are a truly international organization, currently representing 14 nationalities and speaking 15 different languages, so a natural openness and curiosity for other cultures is a huge plus. It's not a place for either sharp elbows or lone wolves, but rather for team players who are willing to pitch in wherever help is needed.



We see ourselves as a global, diverse, collaborative team of professionals sharing a vital set of core values:

- Excellence and impact – Exceeding expectations with high quality work product that will have a positive, long-term impact on our clients' growth
- Integrity – Maintaining the highest professional and ethical standards, while demonstrating respect for others, shared responsibility, courage and accountability
- Growing together – Valuing teamwork and personal growth, both among colleagues and with clients, building long-term relationships based on trust, open and honest communication, and mutual benefit
- Inclusivity and diversity – Building a sense of belonging for each individual, recognizing that our varied background and perspectives bring real value both to our people and our clients

As we continue to grow, we look forward to hearing from more candidates from all over the world who believe they fit this profile, and would like to help us continue to make a difference in the global water sector.



Submit a
Question,
Suggest
a Topic



In keeping with our goal of making *amane currents* a valuable and useful tool for you, we invite you to ask a question for one of our upcoming issues and submit your suggestions about topics or issues that you would like us to cover. We welcome your feedback; please [let us know what is on your mind](#), so that we can make *amane currents* as relevant as possible.



Employee Spotlight:

KAREN CHEN



Position: Project Manager
Office: Shanghai, China
Joined Amane Advisors: 2018
Nationality: Chinese
Languages Spoken: Chinese, English



Karen has more than 10 years' experience in the environmental industry, particularly in China's water market. She has a strong engineering and consulting background, with hands-on experience in technology commercialization, marketing and sales, and mergers and acquisitions. Karen has contributed to the success of consulting projects for multiple companies in China's water market, often working with top global companies on market research and strategy.

Describe a typical day at Amane Advisors:

My day is full, busy, and requires a lot of organization to allow time for the work related to our office in China as well as in our five other offices around the world. If I am not traveling for work, I typically arrive around 8 am after riding my bicycle to the office, weather permitting. From then on, my day is non-stop, starting with a review of my to-do-list, then replying to emails that arrived from overseas during the night. When our Partner Alex Zhang and Consultant Zoey Xu arrive, I communicate with them to prepare and clear the team tasks for the day.

Most of Amane's projects in China are not the same as in other Amane offices. We generally tend to have more M&A and commercialization projects, which need lots of communication with clients. I will do that before lunch, catching up with developments with outside parties, and update each project's progress. After

lunch, I usually will write or review project documents and prepare them for delivery to our clients. In the late afternoon, we normally have conferences with other Amane offices, as they are now starting their morning time. Before I leave the office, I will wrap up the day's work, touch base with my team, review the day's progress, and map a plan for the next day.

What do you like best about your job (or find most rewarding) and why?

I like Amane's focus on the water industry; we cover nearly everything related to water. Most of all, Amane gives me the opportunity constantly to acquire different knowledge, make connections, and really help multiple clients.

Previously, I worked for several years with Alex at an EPC company. There, I focused mainly on overseas



technology transfer to China, and serviced only one company. Everything was built around the technology. Joining Amame was a significant career change, going from engineering to consulting, and talking not only about technology but also a company's strategy, finance, all aspects of its operation. This really pushed my career to a higher level.

What has been the biggest surprise about working at Amame Advisors?

The biggest surprise working at Amame is that my English improved from projects and communications.

What words would your colleagues use to describe you?

"Good ideas": I help our Partner Alex with market development, contributing (I am told) good ideas about how to support clients and how to develop leads for projects.

"Trustworthy": I will try my best with tasks assigned to me. I take the responsibility so that others need not worry.

"Nice to work together": First, I like to make things clear to ensure that everyone understands each other, knows and is clear about the intention and goal. Then I like to simplify complicated things – analyzing problems, making our approach clear and confirming the steps to take. This way, I can help create an optimistic work environment for my colleagues, confident that we can solve issues no matter how tough they may be.

Name something about you that most people would find surprising.

I can cook quite well, especially Chinese food such as Hong Shao Rou (red braised pork belly), which I'm sure you would really enjoy!

What are your favorite activities outside work?

Fitness, jogging, yoga...I go to the gym on average twice a week, and when I'm on business trips or on holiday, I always find places to jog or practice yoga. Sweating removes my work and life pressures.

What is your favorite book?

It is a book about Buddhism, titled *Living through Suffering*. It was written by Sodarji Khenpo, a famous Buddhist master. It tells people about Buddha's philosophy through stories on how to deal with sad and bad things.

What is the best advice you have ever received, and who gave it to you?

My best advice is also from that book: "Tomorrow (you may be) dead or (it may be) the end of the world; cherish the present moment and enjoy life."



MEET OUR NEW HIRES

Amane Advisors is pleased to welcome three new consultants to our growing family. They joined the company between July – September 2020.



Ruben-Olivier Kahn, Consultant

- Joined the Paris office in September 2020
- Gained consulting experience through a six-month internship with Amane in 2019
- Graduated from the ESSEC Business School with a BA in Business Administration in 2020



Mairead Helmes, Consultant

- Joined the Philadelphia office in September 2020
- Eleven years of business development experience with Change Healthcare, a healthcare technology company that offers software, analytics, network solutions and technology-enabled services
- Earned a Masters Degree in Environmental Studies from the University of Pennsylvania in 2019, with a focus on water policy



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- Three years of experience with JP Morgan Chase, most recently as a Program Manager in the bank's Strategic Finance group
- Earned a BS in International Business, with concentrations in Finance and Economics, from Elizabethtown College in 2017



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