

# amane currents

Designing the future of water

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**Circular economy – new applications, potential disruptions**

**U.S. poised to limit PFAS in drinking water**

**A. Vaccani & Partner – the faces behind the names**

**Successful private participation in peri-urban and rural SE Asia**



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# WELCOME Summer 2022 amane currents



Welcome to the Summer 2022 issue of *amane currents*! This is a special issue for us because it's the first one to be published following the announcement of our merger with A. Vaccani & Partner AG (AVP) and the expansion of Amane's focus to cover the wider circular economy.

We are all extremely excited about the benefits of combining AVP's expertise and network with Amane's own unique capabilities and network in the very complementary sectors of water, resource recovery and energy recovery. This has enabled us to broaden our advisory offerings across the areas that will be absolutely critical in developing a sustainable global economy and to deepen our ability to serve the companies, investors and governmental agencies who are driving the sustainability agenda.

In this issue we will introduce Amedeo Vaccani and Suejean Asato, the key figures who over the last 30 years have built AVP into a leading advisor for players in resource and energy recovery and the circular economy. And jumping right into this new field, Suejean has also joined forces with Mathieu de Kervenoael and Alec Freedman to give us an article that highlights two cases where new applications in the circular economy are already disrupting the value chain of economic sectors like resource recovery or regeneration.

Looking at the developing world, Ida Johansson describes the important role that development finance institutions (DFI) can play in attracting private finance and overcoming the barriers faced by drinking water access projects in peri-urban and rural areas. In the first article of a series, Laura Chamberlain also brings us up to date on the status of new tighter regulations and enforcement plans for per- and polyfluoroalkyl substances (PFAS) in drinking water in the U.S., where the legacy of these "forever chemicals" will significantly impact municipalities, utilities and funding priorities for years to come.

As part of Amane's ongoing commitment to supporting healthy oceans and the development of the Blue Economy, I report on some of the outcomes from the recent United Nations Ocean Conference (UNOC), and describe some of the ways in which we in the water and resource recovery industries are ideally positioned to make real contributions in addressing the threats posed to ocean health by marine pollution, including litter and plastics, from marine or land-based sources.

As always, we like to bring you insights from some of the sharpest minds in the industry, so we asked three leaders from the water-focused venture capital community to share their thoughts about what they see as the most exciting technology development(s) in the water/wastewater sectors. We hope you find their answers to be as interesting as we did!

Finally, Natalie Peña takes us back to some of the great moments from our fourth Amane Advisors company retreat, which was held in June on the island of Jersey in the English Channel. This retreat was an extra special one because our last gathering was held just before the COVID pandemic hit and travel had been restricted ever since. After nearly two and a half years of not seeing each other as a full team, there was a real excitement to gather everyone in the same room and to meet face-to-face to chart the firm's future course together.

We wish you lots of fun and interesting reading and, as always, we welcome your ideas, input and feedback!

Sincerely,

Bill Malarkey





# CIRCULAR ECONOMY: New applications and potential disruption of traditional markets

*By Mathieu de Kervenoael, Partner, Suejean Asato,  
Principal, and Alec Freedman, Intern Consultant*



Since the beginning of 2022, Amane has been engaged in advisory projects that provided the opportunity to dive deeply into new applications of the circular economy—examples of these new applications include carbon capture, utilization or sequestration (CCUS), and biochar—and in others that highlighted cases where the circular economy disrupts the value chain of economic sectors, such as the sectors of resource recovery or regeneration.

## A look at CCUS

CCUS is becoming a hot topic in Europe, specifically in the UK. Carbon capture and utilization (CCU) and carbon capture and storage (CCS) are often discussed collectively as CCUS.

Carbon capture (CC) is an expensive process that yields a product with an intrinsic low value (i.e., CO<sub>2</sub>). From an economic perspective, CCU makes more sense when combined with a utilization process where the cheap CO<sub>2</sub> can be utilized to produce high-value chemicals, offsetting the high costs of capture operations. CCS refers to technologies that can remove carbon pollution from the air or from point sources like smokestacks, and permanently store the carbon in order to curb carbon emissions and help the planet meet climate goals in the coming years.



CCUS in factories can reduce emissions from chemical reactions and high-temperature processes that are difficult and expensive to decarbonize. Scientific analyses have found that, to achieve a net-zero economy, countries will need to remove and store carbon pollution that has already been released into the atmosphere. The CO<sub>2</sub> can be captured from industrial and other sources using various technologies such as absorption, adsorption, chemical looping, membrane gas separation, or gas hydration. As of 2020, only 1/1000 of global CO<sub>2</sub> emissions are being captured by CCS, according to a report by Element Energy.

## CCUS projects

The waste sector has been developing energy recovery from waste—with Energy-from-Waste (EfW) plants—and is now exploring CCUS. As of today, applied to EfW units in Europe, the most advanced CCS project is in Norway, while the most advanced CCU project is in the Netherlands. And the UK seems to be embarking on significant programs as well.

Located near Oslo, Norway, the Klemetsrud EfW plant is processing over 400 kilotonnes per annum (ktpa) of residual waste with a district heating network (55.4MW thermal, 10.5MW electric). The facility currently represents 15% of Oslo's carbon emissions (the largest single source contribution). The CCUS project's feasibility, concept, and Front-end Engineering Design (FEED) studies were completed over 2015-2019. The full-scale capture plant is intended to be operational in 2022.

Klemetsrud is part of the Norwegian Longship Project, the Norwegian government's fully funded, full-scale, first ever cross-border, open-source CO<sub>2</sub> transportation and storage (T&S) infrastructure network. Longship reflects the Norwegian government's ambition to develop a full-scale CCS value chain in Norway by 2024.

The Klemetsrud plant aims to capture 400ktpa of CO<sub>2</sub>, equivalent to around 90% of total CO<sub>2</sub> emissions. CO<sub>2</sub> from the capture unit will be conditioned (compressed after oxygen removal and dehydration) and piped in a gaseous phase to a port hub 10km away. Here the CO<sub>2</sub> will be liquefied and stored in pressurised tanks prior to loading onto ships. Northern Lights is the T&S component of Norway's Longship project and will collect liquefied CO<sub>2</sub> by ships from the port hub. The ships will deposit the CO<sub>2</sub> at an onshore terminal on the west coast of Norway.

From there, the CO<sub>2</sub> is transported by pipeline to be stored below the seabed. Liquefied CO<sub>2</sub> will be pumped by pipelines into the Norwegian continental shelf, offshore Smeaheia or Johansen saline formations, at depths of 1.2-7km and 3.3km below sea level, respectively. The storage distance is less than 600km. Initially, there is a storage capacity of 1.5 million tonnes of CO<sub>2</sub> per year at the storage site. Northern Lights plans to increase storage capacity to 5 million tpa through an increasing customer base.

The most advanced project located in Hengelo, the Netherlands, is processing over 830ktpa of residual waste with a district heating network (73MW thermal, 20 MW electric). In 2014 the EfW operator introduced the first CCUS installation to an EfW facility, converting the CO<sub>2</sub> into sodium bicarbonate, which is used to cleanse flue gases.

Since July 2020, the next step has been capturing 3,600tpa of CO<sub>2</sub> that is liquefied and delivered by tanker as a raw material for commercial greenhouse horticulture. The plant operator has recently procured a 100ktpa modular capture plant, intended to be operational in 2022. The CO<sub>2</sub> captured will again supply greenhouse horticulture, where it will be used to enhance crop growth.



Carbon capture and utilization (CCU) and carbon capture and storage (CCS) are often discussed collectively as CCUS, which is becoming a hot topic in Europe.”



CO<sub>2</sub> is already immediately applicable as “fertilization” in greenhouse horticulture, which means this sector can switch to clean energy sources. CO<sub>2</sub> used in this way is clearly not permanently stored, and hence the CO<sub>2</sub> is not abated in the same way as via geological storage.

In the UK, there are now 48 EfW plants in operation, processing just under 14 million tonnes of residual waste in 2020. A further 16 sites are under construction. In line with the UK’s commitment to combat climate change, emissions from the waste sector will need to be reduced to net-zero; for every tonne of waste treated via EfW, one tonne of CO<sub>2</sub> is emitted. Considering the ongoing and increasing need for EfW, and the limitations on the ability to decarbonize residual waste feedstock, CCUS offers the only currently viable solution for large-scale CO<sub>2</sub> abatement of the UK EfW fleet.

There is recognition that, in terms of practical reality, large CO<sub>2</sub> emitters in close proximity to each other and a T&S solution will likely form into a CCUS cluster. In May 2021, the Department for Business, Energy & Industrial Strategy (BEIS) launched the “Cluster Sequencing for CCUS Deployment: Phase-1,” with the ambition of deploying CCUS in two industrial clusters by the mid-2020s and a further two clusters by 2030. The government received submissions from five clusters for potential support. Two clusters include multiple EfW plants: East Coast (three plants) and HYnet (five plants).



## Biochar

Biochar, another application, is the high-carbon, fine-grained, solid material that is obtained through pyrolysis, or decomposition brought about by high temperatures. The process for biochar starts with biomass. Wood, wood residues, energy crops, agricultural residues, and waste from industry, farms, and households can be put through pyrolysis and turned into biochar. The pyrolysis process causes the direct thermal decomposition of the biomass while preventing combustion (due to the absence of oxygen), producing a mixture of solids (the biochar) that have many uses, pyrolytic liquid (bio-oil) that can be pumped into depleted fossil oil repositories, and permanent pyrogas (dominated by the combustible gases CO, H<sub>2</sub> and CH<sub>4</sub>) that may be transferred as CO<sub>2</sub> to geological storages after combustion, according to the article: [\*Biogeochemical potential of biomass pyrolysis systems for limiting global warming to 1.5° C\*](#), by C. Werner.

The refractory stability of biochar has led to the concept of pyrogenic carbon capture and storage (PyCCS)—a proposed carbon sequestration technology that can mitigate climate change while improving soil fertility (i.e., carbon sequestration in the form of biochar). Biochar may be a means to mitigate climate change and may increase the soil fertility of acidic soils and increase agricultural productivity.

Yields from pyrolysis depend on the process conditions, such as temperature, residence time, and heating rate. These parameters can be changed to produce either energy or biochar. Both producing more energy and producing more biochar will produce net energy. Typically, the energy required to run a “fast” pyrolyzer is approximately 15% of the energy that it outputs. Pyrolysis plants can use the syngas output and yield 3 to 9 times the amount of energy required to run based on an article published by The Ecological Society of America.

According to the report [\*Sustainable biochar to mitigate global climate change\*](#), the biochar production process does release CO<sub>2</sub> (up to 50% of the



biomass). However, the remaining carbon content becomes indefinitely stable. Biochar carbon remains in the ground for centuries, slowing the growth in atmospheric greenhouse gas levels. Simultaneously, its presence in the earth can improve water quality, increase soil fertility, raise agricultural productivity, and reduce pressure on old-growth forests. Along with these benefits, the possible applications for biochar range from acting as a carbon sink to being used to supplement fodder for animals. Biochar can also be a soil improver, an inhibition mitigator in bioprocesses, a nitrogen capture agent, an enhancer of various biological ecosystems, an additive in concrete materials, an aid in water retention, a wastewater filtration medium, and more.

The 2010 report *Sustainable biochar to mitigate global climate change* estimated that the sustainable use of biochar could reduce the global net emissions of CO<sub>2</sub>, methane, and nitrous oxide by up to 1.8 billion tonnes CO<sub>2</sub> equivalent per year without endangering food security, habitats, or soil conservation. A 2018 study, however, doubted that enough biomass would be available to achieve significant carbon sequestration. The 2021 study *Biochar in climate change mitigation* estimated the potential CO<sub>2</sub> removal to be from 1.6 to 3.2 billion tonnes per year.

## Disrupting the value chain

The circular economy does disrupt the value chain of economic sectors. A few examples in the case of the resource recovery or regeneration sectors follow. While household waste collection would traditionally be organized by local authorities, Scotland recently decided to implement its Deposit Return Scheme for dry materials (cans, plastics, glass, paper & cardboard) for its entire territory, with the procurement of a unique waste operator for collection and processing of these materials.

Other signs that the resource recovery or regeneration value chain is being disrupted are the market entry in Europe of the Schwarz Group (Lidl supermarket chains) in the waste sector, with the acquisition in 2021 of the recycling businesses of Suez in the Netherlands, Luxembourg, Germany and Poland, and of Ferrovial in Spain and Portugal. In July 2022, Thailand's largest packaging provider bought the longstanding Dutch recovered paper and plastics business Peute to move into the rapidly-growing packaging materials recycling business.

Next to enter the waste sector could be the chemical industry to access feedstock for plastic chemical recycling and/or production of bio-chemicals.

## Conclusion

The circular economy is a model of production, consumption, and recycling of resources that leads to balance and sustainability. It is multifaceted and touches all aspects of our lives. The topic of carbon capture discussed in this article is important, but it merely scratches the surface of the circular economy advancements that the future is poised to hold. Nonetheless, it presents great opportunities for established businesses to modify their practices and for new enterprises to create entirely new paradigms to disrupt the resource recovery value chain.

Amane Advisors is here to help our clients effectively seize the opportunities, navigate the challenges, and design their future in the circular economy that is critical to the future of our planet.





# Uncovering enablers for successful private participation in peri-urban and rural water projects in Southeast Asia



By Ida Johansson, Principal

“Water is the foundation of all life on Earth, necessary for healthy ecosystems, social wellbeing, economic growth, and for everything that we hold dear,” said Ahmed M. Saeed, ADB Vice-President, Operations 2, at the Asia International Water Week, 14 March 2022.

Southeast Asia has progressed enormously over the past two decades to increase access to water in urban areas, with around 80% of the urban population having access to piped water in Vietnam, the Philippines and Cambodia. However, in peri-urban and rural areas, the picture is different, with only about 20% of the population being connected to water in Vietnam and Cambodia, while it is slightly higher at 50% in the Philippines.

The private sector has long played a role in enhancing

% of population with access to piped water	Urban	Rural/Peri-urban
Philippines	82.3%	50.6%
Vietnam	85.4%	26.4%
Indonesia	44.6%	21.4%
Cambodia	79.6%	16.7%







Capacity building is not sufficient without improving bankability of the projects and addressing the financing gaps faced by utilities in rural and peri-urban areas.”

the access to water and improving the quality of both water and customer service in urban areas across the region, but it has not yet had the same success in peri-urban and rural areas.

With smaller populations that are more spread out, the utilities, at times, have lower financing capabilities. Tariff revenues are not covering—or are just covering—operational cost, as tariffs are kept low due to a combination of political reasons and affordability. As a result, the utilities are lacking the necessary funds for both required maintenance and service expansion, and have lower profitability and credit worthiness, which impacts bankability of projects from an investor point of view.

Utilities in peri-urban areas have less experience in structuring private public partnership (PPP) projects, managing the tendering process and establishing a contractual framework that achieves the right level of risk-sharing between the private and public sectors. Hence, there is a lack of technical capacity to engage the private sector from the utility on the one hand, and concern over robust contractual frameworks and tendering processes from the private sector on the other hand.

National governments are more readily offering financial support in the form of Viability Gap Funding (VGF) grants or payment guarantees for large urban PPPs. Therefore, private sector investors do not receive the same level of support when investing in peri-urban areas. For example, in Indonesia, the Ministry of Finance offers VGF grants for up to 49% of total investment cost for project values exceeding IDR 100 billion (USD \$7 million).

The regulatory landscape can also raise confusion among private players, especially if the regulations

vary between urban and rural areas, or between different regions within a country. For example, in the Philippines, entering into joint ventures has become a predominant model to procure PPP projects, which are regulated under the 2013 NEDA Joint Venture Guidelines. However, this guideline only applies to the water districts, which are quasi-public entities providing water and wastewater services to large cities. When private parties wish to conduct projects with Local Government Units (LGUs) serving smaller cities and rural areas, there are no specific guidelines to be followed.

To attract private finance, it is important to increase the scale of the peri-urban projects, such as agglomeration of several utilities into a larger service area. This presents another challenge: peri-urban water supply often comes under the purview of municipalities governed by elected politicians who serve a set time. For example, in the Philippines, the governors of the LGUs are elected on a 3-year basis, which makes it challenging to convince several LGUs to collaborate on a provincial water supply within a 3-year time span, hence limiting viability of long-term infrastructure projects.

Southeast Asia can learn from Senegal in West Africa with regards to creating scale in the rural area. In 2014, Senegal established the Office des Forages Ruraux (OFOR), which is responsible for management of rural water resources. It divided the rural territory into eight clusters, which enhanced the financial viability of each area. Each is governed by a rural water operator under an affermage contract, which all are managed by OFOR.

International Finance Institutions (IFIs) such as the World Bank and Asian Development Bank play an important role in providing assistance for capacity



building, which would lay a foundation for private sector participation. This would include conducting studies to assess and identify the most suitable models for private sector participation in rural and peri-urban areas, and thereafter provide guidance to national and provincial governments on how to implement these models, e.g., bringing clarity to policies and regulations and establishing clear contractual frameworks with obligations of both private and public parties and guidelines on procurement such as template bidding documents, bidding requirements.

For example, in Indonesia, World Bank's Global Water Security & Sanitation Partnership (GWSP), together with the Private Infrastructure Development Group (PIDG), is launching training courses for public utilities focusing on service delivery and financial management improvements. The goal of this training is to make service providers more commercially viable and suitable candidates for borrowing and becoming more creditworthy.

However, capacity building is not sufficient without improving bankability of the projects and addressing the financing gaps faced by utilities in rural and peri-urban areas. Rural utilities need to ensure that the tariffs remain affordable for the population while at the same time reach the SDG goal of universal access to water and sanitation. Hence, it is often not feasible to increase the tariffs to reach cost recovery, as that would result in tariff levels that the poor households are unable to pay.

That is where Viability Gap Funding (VGF) plays a role. VGF can be provided by national governments, IFIs or development infrastructure funds, and it involves making upfront capital grants at financial close of a project to cover a portion of the capital cost to make the project bankable.

For example, the government of Vietnam is trying to increase attractiveness of investing in rural projects through subsidies for enterprises investing in the rural sector, introduced in 2018. The subsidy is given to projects providing clean water in rural areas, and the subsidy amount is based on the capacity of the plant and the expense on the distribution network. So far, two water supply projects are known to have qualified for the subsidy.

Cross subsidies are also an option, such as implementing higher tariffs for industrial end-users or implementing specific tourist fees for water and sanitation, while keeping tariffs for the poor households low.

PIDG is working in Southeast Asia through its group companies InfraCo Asia (which originates, structures, invests in and manages projects), PIDG TA (technical assistance grants), DevCo (PPP advisory services via IFC), and GuarantCo (local currency contingent credit solutions) to help realize early-stage projects, overcome financial, technical or environmental challenges and create investment-ready, bankable infrastructure.

For example, in Vietnam, PIDG is helping to realize the Ba Lai water supply project (5,000 m<sup>3</sup>/d) in the rural area of Ben Tre Province. The existing water supply is not aligned with the existing regulation, and a number of residents rely on rainwater to meet their needs. The private sponsor, Darco Water Technologies (DWT), was unable to raise sufficient funding from the market to build the proposed water supply system. To address the challenges, InfraCo Asia co-invested with DWT to fund the construction of the water supply project and provide access to clean water for over 30,000 households. In addition, PIDG TA is providing a VGF grant to establish long-term commercial viability of the project, providing a practical example of when VGF has enabled a project to be realized.

Another important area to consider when developing projects in peri-urban and rural area is the delivery model, as large-scale infrastructure projects are not the answer to all situations. In a coming issue of *amane currents*, we will investigate in greater depth about models that work, both financially and practically, in remote areas.



# Q&A with amane currents: Claudine Lim, InfraCo Asia



To dive deeper into the topic of PPPs in peri-urban or rural areas in Southeast Asia, *amane currents* interviews Claudine Lim, Interim CEO/COO of InfraCo Asia. InfraCo Asia Development Pte Ltd (InfraCo Asia) is a commercially managed infrastructure development and investment company of the Private Infrastructure Development Group (PIDG). Headquartered in Singapore, InfraCo Asia catalyses greater private sector investment in infrastructure across South and Southeast Asia by providing funding and development expertise. The company funds early-stage development activities to realise socially responsible and commercially viable infrastructure that contributes to sustainable and inclusive economic growth.

## What are some of the market needs/challenges that InfraCo Asia are looking to address in peri-urban or rural areas in order to facilitate private sector participation there?

Working in peri-urban or rural areas requires proper project structuring that takes into account the local markets and specific needs of the stakeholders. Projects that are viable, bankable, and deliver on their objectives, including development impact, are more likely to attract private investors.

### The key challenges that we are focusing on are:

#### 1. Funding:

- Early stage/development: Providing funding to undertake feasibility studies and appoint competent consultants/contractors to structure projects properly so that the projects may become sustainable in the long term & deliver on their objectives.
- Implementation/construction: Generally, due to the prevailing risk, banks are not comfortable providing a majority of the funding and hence, shareholders are required to contribute. Getting access to construction stage funding becomes possible only with proper structuring during the development process.

2. Capacity building: Introducing best practices and knowledge sharing in areas like service quality, construction management, asset maintenance, cost and revenue management and contract management.

3. Innovation: Challenging the status quo that what works in urban areas will work in peri-urban or rural areas and looking for innovative solutions to provide services in the most cost-efficient manner with maximum impact.

## What do you think is the most important enabler for successful private-sector water projects in rural or peri-urban areas in developing countries?

Stakeholder support (and not just shareholder support) in project development and implementation, as well as clarity on local regulations are important enablers for successful private-sector led water projects in rural and peri-urban areas. This is because:

1. Stakeholder engagement is required to assess the willingness to pay and for information dissemination on the benefits of allowing the private sector to supply water, like water quality in line with regulation, continuous water supply, better customer service, improved health, etc. This is important due to a common misconception that through the involvement of the private sector water becomes unaffordable.
2. Understanding the local regulations, especially if they differ from national or urban regulations, is critical.
3. Achieving cost recovery and an adequate return is key for the company to maintain the water supply system and provide a consistent service quality (and expand if required).



## What role do you think Technical Assistance can play?

At PIDG, Technical Assistance (TA) can help support a range of needs associated with the infrastructure project development cycle, including the assessment of potential investment opportunities and building capacity of host country partners and local investors. PIDG TA can also make up-front capital grants at financial close, through VGF, to support the construction phase of projects providing strong development impact. This funding is designed to reduce the costs of infrastructure projects to make economically viable projects financially viable in order to attract private finance.

For water projects specifically, the cost of servicing peri-urban or rural areas may be high due to a low population density and a larger geographical area to cover. Technical assistance funding can help mitigate these challenges by utilising capital grants to reduce the project capital expenditure or support the development of innovative engineering solutions like solar water pumping systems, smart metering, etc.

## What is an ideal partner for InfraCo Asia?

An ideal partner for PIDG and InfraCo Asia would share similar views and ideology on project implementation and approach, ethics and development impact. We look for partners who have complementary capabilities— for example, strong technical capability or sector knowledge. We also look for partners with an alignment of values. This includes a demonstrated desire to develop projects to international standards and a belief in the value that InfraCo Asia brings in Health, Safety, Environment and Social (HSES) management and sustainable development impact. Finally, an alignment of interests is critical. We seek out partners who are invested in the projects we undertake together and are committed to dedicating resources and building the project toward a successful outcome.

## Based on your experience in infrastructure for the region, what advice do you have for private infrastructure investors in Southeast Asia?

Looking across projects that InfraCo Asia and other PIDG companies have been involved in, proper project structuring and stakeholder management emerge as key factors for project success. Project investors should first and foremost look at how well a project has been put together, and whether it caters to the needs of diverse stakeholders. Government objectives, financier confidence, positive impact, and potential for return are all important to consider.

Taking cost and risk into consideration, especially in situations where the returns are not sufficient, alternative financing such as grant and/or concessional financing can help pave the way toward investment, thus enabling the project to achieve its objectives.



Working in peri-urban or rural areas requires proper project structuring that takes into account the local markets and specific needs of the stakeholders.”





# U.S. IS POISED TO LIMIT PFAS IN DRINKING WATER



By Laura Chamberlain, Senior Consultant

Over the coming years, new tighter federal regulations on per- and polyfluoroalkyl substances (PFAS) in U.S. drinking water will significantly impact municipalities and funding. The objective of these regulations is to limit levels of these persistent synthetic “forever chemicals” in water in order to protect public health and waterways from contamination. Water treatment technology companies have an important role to play in providing municipalities with the technology needed to remove contaminants from water and ultimately comply with these regulations.

This article explores recent and upcoming changes in the U.S. federal and state legislative frameworks regarding PFAS in drinking water and helping companies in the water sector to understand the impact of their solutions in helping municipalities meet compliance needs.

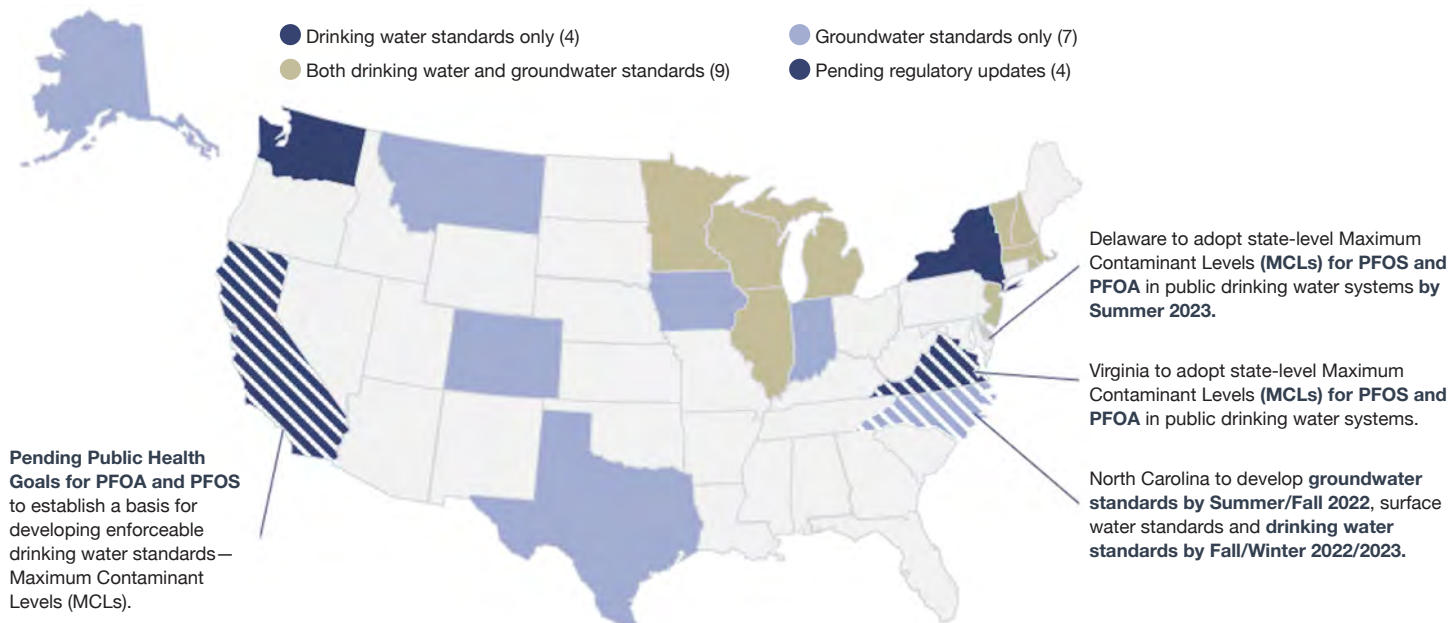
## **Pending enforceable federal regulations will boost a regulatory-driven market**

Historically, drinking water and groundwater regulations and standards for PFAS have been led by states. As of August 2022, over 20 states have promulgated regulations for specific PFAS at varying degrees of stringency. Seven states (Massachusetts, Michigan,

New Hampshire, New Jersey, New York, Vermont, and Wisconsin) have enacted legally-enforceable drinking water standards and treatment techniques under maximum contaminant levels (MCLs) for specific PFAS. This means that if a municipality’s water samples exceed MCLs for regulated PFAS, they are required to take action including installing treatment technologies. State regulations are clustered in the Northeast and Mid-Atlantic U.S., with new regulations developing as PFAS testing, measured at very low concentrations or parts per trillion, and our scientific understanding of the compounds on human health and the environment, evolves.



Figure 1 PFAS State policy landscape with concentrations in Northeast and Mid-Atlantic regions; representing promulgated PFAS regulations only (Source: Interstate Technology Regulatory Council)



In tandem with our better understanding of PFAS, the U.S. Environmental Protection Agency (EPA) has also ramped up action to mitigate and limit PFAS from the environment, including water supplies. As of today, the EPA has enacted only non-enforceable, non-regulatory drinking water Health Advisories for four PFAS: PFOA, PFOS, PFBS, and GenX chemicals. The Health Advisories ultimately provide information to states and public water systems whether to take appropriate action, including deployment of treatment technologies, until the National Primary Drinking Water regulation, or MCLs, take effect. The first federal MCLs for the two most widely used and studied chemicals in the PFAS group—PFOA and PFOS—are expected to take effect in 2023. This will set enforceable limits, establish treatment techniques and corrective actions, and require monitoring of public water supplies. Nevertheless, the Health Advisories for PFOA and PFOS have been applied as a basis to develop state-level regulations and justification to install PFAS treatment technologies at drinking water plants and wells.

In October 2021, the EPA launched the agency’s PFAS Strategic Roadmap outlining its approach to tackling PFAS, with other ongoing actions and commitments:

- In June 2022, the EPA published new health advisories for GenX and PFBS based on final toxicity assessments to enable tribes, states, and local governments to inform the public and take appropriate action. Also, the EPA significantly lowered health advisories for PFOA (0.02 ppt) and PFOS (0.004 ppt), which may likely result in more PFAS treatment projects. It will also expand the monitoring of 29 PFAS under the Unregulated Contaminant Monitoring Rule (UCMR) 5 to understand the frequency and magnitude at which these chemicals are found in drinking water systems, subject to availability of appropriations from Congress.
- It plans to publish the final toxicity assessments for five PFAS—PFBA, PFHxA, PFHxS, PFNA, and PFDA—to better understand their human health and environmental effects.



Seven states have enacted legally-enforceable drinking water standards and treatment techniques under maximum contaminant levels (MCLs) for specific PFAS.”



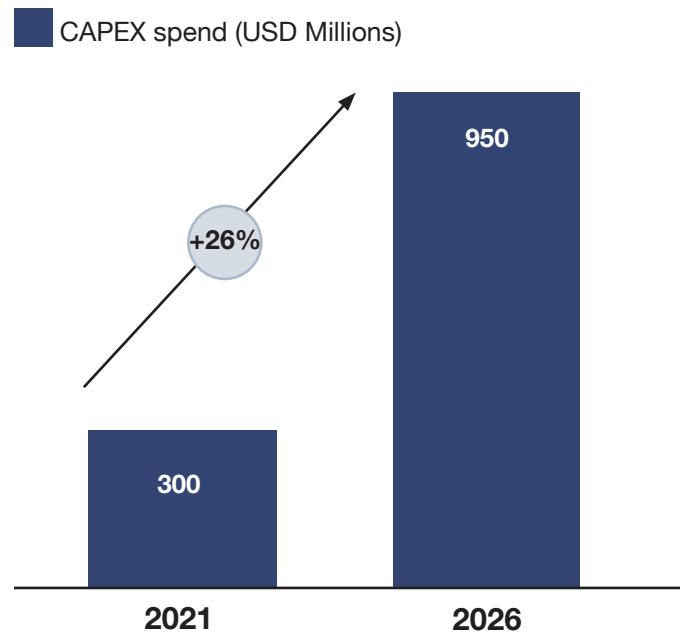
Municipalities can either fund projects to install treatment technologies that remove PFAS, or receive funding/grants from the state, or through the EPA State Revolving Funds (SRFs). To assist municipalities and ongoing studies of PFAS, at least the federal government has committed dedicated funding to testing and treatment:

- The Bipartisan Infrastructure Law, signed by President Biden in November 2021, will invest \$5 billion to help small or disadvantaged communities to test for and clean up PFAS and other emerging contaminants through 2026.
- Drinking Water State Revolving Funds (SRFs) for 2022 allocate \$3.4 billion in funding and \$3.2 billion through the Clean Water SRFs that can also be used to address PFAS in water for 2022.
- If secured, the President's Fiscal Year 2023 Budget Request will include \$126 million for EPA to assess the impacts of PFAS on human health and advance technologies needed to detect PFAS in water.

### Accelerating spend on remediation, based on ongoing monitoring and upcoming regulations

More than 2,850 locations in 50 states and two U.S. territories are known to have PFAS-contaminated water systems, according to Environmental Working Group or EWG. This list will continue to grow with further federal UCMR 5 monitoring beginning 2023 and additional state and local testing. Given the pervasiveness of the contaminants and upcoming enforcements, there is huge opportunity for water treatment technologies to be used by water utilities. According to GWI, water utilities in the U.S. will spend over \$4 billion on PFAS treatment systems for drinking water purposes between 2021 and 2026. Already several PFAS treatment projects at drinking water plants and wells and military bases have been installed nationwide, notably as well in areas without enforceable MCLs but in line with applicable EPA Health Advisories.

Figure 2 US municipality CAPEX spend for PFAS treatment (in USD Millions) | Source: GWI



Well-established technologies like granular activated carbon (GAC), ion exchange (IX), and reverse osmosis (RO) can achieve PFAS removal. GAC and IX occupy the most market share by technology type, with key considerations to highlight:

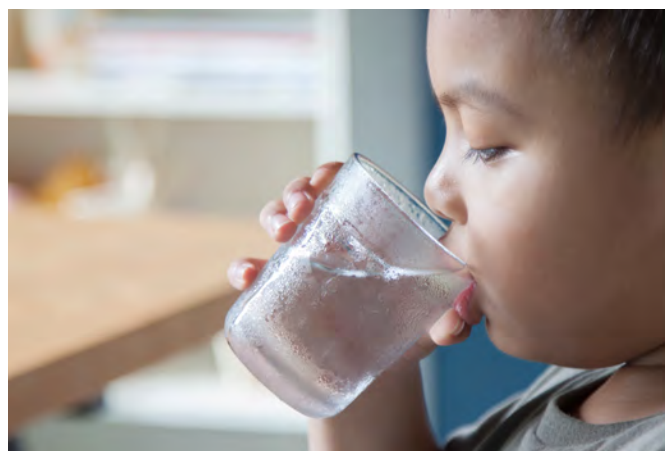
- **High efficacy and reputation:** These technologies are very effective, proven to be up to 99%, at removing certain PFAS from water, and are the most widely tested and understood technologies at PFAS removal. The difference is that IX technology has been proven to be more effective at removing shorter-chain PFAS than GAC, so often a treatment train of subsequent treatment technologies can be deployed at a treatment plant or well.
- **Cost:** IX often has a lower total lifecycle cost compared to GAC alone considering the footprint or capital investments and amount of media required.
- **Concerns around disposal/destruction:** Incineration of concentrated PFAS wastes from spent GAC and IX media is an ongoing concern. Specifically, there is concern that incineration can re-introduce these highly mobile contaminants back into the environment and water supplies.

Yet here is an opportunity for innovation and emerging technologies to come into play in two areas: PFAS treatment and destruction. Technologies in PFAS waste reduction and PFAS destruction are possible innovative solutions to push the market, or PFAS waste reduction as regenerable IX resin and destruction technology. Market players are piloting or have brought to market regenerable IX resin to allow multiple uses of the media and reduce the need for media disposal. Adequate PFAS destruction is being researched by the U.S. EPA to serve as an alternative to incineration, with emerging technologies such as advanced oxidation processes and plasma being piloted and developed by smaller companies in partnership with universities.

In conclusion, regulatory pressures will push municipalities to deploy or update treatment processes to remove PFAS from water and meet regulatory compliance. Further innovation can reduce CAPEX and OPEX of treatment techniques and alleviate waste management through alternatives to incineration and cutting the volumes of concentrated wastes to begin with.

## Outlook

So far, U.S. PFAS regulations in drinking water are a patchwork of different levels of enforcement across state governments. Yet the federal government is ramping up efforts to act on reducing PFAS exposure to humans and the environment, mainly through federal regulations directly impacting public water systems. Municipalities facing compliance deadlines to meet future PFAS regulations in drinking water and source water will require investment into treatment technologies such as GAC and IX. Technology players can support municipalities on these needs especially over the coming years.



The first federal MCLs for the two most widely used and studied chemicals in the PFAS group—PFOA and PFOS—are expected to take effect in 2023.”







# OCEAN HEALTH AND THE BLUE ECONOMY

By Bill Malarkey, Partner



When you consider the fact that the world's oceans make up 97% of all the water on Earth, and cover 70% of the Earth's total surface area, it is both surprising and disappointing that the topic of "ocean health" gets so little attention in our discussions of global environmental issues.

After all, as the United Nations pointed out in the run-up to this year's Ocean Conference (UNOC), the ocean is "the planet's largest biosphere, and is home to up to 80 percent of all life in the world. It generates 50 percent of the oxygen we need, absorbs 25 percent of all carbon dioxide emissions and captures 90 percent of the additional heat generated from those emissions."<sup>1</sup> The ocean also sustains the livelihoods of some three billion people worldwide, most of them in developing countries.

The UN established its Sustainable Development Goals, or SDGs, in 2015 as a collection of 17 interlinked global goals designed to be a "blueprint to achieve a better and more sustainable future for all," including SDG 14: Life Under Water. The main objective of SDG 14 is "to conserve and sustainably use the world's oceans, seas and marine resources for sustainable development." To further the pursuit of this goal, the UN also proclaimed

this decade (2021-2030) as "the decade of ocean science for sustainable development," with the aim of reversing the cycle of degradation and beginning the process of regeneration.

However, despite its clear importance to the health of the planet and the global economy, the ocean has generally been given short shrift as an environmental priority, at least if we take funding flows as our leading indicator. Of the 17 SDGs, SDG 14 is by far the most undervalued in terms of global aid allocations, receiving less than 1% of total aid (~\$2.2 bn) as of 2019. Compare this with SDG 7: Affordable and Clean Energy, which received some 7% of total aid (~\$24.9 bn). (See chart.) It is this lack of attention that led the UN Secretary to declare at the opening of the UNOC that "sadly, we have taken the ocean for granted, and today we face what I would call an 'Ocean Emergency.'"



## Aid allocation per United Nations Sustainable Development Goal (2019, US\$m)

Of the 17 SDGs, SDG 14 is by far the most undervalued in terms of global aid allocations, receiving less than 1% of total aid (~\$2.2 bn) as of 2019.



Source: SDG Financing Lab

The European Union defines the “Blue Economy” as a sector of the overall economy, including “all economic activities related to oceans, seas and coasts. It covers a wide range of interlinked established and emerging sectors.” This would include both the ocean economy (i.e., the extractive, renewable, non-renewable, and operational sectors) and those on-land industries and activities that also indirectly pressure the oceans, such as agricultural runoff and discharges of municipal and industrial waste.

About half of the world’s population lives within 100 km of a coastline, and while this population is by nature the most dependent on the ocean, its activities also have the heaviest direct impact on the ocean’s overall health. We see the results of these activities in a variety of ways, including overfishing, plastic and chemical pollution, and outbreaks of harmful algal blooms (HABs) as a result of increasing nutrient pollution from industrial, urban, and agricultural outflows that accelerate the eutrophication of coastal waters.

At the close of the UNOC on July 1, all 193 member states unanimously adopted a political declaration renewing their commitment to strengthen ocean protection, proclaiming that they are all “committed to halting and reversing the decline in the health of the ocean’s ecosystems.” However, the conference unsurprisingly resulted in few concrete agreements or obligations to address the major challenges on the agenda, such as regulation of deep-sea mining or limits on plastic pollution.

On the funding front, the Protecting Our Planet Challenge, a coalition of philanthropic organizations that includes Bloomberg Philanthropies and the Walton Foundation, committed to invest at least \$1 billion toward marine protection by 2030, which would make this single commitment roughly equal to all philanthropic giving for marine protection over the past decade.





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The outcome of the conference once again made it clear that if we are to make real progress to reduce the continuing man-made pressures on ocean health, it will require significant changes in our current way of doing business across a number of sectors. We in the water and resource recovery industries are ideally positioned to make real contributions in addressing the threats posed to ocean health by marine pollution, including litter and plastics, from marine or land-based sources. By taking local steps to develop and implement established best practices in areas such as wastewater treatment, stormwater management, efficient irrigation, recycling and waste management, we can drive real and dramatic impact in ocean health from a number of angles, moving toward the World Bank’s goal of a Blue Economy that sees “sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of the ocean ecosystem.”

This shouldn’t be positioned as a false choice between conservation and the economy: Properly implemented programs of conservation, protection, enforcement and preservation can actually support long-term economic health by putting the conditions in place to regenerate the oceans and restore abundance. And despite the bleak assessments at the outset of the UNOC, it is not too late to turn things around with regard to ocean health.

In 2020, a landmark study led by scientists at Saudi Arabia’s King Abdullah University of Science & Technology (KAUST) concluded that marine life can be rebuilt by 2050, if committed measures are undertaken on a broad global basis. The researchers found evidence of the remarkable resilience of marine ecosystems and documented a shift from steep losses of marine life during the 20th century to a slowing down of losses—and in some cases even actual recovery—over the first two decades of the 21st century.

By doing our part and working with our clients and partners to clean the world’s waters, we are excited to play a role in rebuilding marine life and creating the conditions needed for long-term resilient oceans and a healthy, sustainable Blue Economy.

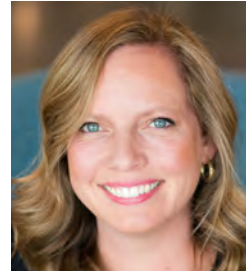


1 <https://www.un.org/en/conferences/ocean2022/about>

# EXPERT VIEW

Amane asked some of our colleagues in the venture capital community to share their thoughts about what they see as the most exciting technology development(s) in the water/wastewater sectors.

## Ginger Rothrock, PhD, Senior Director, HG Ventures: Small-scale, onsite wastewater treatment technologies



Innovations in industrial wastewater remain surprisingly unnoticed by investors. The North American wastewater treatment market was \$110 billion in 2021, with ~30% attributed to the industrial sector (Fortune Business Insights). Industrial wastewater treatment practices are predominantly legacy methods of trucking wastewater to a central treatment facility or hiring technicians to manually test and treat wastewater with chemicals.

Small-scale, onsite wastewater treatment technologies are poised to disrupt this significant market. As regulations become more stringent and Fortune 500 companies require suppliers to improve sustainability practices, onsite systems that measure and capture contaminants improve compliance, reduce carbon emissions, and enable circular solutions, such as water reuse and valorization of valuable byproducts.

The economic rationale for onsite, automated systems is substantial, given the existing labor shortages and rising costs of trucking and landfilling wastes. For example, Kentucky-based Electramet selectively removes heavy metals from waste streams using an automated membrane-free and chemical-free process. ZwitterCo is commercially deploying fouling-resistant membranes that treat highly challenging organic and oily streams, focusing on product purification and chemical reuse.

Venture-like returns are becoming more attainable as the business models adapt. Rather than large-scale, CAPEX-heavy facilities, industrial water monitoring and treatment innovations are moving towards decentralized, small-scale automated units. Pricing models now include leasing combined with software monitoring for a recurring fee, mimicking the high margin “as-a-service” models traditionally found in the tech industry. Customers find value in the reduced workforce needs, exchange of large CAPEX and irregular supply purchases for a predictable operational expense, and measurable sustainability benefits.



Venture-like returns are becoming more attainable as the business models adapt.”



## John Robinson, Partner, Mazarine: “Democratization of water data” – a compelling investment opportunity



Mazarine is enthusiastic about investing in early-stage technology companies that are the forefront of the “democratization of water data.” This has led Mazarine to invest in young companies providing solutions that leverage computer engineering, data science (ML & AI), IoT, and business model innovations that enable the proverbial “little guy” to achieve improved visibility and control of their water/wastewater-related risks.

Small-town water utilities face public health & safety risks; farmers face climate change-induced drought and flooding risks; industrial users face availability, water quality and environmental protection risks related to their process water; building owners face myriad water-related business disruption risks; and the financial and insurance sectors also face substantial risks related to water quantity and quality. These water risks are not new, but technology to improve visibility and control has either not been available, been too expensive, or too complex for all but the largest players.

Several of our portfolio companies are pioneers in democratizing water data. SimpleLab has brought the services of environmental testing labs within reach of any municipality, business, school, or homeowner. WaterClick has reimaged the digitization of small and medium sized utilities. EQO has created RNA- and DNA-based tools that enable any size community, NGO or community group to detect and manage invasive species and help protect and track endangered species. PANI is providing affordable AI-based

solutions that improve efficiency and reduce water usage for industrial and municipal operators of any size. AQUAOSO is offering banks and insurance companies powerful decision-support tools that enhance their efforts to manage customer risks as a function of water security. CLYR has brought the business of monitoring pool health into the 21st century by offering residential and commercial customers a smart pool solution that works out of the box. Conservation Labs has brought efficiency and convenience to flow monitoring with their breakthrough in acoustic sensing and ML.

As technology investors with an impact mandate, Mazarine welcomes the opportunity to partner with other investors who share our vision to ensure that innovations in computer engineering, data science, IoT, and business models help everyone better understand and manage their water quality and quantity risks.



Technology to improve visibility and control has either not been available, been too expensive, or too complex for all but the largest players.”

## Tom Ferguson, Managing Partner, Burnt Island Ventures: Much to be excited about

We're living in interesting times. I think there's a degree now to which there is enough broad-based pain that you are going to see some really quite significant companies [in the water sector] being built faster than we've ever seen.

In the U.S., I think this is fundamentally related to the fact that the federal government hasn't put any real money into water since about 1978. I believe that the combination of investment and project capital on top of basically "busted" infrastructure in the U.S. is actually reason for significant optimism. Then going a level deeper, you have pain points that are just more significant than we've seen before: everything from the lead issue to PFAS to access to demographic talent issues. And you've got energy prices, chemical inputs, labor costs, all the way down.

This translates into an interesting arena for value creation by smart people with good solutions for these problems. We're now seeing breakout companies hit the gas.

We're thinking a lot about the structural elements: from upwards pressure on pricing to difficulty hiring. The institutional knowledge of a wastewater treatment plant is about to wander out the door and go and play golf; with retirements goes the knowledge of how to run these things, and that's dangerous unless you have ways of codifying that knowledge in software. It's a key part of resilience.

Talent really matters. I think that previously, when people were investing in water, there wasn't that much of a margin of safety around the number of high-quality entrepreneurs building companies. Of course, there have been extremely high-quality entrepreneurs throughout water's history, but in my opinion, that talent pool is building fast and has been for a while.



This new generation of entrepreneurs really understands that to grow at the pace you need to really garner the interest of the mainstream investment industry, you need to have an exceptional solution to a big pain point, and there needs to be a margin of safety in terms of the degree of performance or ROI on that client's investment. Great entrepreneurs build no-brainers.



In terms of what we are really excited about, it's a lot of things: on the software side, people like John Bertrand at Daupler, Bessie Schwarz at Cloud to Street and Erin Rothman at StormSensor are doing ingenious things. On the membrane side, look at what ZwitterCo are up to: Alex and Chris are building the engine for an ungodly amount of industrial recycling and reuse.

On the consumer side (which historically has been ignored by capital providers), I've just seen a phenomenally exciting company in the outdoor irrigation space that's certified to save 50% of water use after the controller. With \$200,000, the guys at Spout have created an efficient, beautiful countertop atmospheric water generation system when others have vaporized \$15m+ failing to do it.

More people are starting to get it. Water is the fundamental molecule that allows society to exist. It's not getting any less important. Climate change is water change. If you want to allow people everything from healthcare equity to gender equity to racial equity, getting water right is a pre-requisite. There is an awakening around water's broader narrative that we've been awaiting for years. It's exciting.

There is an awakening around water's broader narrative that we've been awaiting for years. ”



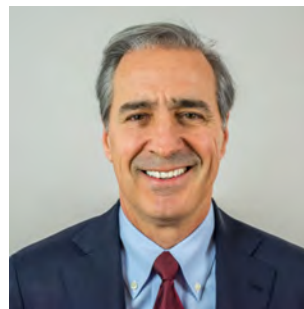
# THE FACES BEHIND THE NAMES AT A. VACCANI & PARTNER

In May, Amane Advisors merged with A. Vaccani & Partner (AVP), a development that expands and strengthens our array of advisory offerings as we work together to help our clients design their future in the circular economy.

Based in Zurich, Switzerland, AVP has long been known for its expertise, dedicated research, and references in the areas of sustainability and resource & energy recovery including environmental technology, energy from waste (EfW), waste management, and renewable energy. A family-owned business for 30 years, it brings a network of 125 professional advisors, in-house research team and proprietary data, poised to meet the needs of client engagements around the world.

AVP has specialized in providing services in strategy consulting, M&A advisory, strategic partnering, and industry research to a range of clients across the cleantech, environmental and energy sectors since 1992. In addition to its industry focus, AVP possesses distinct industry expertise in cross border mandates, in- and outbound investments and international strategic partnerships. It has completed more than 120 M&A and strategic partnership transactions and 80 industry research mandates in Europe, Asia & North America and has served corporates, start-ups, multilaterals, investors and industrials.

Now that the initial flurry of media coverage and questions has assumed a more normal pace, we invite you to take a closer look at two of the individuals—Amedeo Vaccani and Suejean Asato—who have shaped AVP's success over the years and are now part of the Amane team.



**Amedeo C. Vaccani,**  
Partner

AVP's Founder and Managing Partner, Amedeo has enjoyed an extraordinary career that began in 1979 at W+E

Umwelttechnik AG, Zurich, Switzerland, a subsidiary of Alusuisse AG. In just two years, he rose through the ranks to become the company's Technical Director, responsible for W+E's waste-to-energy technology and related engineering departments including R&D, technology standardization, start-up of new plants, worldwide licensing, etc.

Amedeo had always wanted to go to America, and so he left W+E in 1984 to attend the MBA program at the world-famous Harvard Business School. In 1985, Amedeo graduated with a Master of Business Administration (MBA) First Year Honors.

While attending Harvard Business School, he also worked as a freelance consultant for U.S.-based Blount Inc., one of the leading technology and plant suppliers of waste-to-energy power plants and hazardous/industrial waste incineration facilities. There, he provided technical and commercial support for various BOO development projects in the U.S. and support of waste-to-energy technology transfer from W+E Umwelttechnik AG to Blount. In 1985, he provided further assistance to Blount in its acquisition of W+E Umwelttechnik from Alusuisse—becoming CEO of W+E Umwelttechnik AG and a member of the Blount Inc. Executive Management Team.



His career continued to advance at Asea Brown Boveri (ABB), a global Swiss/Swedish industrial technology and manufacturing group, where he became Worldwide Business Area Manager for Resource Recovery and CEO of ABB/W+E Umwelttechnik AG, helping to integrate W+E's Energy-from-Waste (EfW) business into ABB's global product and market matrix organization.

In 1994, two years after leaving the company and striking out on his own, Amedeo and a partner founded Vaccani, Zweig & Associates. Amedeo focused on M&A, strategy and business development while his partner concentrated on organizational development and performance improvement. After he and his partner parted ways, he grew AVP into the well-known and highly successful firm that is now an important part of Amane Advisors.

On a more personal note, Amedeo's commitment to excellence and his drive to achieve business success are matched by his passion for sailing. He began sailing at the age of 15, devoting his spare time to training and racing. He was Swiss Champion 1977 Lacustre Class, Swiss Champion 1979 Olympic 470 Class, and Swiss Champion 1991 m1 class. He was a member of the Swiss National Team from 1977 to 1980, participating in numerous World and European Championships. He is still racing, in ESSE 850/990 Class and "big boats."

### Suejean Asato, Principal



Suejean has been a key member of the AVP team for 25+ years, serving as the head of business intelligence and partner at the firm since 2016.

She has established a

strong reputation as an expert in the waste-to-energy market, as the predecessor to today's AVP was the first company to track waste-to-energy projects globally and provide accurate data on global waste-to-energy plants around the world.

She is known for her expertise in the sustainability, waste and renewables markets. Her areas of coverage include industry & market research, strategic partnerships, technology transfers, and

M&A support. Suejean has also provided market entry support for European companies in Asia as well as supervision for Asian companies in Europe. Coordination of international research activities also comes under her areas of expertise. She is also skilled in communications, profile raising, and marketing management.

Earlier, when the company was known as Vaccani, Zweig & Associates (Management Consultants and M&A Advisors), Suejean handled many diverse responsibilities. She was a consultant; she headed Research & Technology Transfer; and sometimes she wore the "hat" of executive assistant.

Importantly, she played an active role in building up the firm's successful technology transfer/strategic partnership business between Europe and Asia, and maintaining relationships with Asian customers, partners and contacts. As the main researcher for the company, she was focused on energy, environmental issues, recycling, and more. She has actively supported the firm's M&A activities via research, target search, and contacting while serving as the firm's main point person with its clients. In addition, she handled the main research for numerous industry market reports, maintaining and publishing the market share report for the energy-from-waste industry on an annual basis since 2002.

When not working, she enjoys scuba diving, traveling, snowboarding, reading, and cooking.

### Working together, looking ahead

The combination of AVP's team, expertise and network with Amane's unique capabilities, team and network creates a powerhouse in the complementary sectors of water, resource recovery and energy recovery.

As Amedeo has said, "The merger lays the foundation for Amane's expanded global service offerings in sustainability and the circular economy, enabling the continued rapid growth in all key markets around the globe."

We look forward to a bright future together.





# KALINDI RANA



Position:	Project Manager
Office:	Paris
Joined Amane	
Advisors:	Joined as an Intern in July 2017
Nationality:	Indian
Languages Spoken:	Fluent in English and Hindi, and some French when needed

## Describe a typical day at Amane Advisors.

My typical day has changed a lot since I was a consultant. As a consultant on a project, you would have a morning check-in call to prioritize your list of tasks to do for the day with your project manager. You probably had some expert calls or internal calls and then the checkout meeting for the day. Generally, you oversaw just your one workstream and were responsible for completing only your own work.

I was promoted to project manager last October, and since then, my typical workday has changed a lot. Of course, the day still starts with the morning check-in call when you are on a project, but now I am the one leading the check-in. I need to have a plan for what needs to be done first for everybody else and so there is a little bit of preparation to be done before the call. There is then a lot of multitasking, a lot of juggling things throughout the day; a lot of different things come at you at the same time, so you need to prioritize your day. So far, my experience has been that the day just goes so fast, and you don't realize where it has gone! Of course, you also have calls with your team—ad hoc calls or structured problem-solving sessions, and still participate in expert interviews. There is always still a checkout meeting at the end of the day.

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

Although my job has changed, I still like that it involves a lot of finding solutions. Every time a client comes to us, it is because there is something that they don't know. And while we may need to refresh or add to our knowledge, rest assured—we are going to know so much more in such a short period of time, and we are going to be educating them!

And we are going to be educating people who have been in the sector, have been living this life, often for decades. That is one of the things that has always fascinated me. In consulting, you are always finding information and putting together different pieces of the puzzle and bringing out what it means for someone.

We also bring an outside, fresh perspective. We can be objective about our client, about their competitors, and about the market because we are not directly involved. We come from a neutral, third-party point of view.

The aspect I like the most is that we are solving something for our client. Every project presents a new problem to solve, a new puzzle. These are important puzzles because their impact can be huge.



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

The biggest surprise was that what I had heard about corporate jobs just did not apply here. What surprised me, and what I love about Amane, is that it is not hierarchical. It is a very flat organization. Everybody has a say, and everybody's say is equally important.

I have never been someone who challenged hierarchy because of the culture and the environment in which I grew up. But the company made it very easy for me to be able to do just that. It's not something that comes naturally to me, and yet still, I've been able to do it.

You could just tell that you could go up to Thierry (Noel) at any point in time and talk about anything if you wanted to—and he would make it easy. That's one of the things that I like—the partners make it easy for me to approach them, even though it doesn't come naturally to me.

## What three words would you use to describe Amane Advisors?

- Diverse
- Non-hierarchical, a flat organization
- And water—it is the first thing that comes to mind.

## What three words would your colleagues use to describe you?

- Empathetic
- Sharp—quick to pick up things and analyze them
- Organized

## Name something about you that most people would find surprising.

That I competed in and taught Latin and ballroom dancing and also studied Bharatanatyam (an Indian classical dance) for over 10 years back in India, before I moved to France.

## What are your favorite activities outside work?

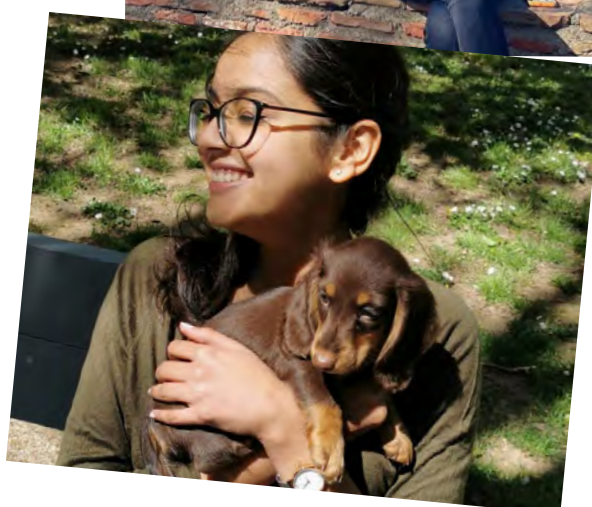
I really like going for hot yoga. I like taking my dog to the park. And I love going out on the weekends with my friends: it could be dinner; it could be drinks; it could be dancing. I love to go dancing.

## What is your favorite book?

I don't really have a favorite book. I have a favorite author. Actually, a couple of favorite authors, but I love P.G. Wodehouse the most, primarily because his books are set in a different time, and they are so hilariously written. They can transport you to a time when their problems were really just something else.

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

“Work is just a part of your life. It is not your whole life. And do not put so much pressure on yourself for everything to be perfect.” I got this advice around the same time in my life from a lot of different people—a couple of my best friends, several people at work, and more.



# NEW HIRES

Amane Advisors is pleased to introduce the newest members of our rapidly growing team.



## Sky Filippi

Joined the Philadelphia office in May 2022 as Project Manager.

Sky is an energy expert in the circular economy with a focus on the North American utility industry. He honed his brand marketing, project management, and GTM planning skills at more than 20 key energy companies. He has delivered successful energy and water programs to leaders in C&I businesses, civic agencies, educational institutions, and healthcare facilities.

Sky holds a dual bachelor's Cum Laude Honors degree in computer science and film production from CUNY Hunter College with minors in mathematics and art history.

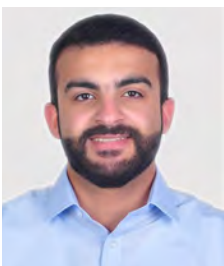


## Steven Gauthier

Joined the Oxford office as a Project Manager in June 2022.

Steven possesses varied experience having worked in project management, business development and held strategy roles in construction, oil & gas, and consulting. He has worked on such varied projects as scoping workstations and suppliers for the construction of a factory in China, selling monitoring solutions for gas pipelines in Australia, and supporting the sale of a formwork company in UK.

He studied aeronautical engineering at IPSA in France and has an MBA from Cambridge.



## Sayeed Abdulla Qarooni

Joined Amane's Bahrain office as Consultant in May 2022.

Sayeed brings to Amane a background in process engineering. His references include a theoretical design of a production plant and optimization of its production process; conducting a full hazard and operability (HAZOP) study on methyl ethyl glycol reclamation rig; and design, simulation and assessment of the technical and economic viability of a process plant for the production of ethylene from bio-ethanol.

He earned a bachelor's degree in Chemical Engineering at the University of Manchester.



# CHARTING THE COURSE FOR AMANE ADVISORS' NEXT CHAPTER:

## Reflections on the 2022, Company Retreat

*By Natalie Peña, Project Manager*



The fourth Amane Advisors annual company retreat was held on June 19-24, 2022 on the island of Jersey, United Kingdom.

This retreat was particularly special because the previous retreat was held just before the COVID pandemic hit and travel was restricted. After about two and a half years of not seeing each other, there was real excitement to gather everyone together in the same room and to meet face to face. New members of team were also keen to see the rest of the team for the first time.

Despite several travel hiccups (which affected almost everyone), we managed to assemble a group of about 50 people coming from our seven offices, including the latest additions to our growing family from A. Vaccani & Partner AG (AVP).

Having been full speed on projects for the first half of the year, many felt that the week away was a welcome

break from the usual routine, and a great opportunity to bond, sightsee and enjoy good food in the company of friends. Some of the fun things we did include a visit to the Botanical Gardens at Samares Manor, a speedboat ride to a beautiful island called Les Ecrehous, kayaking, and vineyard tour and wine tasting. We also managed a visit to an impressive waste recycling plant in Jersey.





I enjoyed the strategy seminars. It is inspiring to think about impact and where we can go next as a business. This made me feel more engaged in Amane's success and direction."

### Developing a shared vision for Amane

One of the main purposes of the retreats is for staff to come away with a common understanding of Amane's strategy and how we each contribute to that. In line with this goal, the opening seminar gave context on Amane's strategy and purpose, with our founder Thierry Noel giving a quick overview of our historic development. We then heard an introduction of the key pillars that define our business from our partner from Oxford, Geoff Gage.

Each member of our leadership team then shared thoughts about initiatives and topics they were passionate about leading and growing. These ranged from innovation to industrial water risk and supporting Development Finance Institutions to create opportunities to serve the African market. Each session involved targeted roundtable discussions to understand how excited people felt, problem-solve how we can address new markets, or brainstorm next steps in the path forward.

Many took away a unique sense that we have myriad opportunities lying ahead of us, and that we each have a role to play in defining and contributing to the next chapter for Amane.

### Working together for impact

One key theme that emerged during the retreat was "impact." Together, we discussed and co-created ideas about how we would like to make a stronger impact on the environment and society as a company, directly and through supporting Development Finance Institutions or Development Impact Funds. The sessions generated many great ideas ranging from investing consultant time to support impact-oriented companies or projects through a low-bono model to setting aside one day per year to help with cleaning up our beaches.

Some initiatives that emerged included investing a portion of our revenues into impact as well as assembling a small team of volunteers across offices that would look into our impact as a company to understand our own carbon footprint and brainstorm how we can reduce it, such as reducing emissions from computer use and travelling.



## Celebrating our values

Another highlight of the retreat was the presentation of special awards to recognize specific team members who embody each of Amane’s key values: (1) Excellence and Impact, (2) Integrity, (3) Growing Together and (4) Inclusivity and Diversity.

Throughout the retreat, it was also clear that what makes us special as a company and what binds us

together is that we live out these values in our day-to-day work, from how we set up a project to how we interact with clients, and how we work as a team. These values are also what enable us to work seamlessly across different offices, cultures and personalities with team members whom we have never met or worked with before.



### Excellence and impact

- Positive and long-term impact on our clients’ growth, profitability, and success
- Exceeding their expectations
- Making our clients market leaders
- High quality outputs and outcomes
- Being attentive, agile, adapting to their needs and constraints



### Integrity

- The highest professional and ethical standards, outputs
- Respect for others
- Sharing responsibilities
- Courage and accountability
- Confidentiality



### Growing together

- Teamwork between our people and with our clients
- Everyone has a contribution to make
- Long-term relationships based on trust and mutual benefits
- Empathy, open and honest communication
- Self-achievement and personal growth for our people and our clients
- Bold and passionate



### Inclusivity and diversity

- Diversity is a strength
- It brings value to our people and our clients
- Building a sense of belonging for each individual



I really saw strong engagement with the attendees. Lots of input and good discussions.”

# ABOUT THE AUTHORS

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