

amane currents

Designing the future of water



In this issue:

Look Back to 2021, Look Ahead in 2022

Achieving Net-Zero: Impact on the water industry

Sustainable Financing: The future in the water sector

Renewable Natural Gas: Powering the future with waste



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WELCOME to Winter 2022 amane currents



Where did the last year – perhaps even the last two years – go? We all have certainly faced many challenges, but through it all, we have stood together, learning, adapting, and emerging stronger and wiser. And as some hopeful signs point to a loosening of COVID’s grip, we see renewed hope that we will soon begin a return to “normal” – whatever that “new normal” may be.

One of the most inspiring insights that I have gained is that we, as an industry, will be ready for whatever the future may hold, buoyed by our resolve and resilience, our forward-looking orientation, and a renewed appreciation of the valued work that our industry undertakes every day.

To that end, the Winter issue of *amane currents* takes a look at developments and changes that have affected many parts of our industry. But importantly, it also looks forward by exploring issues and opportunities that are shaping our future.

One of those topics is achieving “net-zero” in the water industry by 2050, which Geoff Gage, Dorothée Chabredier and Alisha Krishnan address in the article, “Achieving Net-Zero: What is the water industry impact?” The US Environmental Protection Agency defines net-zero as being “all about conserving water, reducing energy use, and eliminating solid waste to improve the environment, save money, and help communities become more sustainable and resilient.” This perceptive piece delves into this theme and kicks off our continued coverage of this topic throughout 2022.

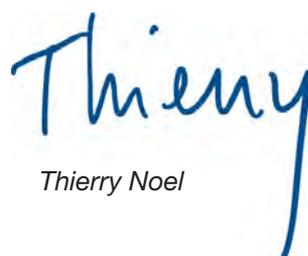
Bastien Simeon and Julian Sebag dive into the topic of green financing, where investment and lending organizations consider environmental, social and governance (ESG) aspects as part of the screening criteria. This informative article includes a discussion of green loan principles and explores an increasing global shift towards a system whereby financial and social returns are complementary and help ensure a sustainable future.

Mairead Helmes’ article “Renewable Natural Gas: Powering the future with waste” explores another timely subject with a discussion of a shift in priority from investment in solar and wind to bioenergy (RNG), to help meet the COP26 goal and realize net-zero energy by 2050. Among other things, this piece discusses the abundant waste options to fuel growth, as biogas can be produced from multiple feedstocks of waste, including landfills, livestock, and water resource recovery facilities.

In this issue, we also tap into the wealth of knowledge possessed by members of Amane’s highly respected Expert Network around the world, soliciting their views on the greatest challenges and also the most exciting opportunities for the water industry in 2022. We hope to continue this feature in future issues and encourage you to pose a question to our experts on any topic related to water.

Thank you as always for your continued support. We wish you good health, happiness and success throughout this year.

All the best,


Thierry Noel



North America Region Trends

By Bill Malarkey, Partner



The past year in the North American water market was largely dominated by the red-hot deal market in M&A, which actually carried on from late 2020. The year started off with a bang, with two billion-dollar transactions – New Mountain Capital’s acquisition of Aegion and Autodesk’s purchase of Innovyze – each being announced in February, and never really slowed down, with deals closing right up until the last week of the year.



The market was active across all segments from old-line valve manufacturers to asset management software providers and O&M service companies, and could definitely be described as a seller’s market, one marked by healthy valuation multiples. The action not only involved a wide range of middle market transactions, but some megadeals, as well.

Culligan managed to make headlines twice during the year, as private equity giant BDT Capital Partners acquired a majority stake in the company in July, and then announcing a combination with Waterlogic in later December. And of course, the Veolia-Suez takeover battle, which began with Veolia’s bid to buy a 29.9% stake in Suez from Engie SA back in late August 2020, played out in boardrooms and courtrooms all during the year, with the companies signing a merger agreement in May and the European Commission giving its final approval to the combination in mid-December and closing taking place on January 7 of this year.

While equipment manufacturers enjoyed stronger market demand during the year, they also faced any number of obstacles during the course of 2021. While significant inflation in raw materials, labor, freight, and energy and other costs tested the ability of producers to pass along these costs to their customers, companies were also confronted with unprecedented supply chain disruptions and labor availability challenges. The combined effect of these multiple headwinds impacted both delivery times and financial results for many players.



We can expect an accelerating recognition of water’s critical role in the broader economy.”



Finally, 2021 was marked by the months-long saga over the fate of the Biden administration's infrastructure plan. Originally announced in late March as a \$2.3 trillion "The American Jobs Plan" that was loosely connected to traditional "infrastructure" and contained a proposal for \$111 billion in total funding for water systems over the course of the next decade, it represented a massive increase in federal outlays. As predicted at the time, the final product looked quite different after months of legislative wrangling and mud-wrestling, with water appropriations ending up significantly lower.

The \$1.2 trillion "Infrastructure Investment and Jobs Act" was signed into law on November 15 and contained \$55 billion in water-related spending. The law reauthorized several federal drinking water programs, provided expanded funding for water infrastructure and other programs, and committed substantial spending to deal with two of the country's largest water quality challenges: \$15 billion for lead service line replacement and \$9 billion to treat emerging contaminants, such as PFAS. Even at this level, it marks a significant return of federal spending on water infrastructure to levels not seen since the 1970s.

2022

I expect that water sector M&A deals should continue to flow throughout the course of this year, albeit almost certainly at a slower pace than 2021, and likely without any mega-deals to rival Veolia-Suez.

While hopes are that inflation will ease – finally becoming "transitory" after all – it is probably more likely that it will continue to some extent well into this year, along with ongoing supply chain bottlenecks and labor shortages. This will present a continuing challenge to manufacturers as they work to meet the expected increases in demand brought by increased federal infrastructure funding.

With regard to that increased funding, the big questions will be how and when the market will begin to see the impact in terms of projects getting underway and equipment being ordered. The 2009 Obama stimulus actually caused some planned projects to be put on hold in the hopes of snagging some free money to pay for them – and the funding

available from this plan is nearly 10x greater. Some manufacturers are already bracing for similar unintended consequences.

Finally, we can expect an accelerating recognition of water's critical role in the broader economy and in any efforts to move to a more sustainable economy. Water scarcity presents a systemic risk to nearly every segment of the global economy, and the extent of this risk is generally still underappreciated, especially among US-based investors. In 2022, I believe that more people will begin to grasp the key role that water will have to play in their assessment of companies' risk management plans, as well as in any commitments to reach "net-zero" and to grow the circular economy overall.

In a 2021 interview, a noted investor was quoted as saying: "A colleague recently told me that water isn't that important because the entire water sector is less than 1% of GDP. The problem is that the other 99% can't do without it." I think we will see this understanding catching on more and more in 2022.



LOOK BACK, LOOK AHEAD

China Region Trends

By Alex Zhang, Partner, and Karen Chen, Principal

2021 was an important year for regulations in China, with the official endorsement of the National People's Congress in March. The 14th Five Year Plan covers the years 2021-2025 and includes, among other things, China's carbon emission control target, China's water reuse regulation and the issuance of other significant policies & regulations pertaining to the market, leading the country's change in direction regarding the coal and power industry structure and also towards investments, which will turn more attention to ESGs. These changes are expected to generate more opportunity in 2022.



Looking back on 2021, we saw a number of developments.

- **The issuance of China's 14th Five Year Plan and 2035 Vision in early 2021 confirmed that environmental protection will continue to be one of the most important development areas in China through 2025.** China is poised to become the largest water market in the world with demand still growing for water treatment, especially with industrial growth. Following the 14th Five Year Plan, with improving regulation to reduce the total volume discharge of chemical oxygen demand (COD) and nitrogen from general municipal and industry by 8% each, industry associations are issuing their respective plans to reduce discharge. For example, the food & beverage processing sector released new total nitrogen (TN) regulations that began to impact new builds as of January 2021 and will impact existing plants starting July 2022.



China is poised to become the largest water market in the world with demand still growing for water treatment.”



- **The China carbon emission control policy has led the industry structure to begin transformation in 2021.** China is targeting peak carbon by 2030 and carbon neutrality by 2060. Beginning in 2021, we saw industries planning to change or already changing and improving their manufacturing processes in order to reduce carbon emissions. This results in changes in the water and wastewater volume or quality, and will generate new or retrofit water projects, especially for industries with higher carbon emission such as coal, power or steel. With this, water treatment needs are changing and as a result, opportunities for upgrade projects have begun to emerge.
- **The strong push for water reuse regulation created an opportunity for water reuse and membrane technology.** China issued one tight water reuse policy in early 2021, setting up a high target for municipalities of >25% by 2025, versus around 20% in 2020. This not only pushes industry to save and reuse more water; also in the municipal wastewater

reuse market, it has generated new projects and pushed development of water reuse technology, especially membranes such as UF and RO – key treatment technologies for water reuse.

- **The continual COVID impact on export and import business created an opportunity for local Chinese brand and manufacturing development.** With COVID, the import and export shipping and product costs have been getting higher. As a result, there has been a trend to use local brands and local manufacturing to replace international brands in China. We heard from experts that some State-owned Enterprise (SOE) end users' projects specified the use of domestic brands in their purchase request. That has created room for local Chinese brands to build up their references and strengthen client relationships especially in areas where, previously, international brands enjoyed a monopoly, such as reverse osmosis.

Looking ahead to 2022, we expect to see:

2022

- **More investment opportunity.** Though the environmental industry has not been as attractive to investors as “hot” industries such as medical or new energy, with ESG and net-zero regulations, we anticipate that there will be more investors going into the environmental industry in 2022. Many green funds formed in previous years are ready to invest in 2022, and China keeps improving the investing environment. For example, the recently opened Beijing Stock Exchange, openness to international capital, and policy and regulation protection improvements will create more confidence for investors and environmental companies.

- **Top local Chinese companies looking for international market business opportunities.** While COVID gives local market opportunities to local brands, it also increases the local market competition. Top local Chinese companies, especially those offering mature equipment/technology, e.g., membranes, valves, pumps, container-sized skid equipment and so forth, expect to expand or develop the overseas market. Following China’s “One Belt, One Road” policy, the Middle East and Southeast Asia markets will be priorities. They are looking for strong overseas partners to help them out and develop related M&A or investment opportunities abroad.



The Greening of Project Finance

By Bastien Simeon, Partner



GOING GREEN(ER)

As countries intensify measures to overcome climate change, sponsors as well as financial and institutional investors are increasingly embracing sustainable infrastructure projects, in particular in water and wastewater. This has given rise to green finance, where investment and lending considers environmental, social and governance (ESG) aspects as part of the screening criteria.



As a consequence, this past year has seen a significant number of water projects and initiatives being financed through green facilities. They range from desalination projects in Saudi Arabia – Yanbu 4 and Jubail 3B representing 1bn\$+ of project finance debt benefiting from Green Loan certification to more innovative instruments such as a municipal green bond from Central Arkansas Water (USA) to buy and protect forests, leveraging their crucial role in providing clean drinking water to cities.

This has become one of the most significant trends in debt markets over the past two years, and it is now common for ESG and sustainability criteria to be integrated into project documentation. As a result, borrowers meeting agreed targets are rewarded with lower interest payments through margin ratchets mechanisms. What was a novelty has become widely spread and accepted when structuring a loan; and some are taking it much further, using ESG linked covenants which may lead to default by the borrower.

Infrastructure funds have also embarked on this journey, with sustainability-linked strategies emerging beyond traditional core infrastructure and onto climate resilience related themes, in particular water sustainability.





It is now common for ESG and sustainability criteria to be integrated into project documentation.”

Scaling up investment

Whilst there is a compelling economic case for investment in water, it has failed to translate into a compelling financial case for investment at scale globally. Future investment needs are estimated to be significantly higher than current financing flows. One of the major challenges is the mismatch between sources and investment opportunities. The following are some of the key barriers:

- Water projects are often too small and context specific, thus raising transaction costs and making emerging innovative financing models difficult to scale up.
- Financial flows may benefit projects that are bankable, but may not maximize benefits for communities and the environment. This raises the question of how to ensure that the most beneficial investments from a social welfare perspective attract finance at scale.
- Prevalent business models sometimes fail to take into account operation and maintenance efficiency, a condition necessary to sustain service at lowest cost over time.
- Water management generates a mix of public and private benefits in terms of valued goods and services as well as reduced water-related risks. Many of these benefits cannot be easily monetized, undermining potential revenue flows.

Blended finance – using development finance for the mobilization of additional finance towards sustainable development goals – is certainly a promising approach to scale up financing flows for water.

Mobilizing commercial finance needs to be based on policy reforms to promote efficiency gains, cost reduction and cost recovery, as well as improving the balance of tariffs and taxes as sources of finance.

But there is a need for other innovative tools and solutions in order to reconcile the objectives of financiers and beneficiaries, and overcome those barriers. For instance, a mechanism enabling finance of small scale water assets in a fairly standardized and time efficient manner would have a very significant impact on the sector and open the floodgates of investment.



LOOK BACK, LOOK AHEAD

The Circular Economy

By Mathieu de Kernevoael, Partner



Look Back: As climate action takes center stage, 2021 will likely be remembered as the year when the carbon footprint of the water sector came under increasing scrutiny and when at least 50 leading utilities from the UK, Denmark, Australia, etc., serving over 175m people globally, committed – during the COP26 in Glasgow – to setting net-zero targets between 2025 and 2050.

It is now known that the energy supply of the water sector is estimated to account for 1.2% of global emissions, with approximately 400 million tons of CO₂ per year.

- Water utilities do require significant energy for water treatment and distribution. Therefore, their immediate levers are to enhance energy efficiency and to reduce water losses in their overall system; further main direct opportunities to reduce greenhouse gases (GHG) are to switch their energy sources from fossil to decarbonized ones such as hydropower, solar, wind, etc.
- Wastewater utilities usually have the potential for energy recovery from wastewater treatment by harnessing biogas recovery from sludge digestion. As wastewater treatment includes nitrogen removal, which does generate nitrous oxide (N₂O), the same utilities will have to explore ways to properly capture and incinerate it, as emission of 1 ton of N₂O is equivalent to 298 tons of CO₂.

2021 will also be remembered for the major external growth of Veolia with the acquisition of Suez's industrial assets (in water and hazardous waste, globally) as well the municipal water assets in Spain, North and South America. With the transaction, Veolia hammers further its identity as “the global champion of ecological transformation,” to speed up the development of solutions to combat climate change, soil, water or air pollution, the collapse of biodiversity, and the increasing scarcity of natural resources; and to enable its customers to achieve their own ecological transformation objectives more rapidly.



Look ahead:

2022 will likely see an acceleration in the development and implementation of action plans engaging towards “net-zero”, whether from public utilities, private operators or original equipment manufacturers. It is worth noting that in the emerging world, any development of proper sanitation and fecal sludge management does not only reduce waterborne diseases but also the overall emissions of CH₄, N₂O, and CO₂.

It is to be hoped that the water utilities will better leverage emissions trading systems and/or financial incentives on the carbon market, and develop further opportunities to reduce GHG, including indirect ones such as:

- Providing thermal energy from wastewater to district heating networks or cold from aquifers to data center cooling systems in their nearby territories.
- Investing in proper sanitation and fecal sludge management of the emerging countries, which will both reduce greenhouse gases emissions and advance the achievement of other sustainable development goals.

2022 could see another water-energy nexus as green hydrogen production requires high-purity water as a feedstock for electrolysis. The availability of renewable energy from solar or wind

power is a key factor in determining the locations chosen for a large hydrogen project. Places with strong solar radiation tend not to have a large natural endowment of freshwater resources, and this means that the hydrogen market is potentially a new market both for desalination and for high-purity water treatment technologies such as electrode-ionisation.

Adoption of digital solutions will likely keep accelerating to further enable remote monitoring and control as we aspire to better predict operating failures of buried water networks.

The circular economy will undoubtedly progress further, for example with increasing recycling of plastic and likely emergence of chemical recycling of plastic, jointly developed with the chemical industry, fast-moving goods manufacturers and waste management companies.

While the spread of the COVID Omicron variant is peaking at the beginning of the year in many regions of the world, we hope that 2022 will enable us to reconnect with more face-to-face professional events in Spain, Singapore and/or Copenhagen among many other locations.

2022



It is now known that the energy supply of the water sector is estimated to account for 1.2% of global emissions.”





ACHIEVING NET-ZERO:

What is the water industry impact?



By Geoff Gage, Partner, Dorothee Chabredier, Principal, and Alisha Krishnan, Consultant

As the Conference of the Parties 26 (COP26) demonstrated the emergency to further take actions to mitigate anthropogenic climate change, the water industry is considering how it could contribute to be part of the net-zero solution. Through a series of articles to be published through 2022, we will investigate what we know and what strategies could be explored for the water industry to achieve net-zero carbon footprint by prioritising reduction and offsetting a range of greenhouse gases (GHGs). Let's start by identifying the water industry's impact on GHG emissions, including carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O).

COP26: First time with a dedicated Water Pavilion

COP26, which took place between 9 and 19 November 2021 in Glasgow, saw significant milestones being made towards limiting global average temperature.

Through the Glasgow Climate Pact, nearly 200 countries reaffirmed their commitment to limit global average temperature to well below 2°C above pre-industrial levels and pursue efforts to increase the average temperature to well below 1.5°C. Today, with global temperatures already 1.1°C above pre-industrial levels due to human activity (according to the IPCC, Sixth Assessment Report [2021]), we are beginning to experience its effects with extreme weather events occurring across the world. According to the IPCC report, the 1.5°C threshold could be achieved as soon as 2030, which will result in significant economic and social consequences.



In addition, 111 countries signed up for the US- and EU-backed [Global Methane Pledge](#), which is the first-ever global commitment to reduce global methane emissions by 30% from 2020 levels by 2030, and extend actions beyond just CO₂, as methane has 84 times more warming potential than CO₂. According to McKinsey Sustainability, the water sector produces ~7-10% of its GHG through methane primarily from sludge management processes of wastewater treatment.

During COP26, the first Water Pavilion symposium was held, with the objective to encourage the generation of ideas and solutions to create a unified voice on the role of water in meeting the Paris Agreement goals and support science-based climate action. It was a historic effort from the water community to understand the links between water and climate and how to achieve net-zero emissions among water and wastewater utilities with best practice examples and scientific knowledge.

The water sector contributes to ~1-2% of global GHG emissions

According to GWI, the water sector is estimated to currently contribute ~1-2% global GHG emissions based on Scope 1 (sources owned by the company) and Scope 2 (purchased electricity) activities. However, IEA estimates that the water sector's GHG emission can be up to 10% of global GHG emissions if taking into account Scope 3 (emissions from company value chain). The contribution of the water sector to global GHG emissions is poised to grow if the goal is to meet SDG 6 objective (access to clean water and sanitation), as currently 2 billion people lack safely managed water and over 660 million lack basic services according to Water.org, pushed up by climate change and population growth.

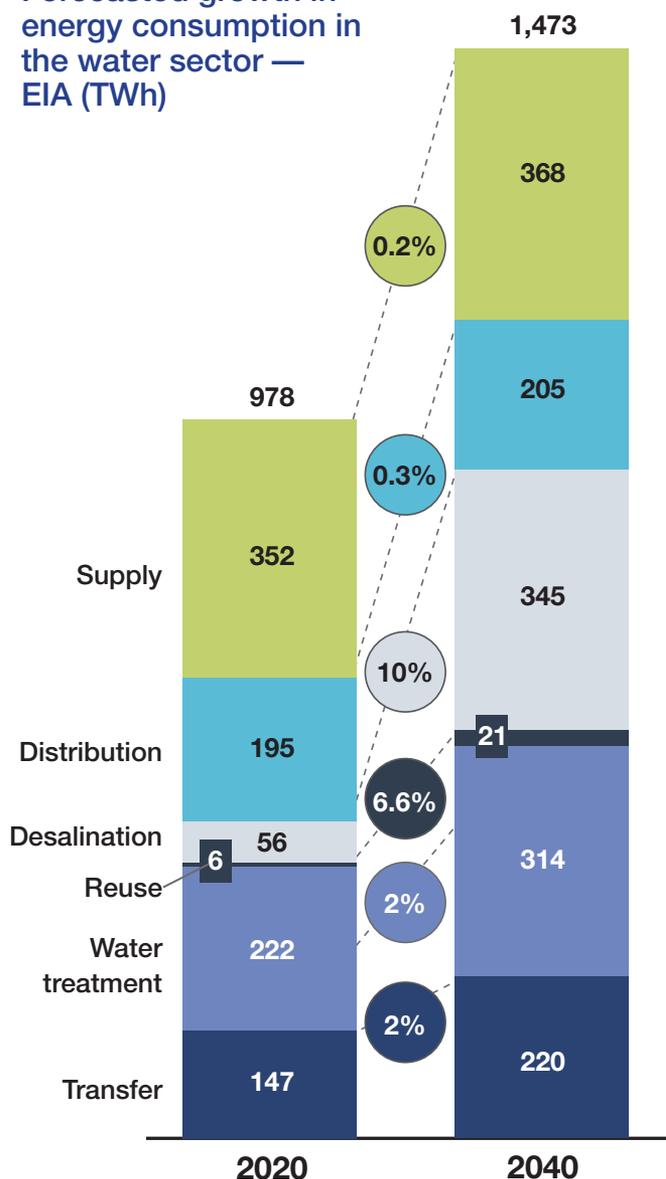
The majority of emissions produced by the water sector occur indirectly through energy consumption, with large regional differences. According to GWI, the water sector currently accounts for ~4% of the global electricity consumption. However, there are large discrepancies between countries. In the US and EU, energy consumption for water is ~3% according to IEA, Special Report Water Energy Nexus.

However, Amane's analysis indicates that Oman's water electricity consumption is 15% due to pumping groundwater and desalination processes.

According to IEA, a breakdown of the water sector's energy demands shows that water supply & distribution networks (56%), followed by wastewater treatment (23%), are the most energy intensive. Desalination, though currently contributing only 6% of energy consumption, is projected to increase to 20% by 2040 as its usage increases.

Process emissions are also a large contributor. UK water sector GHG emissions show methane as 17% of total GHG emissions, and 10% in nitrous oxide, both emitted mostly through wastewater treatment processes, according to the Water UK, Net-Zero 2030 Routemap.

Forecasted growth in energy consumption in the water sector — EIA (TWh)





At least 50 leading utilities are committing towards net-zero

As of January 2022, 42 water and wastewater utilities have set self-defined targets to be net-zero, serving 175 million people – just 2.2% of the global population, according to GWI. Currently, the majority of them are either in the UK, aligned with its Net-Zero 2030 Routemap, or Australia, while 21 are part of the UNFCCC Race to Zero, an international campaign for a resilient carbon recovery.

Conclusion

With its current emissions and electricity consumption levels projected to rise by 51% by 2040, the water industry is beginning to search for opportunities for decarbonisation, and would need to balance with its first mission to provide safely managed water to a growing population. The first step towards decarbonisation for utilities will be to identify key sources of emissions to size impact and evaluate investment opportunities. Tools and best practices sharing among peers will be key to accelerate the transition and reduce its costs. However, innovative business models would be required to provide new sources of financing, contribute to capture carbon and even reduce impact of other industries. Let's start the journey!



Through a series of articles to be published through 2022, we will investigate what we know and what strategies could be explored for the water industry.”



SUSTAINABLE FINANCING:

The future of financing in the water sector

By Bastien Simeon, Partner, and Julian Sebag, Senior Associate



As countries intensify measures to overcome climate change, financial and institutional investors are increasingly embracing sustainable and green infrastructure projects in their investment mandate, in particular water and wastewater. This has given rise to green finance, where investment and lending considers environmental, social and governance (ESG) aspects as part of the screening criteria.

There is growing evidence that climate risk has underscored the urgent need for investment in sustainable infrastructure. An estimated USD 5 to 7 trillion of infrastructure investment is needed each year till 2030 to meet climate and development objectives.

To mobilize these levels of investments, countries will need to focus on key parameters such as increasing the supply of bankable and viable sustainable infrastructure projects, raising the attractiveness of local currency green financing instruments and structuring clear reporting standards for green investments.

Sustainable finance as social responsibility

Sustainable finance places emphasis on the role of social responsibility within investment decisions. This trend has gained significant momentum, prompting various categories of institutional investors, such as pension funds and insurance firms, to change their long-term investment models.

There are different approaches to sustainable finance:

- Screening potential investments according to their performance across the different ESG dimensions, with the primary objective of doing no harm across sustainability goals.



- Investments that have potential for significant social or environmental impact, typically aligned with the United Nations' Sustainable Development Goals (SDGs).

Three main factors are expected to drive growth in sustainable finance in the future. Commitments from corporates and governments towards net-zero carbon

emissions will incentivize such financing solutions. Moreover, innovative and alternative sources of capital should help drive demand for such projects. Finally, more stringent regulatory frameworks will make such investments more secure.

New sources of financing help spur a global shift towards impact economy

Many new sources of financing tailored towards sustainable infrastructure have become available over the past few years. Financiers are earmarking increasingly large amounts of capital for sustainable and green infrastructure projects through products that drive financial returns by creating social and environmental value. The SDGs are therefore an important framework to steer investments towards long-term financial value and impact. Increasingly, this is resulting in a global shift towards a system whereby financial and social returns are complementary and help ensure a sustainable future.

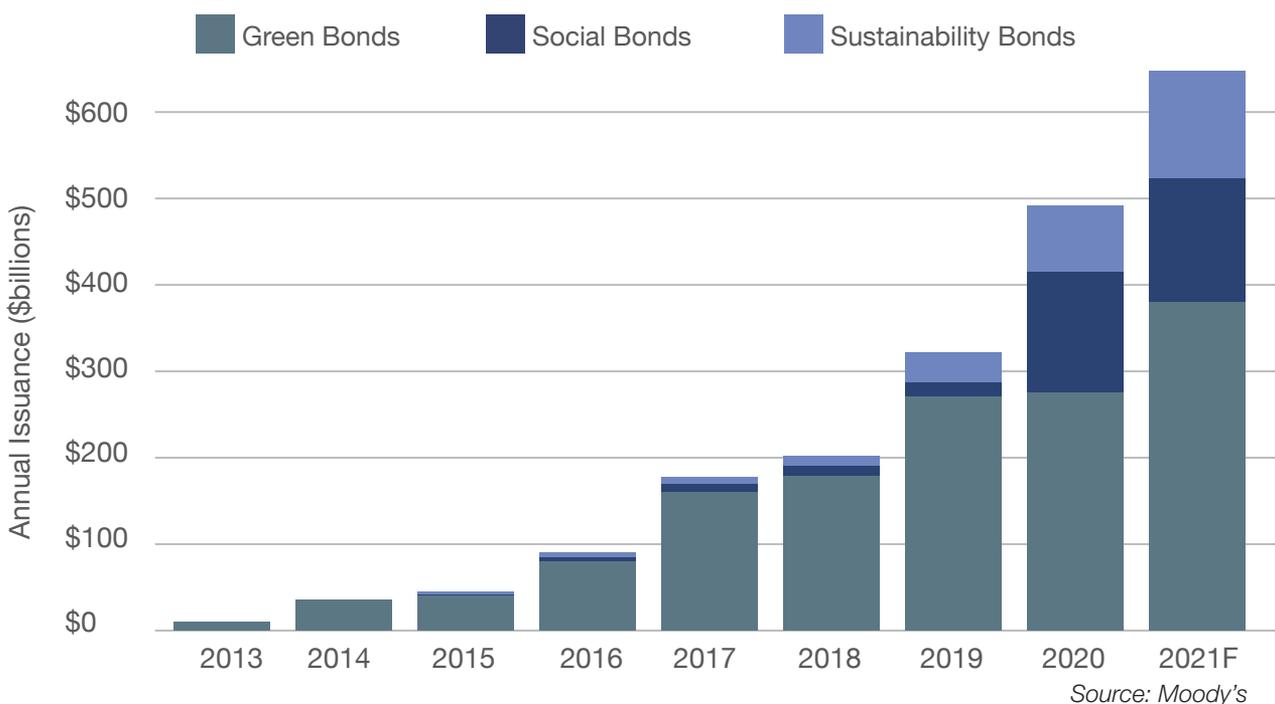
Green bonds and loans have emerged as attractive investment propositions. Moody's rating agency recorded the issuance of green, social and sustainability (GSS) bonds in excess of \$650 billion in 2021 (including \$375m in green bonds), and it expects that figure to exceed \$1trn in 2022.

Sustainable finance has the potential to unleash a wave of innovative investments for infrastructure projects at the global level, particularly in emerging markets.

There remains scope for introducing new types of financing instruments, such as asset-backed products, guarantees, blended finance and local currency denominated green bonds.

Blended finance, the use of capital from public or philanthropic sources, provides an important alternative because it helps create risk and return profiles that match the needs of private investors, thereby helping to mobilize additional investment.

Significant water projects have been delivered through green financing. For example, the Yanbu 4 and Jubail 3B desalination projects in Saudi Arabia have recently achieved close with approximately 1bn\$ of project finance debt benefiting from Green Loan certification.



A growing number of water utilities around the world issue green bonds, as environmental stewardship is generally a core value. It guides their decisions and is reflected in their investments in fields such as green buildings, pollution prevention and control, climate change adaptation, energy management programs, or greenhouse gas reduction.

Municipalities large and small are grappling with how to address shifting precipitation patterns due to climate change. Finding ways to finance the retrofit and adaptation of existing infrastructure, however, presents a major obstacle in an environment of municipal fiscal

Green loan principles

Green financing presents many advantages for the issuer, including the broadening of the investor base, access to lower cost of capital through the issuer's policy or government incentives (e.g., tax reduction, interest subsidies and credit guarantees).

But one of the biggest challenges for stakeholders has been to assess the "greenness" of a proposed transaction. In 2014, a consortium of investment banks through the Loan Market Association (LMA) published the Green Loan Principles to clarify when a loan may qualify as "green." They aimed to develop a consistent methodology and standards, recognized internationally for broad use across the green loan market.

austerity. As stormwater fees are typically not sufficient for meeting regulatory mandates as well as the costs needed to replace or repair urban water infrastructure, municipalities are increasingly relying on green bond issuances.

There have also been some very innovative instruments in the market, such as a municipal green bond from Central Arkansas Water (USA) to buy and protect forests in order to secure clean drinking water. This was the first green issue to protect forests for their crucial role in providing clean drinking water to cities.

The association has developed a four-part framework to this effect:

- The Use of Proceeds responding to the clear objective of addressing key areas of environmental concern such as climate change, loss of biodiversity and air, water, and soil pollution
- Process for Project Evaluation and Selection with clear communication about the sustainability objectives from the borrower
- Management of Proceeds with a clear designation of a separate account to track the conformity of the allocation of funds towards Green Project
- Appropriate Reporting with the use of qualitative and quantitative performance indicators



Financiers are earmarking increasingly large amounts of capital for sustainable and green infrastructure projects through products that drive financial returns by creating social and environmental value.”

Greenwashing is a major threat to sustainable investment

One of the biggest challenges in mobilizing sustainable finance is ‘greenwashing,’ the practice of channeling proceeds from green finance towards projects with negligible or negative environment benefits. The lack of a clear definition of sustainable finance has increased this risk.

Greenwashing carries serious reputational risks for investors and governments, therefore urgently requiring clearer frameworks to address the issue. The Sustainable Finance Disclosure Regulation (SFDR) in the European Union is a significant initiative to promote truly sustainable investing by requiring the disclosure of how investment products address climate change, among other requirements.

The World Bank’s recently published guidelines on developing national green taxonomy is helping to address the need among financial market participants for clarity and transparency in what is understood and what qualifies as green.

Investors often face difficulties finding investment grade projects, given the challenges in aligning sustainable goals with economic development. Too few projects are meeting the risk-return profile that traditional investors are interested in. Governments and development banks, therefore, need to provide support through project-preparation facilities and technical assistance to increase the number of bankable projects.

In summary, green finance represents a massive opportunity for the water sector, as it allows for a dramatic increase in the investor base and a benefit from lower cost of capital. Water represents less than 20% of Use of Proceeds of green bond issuances globally, leaving significant room for further growth.

That growth requires the coordinated efforts of stakeholders across governments, investors, corporates, and financial institutions. Establishing standards, impact measurement frameworks and taxonomies will help create a common language. This, in turn, will help build the trust and transparency that is essential.





RENEWABLE NATURAL GAS: Powering the future with waste

By Mairead Helmes, Consultant



At COP26 in November, the US and EU announced a global partnership to reduce methane emissions to 30% by 2030. For businesses, this signals a shift in priority from investment in solar and wind to bioenergy, also known as renewable natural gas (RNG), to meet the COP26 goal and “net-zero energy by 2050.” This shift in priority has been the impetus for RNG production growth, with International Energy Agency (IEA) estimating a 17% CAGR over the last 15 years, predicting a 16% CAGR in RNG over the next 20 years.

While carbon dioxide is often discussed as the leading cause of this crisis, according to the UN, its sibling methane is equally as potent, with the EPA estimating that the impact of methane is 25 times greater than CO₂ over a 100-year period. The source of this methane stems from three main sectors: fossil fuels, agriculture, and waste, with agriculture and waste making up 60% of production, according to United Nations Environment Programme and Clean Air Coalition (2021). The conversion from waste to methane is done via anaerobic digestion, which occurs naturally but can be controlled and contained to produce biogas by an anaerobic digester. This gas can be used as a source of energy to produce electricity and heat or purified further into near pure methane, also known as “renewable natural gas,” for use in vehicles and distributed to the grid.

Europe is the largest biogas producer today, with 10,000+ operational biogas systems. The United States trails behind with 2,200+ systems, but according to the American Biogas Council, there is a large



whitespace of an estimated 15,000 systems available for development, producing 103 trillion kilowatt-hours of electricity annually.

Bountiful waste options to fuel growth

Biogas can be produced from multiple feedstocks of waste, with the most prevalent being landfill, livestock, and water resource recovery facilities.

Landfills: According to the EPA, municipal solid waste (MSW) landfills accounted for 15% of US methane emissions in 2019, with food waste being the single largest material (24%) placed in municipal landfills. While there are only 548 operational landfills with biogas, the fuel produced from landfill gas accounts for ~90% of renewable natural gas credits (RINs).

Livestock waste: Accounting for 10% of US methane emissions, animal manure from dairy cows, swine, and beef cattle can be used to produce biogas. As of September 2021, 317 farms have anaerobic digestion systems, with dairy farms accounting for 84% of the farms, followed by hog (14%), poultry (3%), and beef (3%). Of those, 44 have the capacity to upgrade the biogas to compressed renewable natural gas, according to the EPA.

Water Resource Recovery Facilities (WRRF): While WRRFs account for less than 10% of production, many already have anaerobic digesters onsite to treat the sewage sludge, making them attractive for renewable natural gas, not only for existing infrastructure but due to a reliable and consistent waste stream. Due to high energy needs for treatment, WRRFs often utilize the biogas produced for onsite heating and electricity, making the additional investment needed to create RNG less advantageous.

Fueled by cow power

Currently, there are more water resource recovery plants, but the biggest opportunity for potential new sites is livestock waste. There are 317 manure-based anaerobic digesters today, but there are potentially 8,000 large dairy and hog farm sites that could be converted, with 44 new anaerobic digesters being constructed this year alone. According to the EPA, if all these farms produced biogas, the farms alone could generate nearly 16 million megawatt-hours (MWh) of energy per year, displacing about 2,010 megawatts (MWs) of fossil fuel-fired generation.

Operational Biogas Gas Systems vs. Potential Sites to Develop

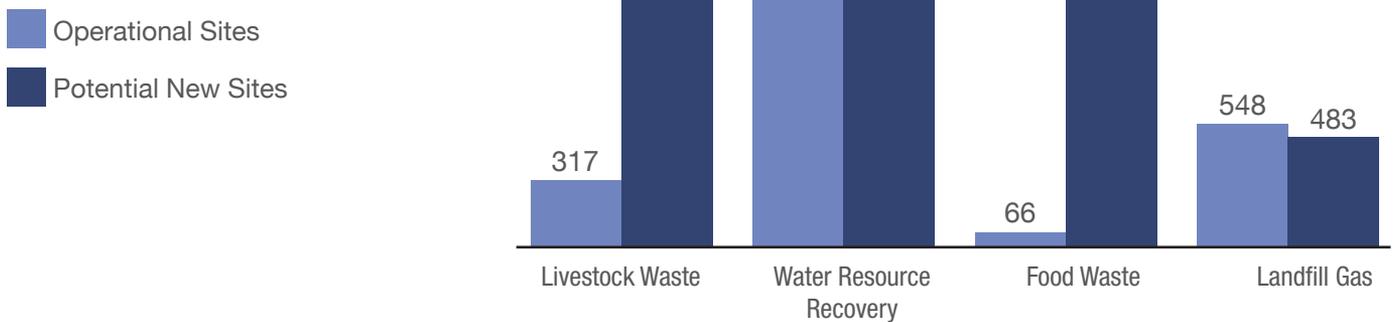


Fig. 1 Source: American Biogas Council, AgSTAR, EPA

Dairy farms aren't the only fuel type with potential. As seen in Figure 1, WRRFs and food waste sites have exponential potential for new sites. According to the American Biogas Council, should these all be constructed, these new sites could catalyze \$45 billion in capital deployment for construction activity, resulting in 374k short-term jobs and 25k permanent jobs to operate those systems.

Challenges

While the industry is bursting with potential, there are a few challenges that face investors looking to jump into the biogas industry. Two of the challenges are:

Cost: The fossil fuel competitor, natural gas, is offered at a much lower price. As per the World Resource Institute, in 2019, RNG cost an estimated \$15-20/ million btu, with natural gas averaging \$3/ million btu. In order to make it fully economical, more federal and state programs need to be put into place to incentivize the shift.

Project size: Especially with dairy farms, to be feasible, the farms must have a minimum of 5,000 heads of cattle and an anaerobic digester. Only 49 farms have

the capacity to create RNG. An additional challenge is the remoteness of these farms, making it harder to connect to a central pipeline to distribute the RNG.

Future outlook

Achieving a 30% reduction in methane and net-zero goal by 2050 is going to require heavy investment from all players. Energy utilities should investigate diversifying their portfolio further and invest in RNG pipelines, following the lead of companies like SoCalGas. Investors and developers looking to jump into livestock feed-sourced RNG should investigate a hub and spoke approach, targeting small clusters of farms that fall below the 5,000 cattle thresholds to ensure a reliable and consistent feedstock. Regulators at both the state and federal level should continue to incentivize businesses by offering credits to produce RNG for vehicle fuel and help fund the infrastructure needed to fuel said vehicles. Ultimately, renewable natural gas represents a holistic ESG investment as it encompasses the nexus between environment, energy, and sustainability.



Biogas can be produced from multiple feedstocks of waste, with the most prevalent being landfill, livestock and water resource recovery facilities.”



INSIGHTS FROM OUR EXPERT NETWORK

Amane Advisors brings to its clients not only the experience and knowledge of our partners and staff but also access to our Expert Network – more than 400 highly respected individuals from around the world who possess specific subject-matter expertise ranging from technology to geography-specific business practices that give our clients a competitive edge.

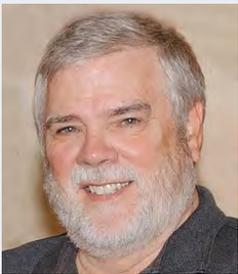
This issue introduces Insights from our Expert Network, a new feature in which experts from around the world present their views in response a single question.

We look forward to making this a regular feature in *amane currents* and invite you to submit a question to our network by emailing currents@amaneadvisors.com.

Our first topic is:

What do you see as the greatest challenge and also the most exciting opportunity in the water industry in 2022?

Tom Pankratz *Independent Consultant and Editor, Water Desalination Report*



Singling out the desalination industry's *biggest* challenge is itself a significant challenge. The complex nature of desalination is such that any meaningful brackish or seawater project is sure to involve a combination

of commercial, technical, environmental and political challenges.

A desalination project involves the integration of multiple individual projects: a raw water supply project, a pretreatment project, the desal system itself, a post-treatment project, a brine management project and a water conveyance project.

The challenges begin with making the decision to employ desal and is often an exercise in the art of problem solving, much like attempting to solve a multivariable equation. Obstacles began presenting themselves during the project's conceptual stage. Will it be a base load facility, or an insurance policy used

during droughts? Who will pay for it and how will it be financed? Where will it be located and who will operate it?

Once a decision to move forward has been made, the challenges shift to dealing with design, environmental and regulatory issues. And in an increasing number of projects, they share the stage with local public relations and political challenges.

Although desal technologies have matured and become mainstream, many communities are considering them for the first time. Clients usually underestimate a desal project's complexity and the amount of hard work, patience and experience necessary to see it through.

Being involved with such a wide range of disciplines can provide desalters with an exciting and professionally rewarding opportunity, while ensuring that a community has a secure, weather-independent water supply.



What do you see as the greatest challenge and also the most exciting opportunity in the water industry in 2022?

CHINA EXPERTS



Mr. Feng Jie *Expert in China Desalination & Reuse*

The largest challenge in China's water market in 2022 is how to upgrade the conventional technology and plants' operation, especially to meet the green, low carbon request. The most exciting opportunity is new innovation technology with more chance to stand out from the competition. The enterprises with true technology will develop fast to become the top ones.



Mr. Gu Jiuchuan *Expert in China Residential & Commercial*

Challenges are the economic downturn, exports blocked, raw materials and labor costs increase, small/medium sized enterprises will be shut down.

The opportunity is that the Residential & Commercial (Res & Com) market in China is still at an early stage. COVID makes people care more about health. They are turning away from bottled water to using Res & Com products, and government and public awareness about installing water purifiers is getting higher.



Mr. Sun Yingchao *Expert in China Water & Wastewater*

In 2022, against the background of global economic challenges, the enactment of China's new policies, and resource channel and information transparency, those enterprises lacking commercial channels, high end technology and good engineering capabilities will be eliminated or integrated into stronger players. At the same time, under China's positive regulation and policy and low carbon requirement, future opportunities belong to enterprises with innovative technology, capital, smart and commercial resources. In the meantime, the Chinese government is providing resources for these enterprises' growth.



What do you see as the greatest challenge and also the most exciting opportunity in the water industry in 2022?

Dominique Demessence *Operating Partner, Climate Adaptive Infrastructure*



What comes first to my mind is a topical subject: many parameters of our global economy are changing very suddenly and no one knows how long and how deep the change is going to be.

Factors include an extended pandemic situation, return of inflation, rise in interest rates, shortage of a qualified workforce, disruption of the logistic chains, and much more. All these factors will impact the water industry, and only those entities that will be able to quickly adapt their business models to the changing conditions will survive.

But what remains to me at the same time as the most challenging and exciting opportunity is the growing

awareness that we have to act now if we want to curb the trajectory of the climate crisis impact and avoid deeper and more damaging consequences.

For the water industry, it means a considerable effort towards more efficient access to new water resources like sea water or recycled water, a significant change in the design of water and wastewater facilities to reach the net-zero emission goals, and a generalized use of advanced digital tools.

The good news is that money seems to be readily available but there remains the real question: How will the money flow to the right projects and at which speed?

Mr. Henry C C Chin *Business Consultant, DR Environmental Technology Sdn. Bhd., Malaysia*



For 2022, the continued challenge in the water industry for the developing countries in Southeast Asia shall be sustaining the environmental quality that has been degrading over the years due to water pollution. The

expected post-pandemic recovery in economic growth, trade and urbanization are some of the reasons behind the continuous degradation of the environment and are mitigating the achievement of the long-awaited environmental sustainability in these countries.

As source water is one of the key environmental factors that has been most affected, this fact is highly worrisome due to two fundamental reasons. The first is that quality water availability is essential to maintain the country's economic, social, and sustainable balance. The second establishes that this situation puts at risk

the availability of a quality water supply for the general population, subsequently risking their health and wellbeing. In this sense, the care of the various available water sources becomes vital since these are the source of the important water supplied domestically and to the various industries.

The exciting opportunity for water treatment product and service providers shall be the introduction and implementation of cost-effective environmental technologies to assist local government and corporations in treating and preventing water pollution in their raw and wastewater treatment facilities through efficient technological infrastructure, expertise, and financial sustainability. Environmental technologies such as ultrafiltration and waste-to-energy shall be the key driving factors that can ensure sustainable treatment and reuse of contaminated raw water and wastewater sources.



What do you see as the greatest challenge and also the most exciting opportunity in the water industry in 2022?



Eko Bagus Delianto *Managing Director of PT Ciriayasa Rancangbangun Mandiri (CRM) of Indonesia*

I see these as the greatest challenges:

- **Protecting Indonesia's agricultural production**

The Agricultural Development Master Strategy (Agriculture masterplan) 2015-2045 aims at structuring the agricultural sector given its strategic role in supporting the national economy, especially for the creation of food security, as a contributor to GDP, employment and poverty reduction, providers of food, feed, fiber, energy and industrial raw materials, exports, sources of public income, etc. There are five major challenges of the future agriculture that are multidimensional, namely: 1) increasing the income of small farmers; 2) increasing food production and other agricultural commodities; 3) meeting the needs of consumers; 4) facilitating the process of transforming the national economy from fossil-based to bioeconomic-based; 5) realizing sustainable agriculture in the context of global climate change.

All of this will challenge water resources and ecosystems. In order to be sustainable, efficient irrigation management and techniques such as erosion risk management, flood warning systems and precision farming systems are all methods that can be used to optimise agricultural production using minimum amounts of water as possible.

- **Improved Water Resources Management to Support Resilient Drinking Water Services**

Indonesia has a large endowment of freshwater resources. As the world's largest archipelago, there is significant variability in water resources across Indonesia's five major islands and 30 smaller groups of islands. Indonesia is not considered to be water stressed according to the Falkenmark Water Stress Index, as the total renewable water resources endowment per person is approximately 7,648 m³.

However, according to SDG 6.4.2, Indonesia has high water stress as the volume of freshwater withdrawn by major economic sectors amounts to 30% of its total resource endowment, which is higher than the 25% water stress benchmark and also slightly higher than the median of 29% in Southeast Asia (source: AQUASTAT Main Database, Food and Agriculture Organization of the United Nations [FAO] 2016.) With a growing population and developing economy, water abstraction will likely increase in order to meet the country's economic development goals. The availability of sufficient bulk water is a major issue for water utilities across many parts of Indonesia. With a growing population of 272 million, increasing ground and surface water pollution, coupled with increased frequency and duration of droughts and flood, and degradation of watersheds that results in declining groundwater levels and reduction of water storage capacity, has resulted in water shortages in some areas in Indonesia. These factors, in combination with extreme weather and changes in rainfall patterns, pose challenges for water utilities to meet the needs of the growing demand for domestic water supply.

continued



- **High rate of Non-Revenue Water (NRW)**

Nationally, the average non-revenue water (NRW) loss rate in 2020 was still high at 33%, or equivalent to a water capacity of 49,000 liters per second (lps). Based on the 2020-2024 RPJMN (5-year national program), the Government of Indonesia is targeting a reduction in the leakage rate (NRW) to 25% by 2024. Water leaks consist of administrative leaks and physical leaks. Administrative leaks can occur due to errors in reading the water meter or damage to the water meter. Meanwhile, a physical leak is caused by a leak in the water pipe for the distribution system.

Global NRW volume is estimated at 346 million m³/day, or 126 billion m³/year. If the price of world drinking water is conservatively assessed at US\$ 0.31 per m³, then the cost/value of global water loss reaches US\$ 39 billion per year. Using the same conservative figure of US\$ 0.31/m³ (or IDR 4,495/m³), the estimated financial losses experienced by the water utility companies (PDAM) nationally reach IDR 7 trillion/year (± USD 479 million/year).

In my opinion, the most exciting opportunities are:

- **Smart and intelligent network technologies**

Smart water network solutions improve the efficiency and reliability of the physical water infrastructure by better collecting and analysing data. The use of Internet of Things (IoT) devices and data analytics not only helps to better manage infrastructure and reduce non-revenue water losses but also supports important changes to the ways in which water utilities and companies operate. Smart end-to-end water networks offer the opportunity to improve productivity and efficiency while enhancing customer service.

- **Solar desalination**

Despite the high costs associated with it, a market for desalination still exists simply because there is a need – particularly for arid regions or islands in Eastern Indonesia. This demand has increased since the beginning of the COVID-19 pandemic as health facilities in remote regions need access to more reliable freshwater supplies.



As the world's largest archipelago, there is significant variability in water resources across Indonesia's five major islands and 30 smaller groups of islands."



ASK AMANE:



How does Amane provide training and development opportunities to its consultants?

By Alex Bamsey, Learning and Development Manager

Over 400 water industry professionals are members of Amane Advisors' Expert Network, providing first-hand expertise on topics shaping the water industry.

Amane has always been committed to providing dedicated learning and development initiatives to our consultants, to support their transition from education (many of our consultants start their careers with us) into the world of work and more specifically, consultancy. In recognition of its growth and future ambitions, Amane ramped up this initiative in 2021 by creating a dedicated position for a Learning and Development Manager, which is my position at the firm.

In this role, my initial focus was launching an e-learning platform to facilitate a flexible training experience. This is extremely important for a global organisation as it means that people can access the training at a time that suits them and complete it at their own pace.

The e-learning platform hosts bespoke modules on a range of topics:

- Water industry specific (e.g., desalination and wastewater treatment)
- Consultancy (e.g., expert interviews and problem solving)
- Interpersonal (e.g., coaching and giving/receiving feedback)
- Onboarding (e.g., welcome to Amane)

The variety of topics means that we can tailor the training experience based on the existing knowledge of our staff. For example, those who are new to the water industry can quickly get an insight into the processes, technologies and markets of the sector. This gives them a great foundation of knowledge to build upon when they start their first project.

To complement the e-learning modules, we run regular workshops. These facilitated virtual trainings promote collaboration and knowledge-sharing between the six global offices and are on a range of topics linked to our skills framework. Our skills framework articulates the key competencies required for each role in the organisation, which means everyone has good visibility about what they need to focus their learning and development on.

These practical sessions are linked to e-learning pre-work, whereby we link the theory from the online module into a group exercise, for example, problem solving. This approach is getting good feedback from our consultants. For example, a consultant who was referring to a workshop on desalination said, “I like the blended learning – it worked well.”

In addition to these formal avenues, consultants have the opportunity to learn about projects as part of a supportive and collaborative team. Within the project kick-off session, everyone is encouraged to share what they'd like to develop during the project, e.g.,

Excel modelling skills, presentation skills or increasing their knowledge of a particular technology. This allows the project tasks to be delegated based on preferred development areas, and it also means that the rest of the team can help and guide each other in their endeavours.

A consultant's overall development is supported by a dedicated reviewer, who supports them throughout the year by co-creating their annual objectives and development plan and mentoring/coaching them to achieve their aspirations. A consultant from our Paris office recently said, “Amane is good at helping people improve. Career development is a real strength here; my reviewer has supported me since the beginning.”

In 2022 we will continue to strengthen our training and development offerings, and I am looking forward to the year ahead!

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.



MOHAMED BASHEER



Position:	Senior Consultant
Office:	Bahrain
Joined Amane Advisors:	April 2016
Nationality:	Bahraini
Languages Spoken:	Native Arabic speaker, fluent in English, basic French and Turkish

Describe a typical day at Amane Advisors:

The first order of the day is to check my emails and To Do list, then align with my line manager on the tasks to do during the day. If I'm working with a project manager, for example, and sometimes when I'm coaching or managing staff such as junior consultants or interns, I also go over the objective for the day and what they have to do. The goal is to ensure that everyone is in alignment about what needs to be accomplished.

Personally, I prefer to do analytically oriented tasks in the morning, so that I can approach them with a clear mind. And after that, I leave the afternoon for putting the outcomes of my analyses into client slides and in the reports.

Towards the end of the day, I give a progress update to my line manager of what has been happening during the day, what has been done, and what are any potential difficulties. Also, if I'm supervising someone, I catch up with them as well and see where they are with their work. That's the final closing of the day, but of course, during the day, there is always interaction about needs, questions or supports.

And in between morning and afternoon, of course, I cannot miss taking a quick lunch break. Some people can do that, but I cannot! And I prefer not to have long

breaks during the day. I usually take my lunch box with me and have my lunch in the office. Some people prefer to go outside. I prefer to keep the continuity of the focus and concentration of ideas to be more efficient.

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

Firstly, I like the fact that Amane's core focus is the water industry. Water is a vital component in everything in life and we cannot live without it at all times.

Secondly, when I joined Amane, a colleague told me "a new project, a new job at Amane." So, that's what I really like about Amane. Every time you start a new project, or even within the same project, you are learning new things every day.

It's a very dynamic and competitive environment. So, I cannot remember that there was a period where I could say, I have a routine job or routine work where everything is the same and just matter of doing the same tasks every day. Every project is a new learning experience and new knowledge that I acquire.

By "competitive," I mean that you need to challenge yourself. And you will be also challenged by colleagues and clients for what you find. So, you really have to do a robust analysis and formulate robust conclusions so



you can defend them in front of your manager and in front of the client as well.

But it's also a collaborative environment. There is kind of a team spirit in the company and about projects, it's not "my task" or "your task." Of course, everyone has clear responsibility, but after that, to succeed together, we work as a team. And if one team member needs some support to meet the deadline, then we "the project team" can take over part of his/her work and help each other. So, it's definitely a very collaborative environment in Amane when it comes to project work.

What has been the most challenging aspect of your work and why?

I struggled thinking about this question, but what I would say is that I have an engineering background and engineers are originally very precise and detail oriented people. In consulting, however, you need always to think about the 80:20 rule and prioritizing things – what's worth a deep dive and what isn't, or what we can keep for a later stage. That's the main challenge for me in that I need to overcome my appetite for looking into details and deep diving into all the details. It's part of my personality. I like to know everything about the subject, even if it's a bit beyond the scope, but I realize that life will not work like this because it impacts definitely my work-life balance at the end and my productivity. So, I'm working on this and I feel I'm progressing well so far.

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

This is my first full-time job after college, so it has been almost six years now. I have stayed here quite a long time. I wasn't expecting that. That's number one.

Number two, hearing from other people in different companies, I'm surprised by the chance that we get as consultants to work directly with the leaders of the company – with the partners directly – and the chance we are given to interact directly with clients at the C-level. It's really a great opportunity to learn from the source, as I call it: the partner who has the knowledge, and also the clients. When you interact with a partner or



Football field at the American School of Bahrain

CEO with 25+ years of experience, you learn a lot.

What three words would your colleagues use to describe you?

I hear a lot the words committed, flexible and also caring for people. And usually, I treat people the way I wish to be treated.

Name something about you that most people would find surprising.

For me, what could be surprising is maybe not much for other people, depending on the culture. But for example, here in my region, it's rare that somebody does things on his own. For example, I like fixing things at home by myself; I have a toolbox with a hammer and some tools. Sometimes, I do carpentry. I once painted my bedroom; I bought the paint, and I did the work myself. I like to do things like that, except when it comes to electricity and power. Maybe it's common in Europe or US, but that's unusual in Bahrain at least.

Also, I'm originally from Egypt. In my hometown, we don't speak in the singular form, we speak in a plural form, as in "we," not "I." So when I noticed that one of my project managers was saying, "We are late on the project," I said, "Oh, but I'm doing my best." He said, "No, I said 'we,' not you." So, it sometimes puts me in a situation, but I try to always remember that this is English, not Arabic. I have to say "I," not "we."



What are your favorite activities outside work?

Number one – which could be added to the list of surprising things – when you see me, in reality I don't look like the super fit guy who can play football (soccer). But I like playing football a lot. And I try to do it twice a week. This is my number one activity.

Number two, of course, depends on the weather in Bahrain. Usually in winter season and spring, it's very nice and it's a chance to spend time near the seaside and walk there, and just sit and look to the sky. In summer, I go to the beach and just float on the water. This is one of my favorite activities. I like the sea a lot.

I also enjoy watching movies, but that's when I have time.

What is your favorite book?

My favorite book is *The Sealed Nectar: Biography of the Noble Prophet* by Safi-ur-Rahman al-Mubarkpuri.

It basically describes the biography of the Prophet Mohammad. I'm a Muslim by religion so it gives me kind of guidance on how to deal with different situations in life. I've read this book a couple of times, and I always find it inspiring on how to deal with different situations in life, how to deal with different people, et cetera.

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

It was during school time. One of the professors told us, "Prepare for the worst and hope for the best."

As engineers, this will be a common thing, and I think I'm that kind of person who really cares about lots of details and different hypotheses and "what if this happened," "what if that happened." But I hope for the best, and this goes back to looking into details – I need to know a lot of details, if the client asks. That's one thing.

In my personal life, I do a lot of plans and plan A, B, C, D. My wife gets mad over that because it's too many details to look at now. In terms of advice, I really have always in mind to prepare for the worst and hope for the best. In the ideal scenario, this will happen. But if not, I have to be prepared for 1, 2, 3!

Also, something that my dad always insisted on, in terms of advice as well: "Treat people the way you wish to be treated – always, in any aspect of life, whether it's work or friends or family or whatever." So, that's always something I always keep in mind. If I don't accept it or like it for myself, I don't accept it for others.



Mediterranean Sea, Marsa Matruh, Egypt



NEW HIRES

Please join us in welcoming two new Consultants to the Amane team.
Based in our Paris office, both joined the firm in October.



Mairi Dean

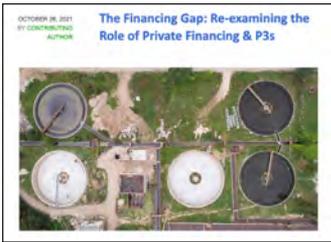
- Was previously a Water Engineer at Buro Happold, an interdisciplinary engineering consultancy in London. Experience includes work on such projects as King Salman Park, NEOM, The Red Sea Project (KSA), Praderas (Chile), and Lots Road Power Station (UK).
- Earned a Masters in Civil Engineering at The University of Edinburgh. Subsequently undertook a research placement with Universidad del Desarrollo (Santiago, Chile), completing her thesis on the Application of Bischofite for Water Demand Reduction in the Chilean Mining Industry, and building a collaboration across both academic institutions.
- Has been an advocate for diversity in engineering and climate justice, founding and managing a global network, building academic and youth outreach collaborations, and championing climate and SDG issues.



Shambhavi Tripathi

- Earned a Masters degree in Management and Engineering of Environment and Energy from Universidad Politecnica Madrid and IMT Atlantique Nantes. Also completed an integrated MBA and Mechanical Engineering degree with a specialization in Marketing.
- Final thesis included conducting a preliminary technical and economical feasibility study for a hybrid renewable energy system for a floating city in Benin, West Africa.
- During her penultimate year at university, started TEC, an educational company that conducted practical workshops for students in a range of subjects including solar energy. This experience allowed her to interact with different stakeholders, manage a team, and create an end-to-end solution, while also fueling the desire to work more deeply in the energy and environment sector.

Amane Advisors: In the news



Amane Advisors was recently featured in Water Finance & Management magazine with an article addressing *The Financing Gap: Re-examining the role of private financing and P3s* by Bastien Simeon, and in Water Conditioning & Purification magazine, with *Plunging into the Residential & Commercial Water Market: Leveraging growth opportunities in APAC*, authored by Victor Ollivier and Melissa Antieul.



Read the full text here:

[Water Finance & Management](#)

[Water Conditioning & Purification](#)

A Toast to Amane Advisors' New Paris Office



The opening of Amane's new Paris office called for a toast and glass of champagne.



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