



CONNECTIONS

September / October 2017

Connecting People and Ideas to Water Solutions

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Reflecting on Our Industry

With preparations for the 2017 IDA World Congress complete, this issue of IDA Connections offers perspectives on a variety of topics, starting with “From Linear to Circular: A Global Water Conversation,” a discussion about the need for a circular water economy written by Shannon McCarthy, IDA 1st Vice President and Chair of IDA’s Foundation and Public Outreach Committee. Eng. Ivanildo Hespanhol, Ph.D., Professor at the Escola Politécnica, University of São Paulo, and CEO of the International Reference Center for Water Reuse-IRCWR/ CIRRA/USP, offers his thoughts on Advanced Water and Wastewater Treatment and Direct Potable Reuse.

Amane Advisors’ informative series on “Digital Transformation in the Water Industry” continues in our Trendwatch section, and we are pleased to include a report on the attachment of our newest IDA Fel-

low Holly Churman with PUB, Singapore’s National Water Agency. You can also read about results of the election of the 2017-2019 Board of Directors.

This issue also marks a milestone for IDA with the impending retirement of Secretary General Patricia Burke. Since IDA’s founding more than four decades ago, Ms. Burke has worked tirelessly on behalf of the Association, seeing it grow into the world’s leading global association focused on desalination and water reuse. On behalf of IDA, we thank her for serving IDA’s members and the industry, and wish her all the best in the new adventures that lie ahead.

We hope that you will be joining us in São Paulo, but IDA Connections will keep everyone informed about this exciting event with coverage in the November/December issue. ■

■ signifies the end of an article.

MESSAGE from the Secretary General



Patricia A. Burke
Secretary General

Here we are again, as we are set to convene the IDA World Congress. IDA will once more bring together delegates from around the world to attend this eagerly anticipated event. This one takes place in São Paulo, Brazil – a new location where we can spread the word about desalination and water reuse. Held every two years, each Congress has a different flavor primarily due to its distinctive location, advancements in current technology and developments in the business of desalination and reuse.

As I reflect on the early days of our Congresses going back to the 1980s, we have covered a lot of ground both on the globe and in the area of technology. Our Congresses have circled the world, taking us to Bermuda, Cannes, Florence, Abu Dhabi, Madrid, Dubai, Kuwait, Bahrain, Bahamas, Maspalomas, Washington, DC, San Diego (twice), Perth and Tianjin. Each one has its own memories, high

points and low points, the making of new friends and the reunions with old friends.

We have often repeated how these Congresses are the premier global event in our industry. And modestly speaking, they are!

The IDA Congress is the ideal place to launch a product or service, showcase your company, see what your competitor is promoting, explore the latest technology, examine trends in the industry, learn from case studies, meet new and upcoming talent – they are all at the IDA World Congress.

This year we are in Latin America, a new region of the world for us. Latin America is an important emerging market for reuse and desalination. For the first time and hopefully not our last, the local audience has demonstrated that they are keenly interested in and aware of the benefits that desalination and water reuse can bring to their region. The support from Latin American utilities, agencies and business organizations and general interest from throughout the region has been great.

An important part of IDA's mission is to bring the knowledge of how relevant and important desalination and reuse are to the various regions in the world. As the population grows and climate change further taxes our already stressed water supplies, desalination and reuse will play an even more important role in solving the growing demand for fresh water. IDA provides the platform for exchanging information about new technology and case studies to facilitate this process.

This will be my last IDA World Congress. After some 40 years serving as IDA's Secretary General, I will be retiring from my official duties at the conclusion of the event. It has been a great journey. I have seen our industry blossom. I have made countless friends from around the world. I have had the opportunity to reflect on the changes within our industry and within our association. IDA and the industry we serve is on the front line of helping the world solve water scarcity issues. We remain strong, relevant and committed to the future.

IDA offers many important and unique benefits that reflect our goal to educate and connect people and ideas to help solve the world's water problems. The World Congresses have earned IDA a great reputation and have become one of our flagship offerings. As we celebrate our industry in São Paulo, it is time to also look forward to our next journey – a return to Dubai, UAE in 2019.

I want to thank each one of you for making IDA the world's leading association focused on desalination and reuse. It has been a joy to work with you, and I hope that IDA will continue be a valued source for information, professional growth and business connections in the future. ■

From Linear to Circular: A Global Water Conversation



By Shannon McCarthy

Recent forecasts of world water needs and resources conducted by NGOs, national and international organizations all reach very similar conclusions: World water consumption will increase drastically in the next 30 to 40 years. The consensus of their estimates is that it will increase by 50%, no later than

2050. There is also agreement that much of the increase will be in developing countries and that conventional water resources cannot meet these needs.

Drastic water shortages are further quantified by the UN 2030 Agenda and Sustainable Development Goals (SDG). SDG 6 entitled 'Water and Sanitation' states: "By 2050, it is projected that at least one in four people will be affected by recurring water shortages..." and that "More international cooperation is needed to encourage water efficiency and support treatment technologies in developing countries."

A circular water economy is one of the solutions to meeting global water needs – probably the foremost. Moving from a linear to a circular water economy requires water systems that use appropriate water reuse technology to prepare wastewater for possibly several cycles of reuse. Where seawater or significant amounts of brackish water are available, desalination has the very important role of providing new water for the circular economy.

Water reuse and desalination technologies are becoming mainstream water supply solutions in creating a circular water economy to meet growing water needs. The biggest obstacles to water scarcity solutions are the lack of comprehensive water policies, essential funding and shortages of local personnel with the capacity to manage, operate and maintain complex

water systems. In all nations, cross-collaboration among stakeholders, innovative thinking, public policy to ensure resilient infrastructure, and education are needed to offset current and potential water scarcity.

IDA has a major advocacy role to play for our industry and for future generations.

This advocacy role has been recognized in one of the goals in IDA's strategic plan, which is to develop relationships and build cooperation with international organizations, global, national and local policy-making agencies, and financial organizations working in water sustainability.

Putting this strategy into action is one of the achievements of the Term 17 Board of Directors. With membership support, IDA has included water reuse throughout the objectives specified in the IDA Constitution and formally prioritized it at the same level as desalination. In 2016, IDA held its first conference exclusively dedicated to the discussion on water reuse and plans to do another in 2018.

In addition, IDA has brought this global conversation to our 2017 World Congress in São Paulo. Dr. Stefan Uhlenbrook, World Water Assessment Program Coordinator at UNESCO, and I will co-moderate a panel discussion on desalination, water reuse and circular water economics. IDA has secured the participation of several distinguished international organizations in this panel, including prominent representatives of World Bank, UNESCO,



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Digital Transformation in the Water Industry Part Three: Making the Business Case



By Gigi Karmous-Edwards

Amane Advisors recently conducted original research to better understand why the water sector has a slow digital technology adoption rate. Our research shows that the reasons are more complex than just having a fragmented market and a risk-averse industry.

In this series of articles, we have identified the key barriers to digital technology adoption and the actions that can be taken to overcome and address them. Some of the barriers identified include the lack of digital strategy and planning by both utilities and technology vendors, inefficient procurement processes, lack of strong and accurate business cases for technology purchase, and lack of accurate calculation of ROI based on a comprehensive set of KPIs.

Overcoming these barriers is essential, because the benefits of digital are clear and a priority (see Fig. 1). The majority of utilities report meeting or exceeding expected ROI from digital solutions implemented (see Fig. 2). If this is the case, then slow technology adoption rates are preventing utilities from enjoying the numerous benefits that result from implementing digital solutions. Building stronger business cases can help alter the path from slow adoption and provide support for investing in digital solutions.

Benefits of Digital Solutions

We know that digital has the power to help water and wastewater utilities save billions of dollars through operational efficiencies, improve service levels and reliability, and extend the life of ageing assets. Top ranked benefits from digital solutions were (see Fig. 3):

1. Issue prevention and improved service reliability
2. Real time event management
3. Extended lifetime of assets
4. Improved customer experience

There are many examples of utilities using a variety of digital solutions to improve operational efficiency. Utilities today use sensor data feeds for condition assessment information into a predictive risk model to reduce replacement capex, collect sensor data surrounding membrane operations and use machine learning to then control surrounding conditions such as temperature, aeration, and pressure for optimal efficiency, just to name a few.

The Digital Vision

The water sector is at a very early stage in its digital transformation; once the shift is made, the broader vision can become a reality. The utility of the future will move from a centralized, reactive mode of operation, to one of utilizing machine learning, mining live data from an army of sensors, running real time simulations and automatically controlling operations. This in turn will provide

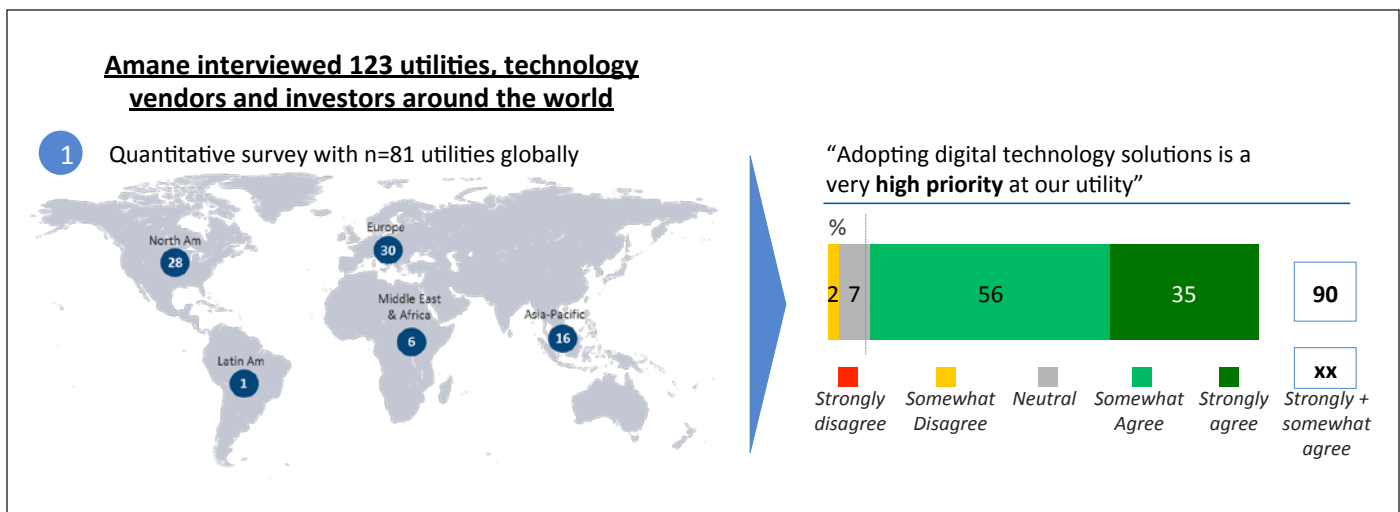


Figure 1

a means for extending the utility's insight and control across the broader water ecosystem.

The ultimate goal for utility operation is the creation of a digital double of the entire utility operation using a hydraulic model as the engine while updating with real time sensor data. Utilities in the future will most likely rely more on the use of drones and robotics. This vision could be a reality sooner rather than later by addressing the key barriers identified in the study.

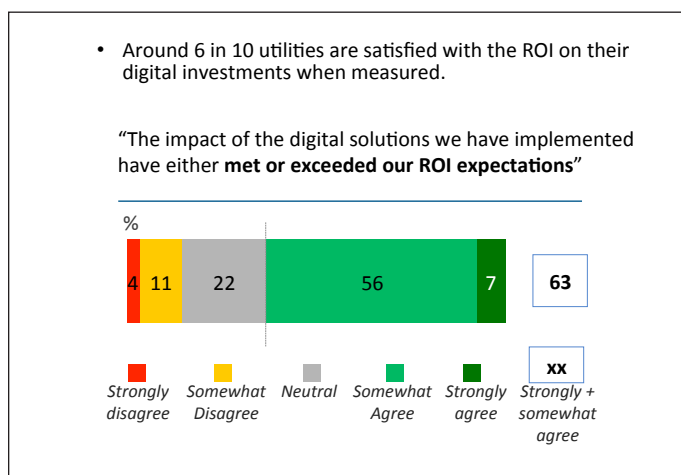


Figure 2

IDA Connections continues coverage of Amane Advisors' study on digital transformation of the water sector with the second in a series of articles for Trendwatch

Making the Business Case Stronger

Building stronger business cases is one step of many needed to help accelerate digital adoption in the water sector. However, the research shows that utilities, for the most part, are not satisfied with the strength of the business cases developed by technology vendors, and claim that if business cases were stronger, they would have an easier time getting budgets approved for these technologies.

When this was expressed to executives of technology companies, they responded by agreeing that they can certainly improve on their business cases, but they also claimed that in order to put together a proper business case, they need to get more information from utilities, including critical KPIs and vital reference information on the utility itself to properly calculate ROI.

That is one of the challenges that the Amane Digital Utility Group will be addressing by building utility reference models that can then be shared with technology vendors to help calculate stronger business cases and show the cumulative impact of data.

Gigi Karmous-Edwards is a Director of Digital Business for Amane Advisors, an advisory firm specialized in the water sector. She can be reached at gigi@amaneadvisors.com. ■

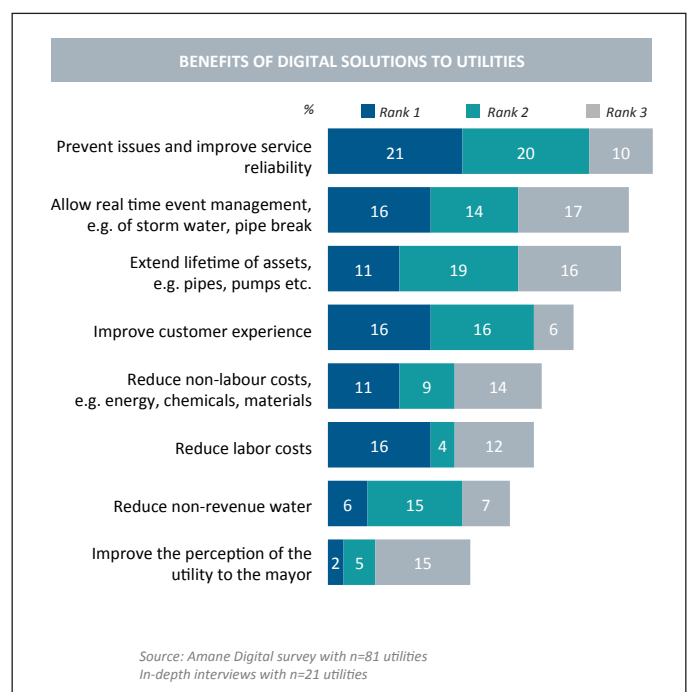
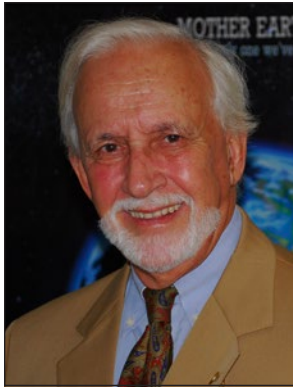


Figure 3

Advanced Water and Wastewater Treatment and Direct Potable Reuse



By Eng. Ivanildo Hespagnol, Ph.D.

The lack of hydric resources and the escalation of conflicts for water use have generated an emergency need for water conservation and treatment and reuse as formal components of water resource management. The benefits inherent in the use

of reclaimed water for purposes other than discharge include the preservation of high-quality sources, environmental protection and economic and social gains. However, besides traditional pollutants, both the sources of water available for public supply and wastewater contain emerging pollutants – both chemical and biological – such as endocrine disruptors, pharmaceuticals active products, cosmetics, nanoparticles, oocysts of cryptosporidium spp., cysts of giardia spp. etc., making it clear that conventional wastewater treatment systems are not able to produce effluents with sufficient quality to be utilized as sources of drinking water.

Since potable reuse is expected to be, inexorably, a fundamental tool for water resources management in critical areas, advanced treatment systems are needed to produce safe water for public supply.

In addition to conventional wastewater treatment systems such as activated sludge, filtration, disinfection, etc., the most adequate advanced unit processes needed to produce drinking water are as follows:

Membrane Systems

Priority and emerging pollutants with relatively low molecular mass – such as endocrine disruptors and small pathogenic microorganisms such as cryptosporidium spp., viruses and bacteria – can be effectively removed from wastewater by membrane systems of ultrafiltration such as MBRs and MBBRs.

The removal of endocrine disruptors and pharmaceutical products with molecular masses smaller than the mem-

brane cut-off molecular mass is due to the adsorption of suspended mass and organic material present in the wastewater on smaller particles. This allows for the removal of very small particles by ultrafiltration membranes.

Intermediary molecular mass compounds such as bivalent cations (Ca^{++} , Mg^{++} and Fe^{++}), or smaller viruses can be removed by nanofiltration membranes.

Soluble compounds with even smaller molecular masses such as NaCl can be removed by reverse osmosis membranes. Desalination systems utilizing reverse osmosis membranes are also the preferred technology to produce drinking water from the sea or from brackish waters.

Advanced Oxidative Processes

Advanced oxidative processes produce the free hydroxyl radical (OH^\bullet), a very strong oxidizing agent capable of oxidizing compounds that are not oxidized by conventional oxidants such as chlorine dioxide, chlorine, ozone or oxygen. The oxidation potential of the hydroxyl radical is of 2,8 eV, while chlorine dioxide is of e 1,50 eV and of chlorine is 1,36 eV. Laboratories studies with an advanced oxidative process by hydrogen peroxide and UV radiation has achieved significant removal of endocrine disruptors and pharmaceutical active products such as estradiol, ethinylestradiol, bezafibrate, carbamazepine, diazepam, diclofenac, ibuprofen, iopromide, sulfamethoxazole and roxithromycin found in natural waters.

Biologically activated carbon

Carbon columns activated by a strong oxidant agent (generally ozone, applied at the entrance of the carbon column) are utilized in advanced water treatment to remove biodegradable organic matter as well as nonorganic matter in the form of stable and too difficult to degrade compounds, and pathogenic organisms contained in surface or underground waters.

The removal of contaminants is done by three basic mechanisms: biodegradation, adsorption of micropollutants, and filtration of suspended solids.

The biofilm formed on the surface and within the carbon pores promote the consumption of organic matter liberating water, carbon dioxide, biomass, and simple organic molecules as sub products.

Wastewater Treatment for Direct Potable Reuse

Conceptually, indirect potable reuse is the treatment of municipal wastewater and its discharge into a protected surface or underground water body to work as an environmental buffer to further dilute the treated wastewater and to provide a lag phase to detect eventual toxic compounds or metabolites before the water reaches the intake of a water treatment plant.

The drawbacks of indirect potable reuse are the lack of protected surface water bodies to be chosen as environmental buffers and the high cost of urban pipelines to connect wastewater treatment plants to reservoirs and their respective water treatment plants.

Direct potable reuse consists of treating municipal wastewater to a safe level of quality allowing for its introduction in existing water distribution systems without previous dilution in the environment, as done in indirect potable reuse. This is the most economical way to do reuse for drinking purposes since there is no need to build a new water distribution system. This level of economy can be seen by considering that, from the total cost of a water supply system, about 75 to 80% is expended for the building of distribution systems, the remaining cost being attributed to water treatment. Therefore, the cost that otherwise would have gone to an expensive water distribution system is more than enough to build an advanced treatment system to secure safe water for public supply.

Public Perception to Direct Potable Reuse

Potential projects of direct potable reuse are always subject to positive and negative claims from the involved public.

The positive side is related to the perception that high-quality water will be available from the public supply, and that water will be permanently available since wastewater reuse is a drought-free technology.

The negative public perception is usually expressed as "toilet to tap water" or the "yuck factor", the late-term coined by the bioethicist Arthur Caplan from the University of Pennsylvania to describe the influence of instinctive responses against new technologies such as wastewater reclamation and use for drinking purposes; genetically modified crops; or trading carbon dioxide credits on the open market assuming this means buying rights to pollute.

Many countries, including Australia, Belgium, Namibia, Singapore, South Africa, the United States and many others already performing extensive direct potable reuse, have adopted programs to change the negative feeling of people. Efforts have included sanitary education, community meetings to explain technological aspects and measures for public health protection, as well as the use of newspaper, radio and TV to disseminate the safety and the environmental benefits provided by the practice.

The Goreangab Advanced Wastewater Treatment has been operating for more than 40 years a direct potable reuse system serving the City of Windhoek, capital of Namibia. Several epidemiological studies performed along these years have shown that diseases found in the city have no correlation at all with the water supplied to its inhabitants.

To bring people to the acceptance of the reuse scheme, several resources and programs have been utilized by the city's water authority. Many compelling phrases were also utilized to convince Windhoek's citizens of the safety of the practice. A remarkable one was "water should not be judged by its history, but for its quality".

Eng. Ivanildo Hespagnol, Ph.D., is Professor at the Escola Politécnica, University of São Paulo, and CEO of the International Reference Center for Water Reuse-IRCWR/ CIRRA/USP. He can be reached at ivanhes@usp.br. ■



Pollutants can be removed by membrane systems including reverse osmosis.

IDA Announces Election Results for 2017-2019 Board of Directors

IDA is pleased to announce the results of the election for the 2017-2019 Board of Directors. The new Board will be installed on October 19 at the conclusion of the World Congress in São Paulo. The slate of officers in addition to appointed affiliate directors for 2017-2019 will be named during the Congress, and the results will be covered in the November/December issue of IDA Connections.

Please join us in welcoming the 2017-2019 IDA Board of Directors:

Europe

Carlos Cosín Fernández,
Almar Water Solutions

Domingo Zarzo Martinez,
Valoriza Agua

Shannon McCarthy, United4Water

Alistair Munro, PROJECX /
International Power and Water
Investments Limited

Miguel Angel Sanz, SUEZ

Latin America-Caribbean

Alejandro Sturniolo,
Fluence Corporation

Middle East-Africa

Zamzam Alrakaf, Ministry of
Electricity & Water, State of Kuwait

Rachid Ghamraoui, BESIX Sanotec

Mounib Hatab,
Future Pipe Industries

Mohamad Jaroudi,
Future Pipe Industries

Fady Juez, Metito Overseas Ltd.

Imad Makhzoumi, ENOIA
Management Limited

Johnny Obeid, Veolia Environment

North America

Leon Awerbuch, International
Desalination Consultancy
Associates LLC

Juan Miguel Pinto,
Energy Recovery Inc

Devesh Sharma,
Aquatech International

Rick Stover, GP Water LLC

Pacific-Asia

Nobuya Fujiwara, TOYOBO

Maurice Neo, PUB, Singapore's
National Water Agency

Hideaki Kurokawa, Hitachi, Ltd.

Li Youqing, Harbin ROPV Industry
Development

Young Leaders Committee Members for 2017-2019



IDA is pleased to announce the Young Leaders
Committee Members for the 2017-2019 term:

NAME	ORGANIZATION/JOB TITLE	COUNTRY
Naomi Jones	H2O Innovation/System Sales Engineer	United States
Monica Boodhan	University of Trinidad and Tobago/Physics Lecturer and University of the West Indies (UWI), PhD Candidate	Trinidad and Tobago
Magda Armendariz	Instituto Tecnológico de Sonora/PhD Student	Mexico
Muhammad Wakil Shahzad	King Abdullah University of Science & Technology (KAUST)/Research Scientist	Saudi Arabia

NAME	ORGANIZATION/JOB TITLE	COUNTRY
Eduard Gasia Bruch	Dow Water & Process Solutions/Chemical Engineer	Spain
Nicholas Nelson	Omya International AG/Head of Competence Centre Water Treatment	Switzerland
Holly Churman	GHD/Lead Water & Wastewater Engineer	United States
Michael Warady	aquaTECTURE, LLC/Project Manager	United States
Kamakshi Sharma	QUA Group/Technology Development Engineer	United States
Rahul Hampaul	Indigenous and Northern Affairs Canada/Senior Engineer	Canada
Mohamed Atta Aljaj	Hamad bin Khalifa University (HBKU)/PhD Candidate	Qatar

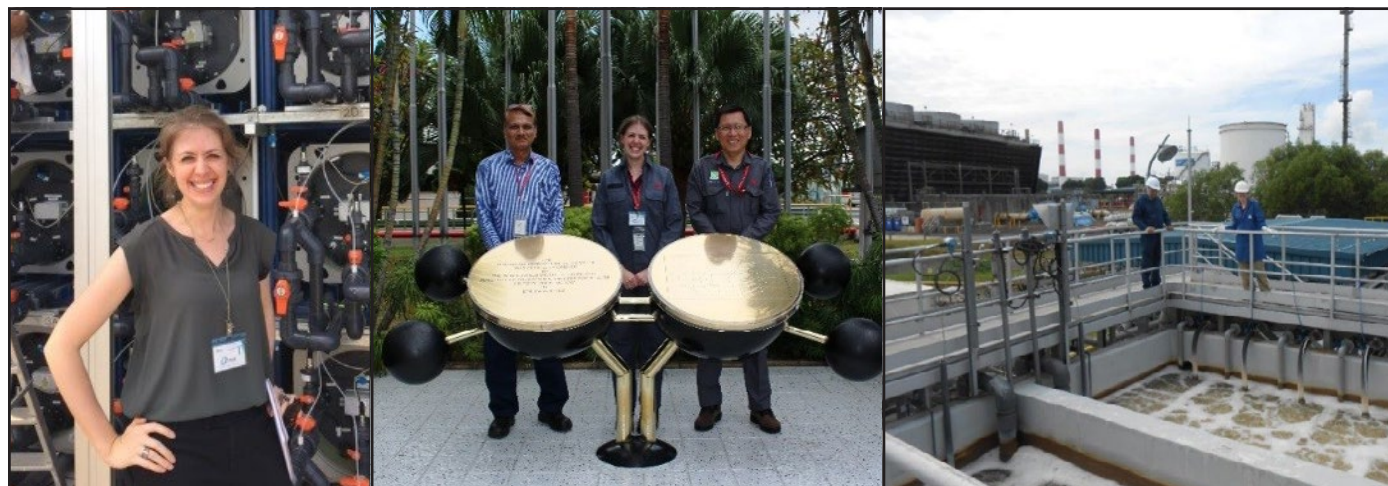
Committee assignments will be posted on the YLP website, idaylp.org. ■

IDA Fellow Completes Attachment with PUB, Singapore’s National Water Agency

Holly Johnson Churman, a lead water and wastewater engineer at GHD, connected with PUB, Singapore’s National Water Agency, through the 2016 – 2017 IDA Fellowship Award program. The purpose of the program was to exchange ideas relating to technology development, best practices, operations, policies, and strategies in desalination and water reuse. The specialized training took place over a four week period during July and August 2017.

A theme of importance to both Singapore and the United States, and Churman’s key research interest,

comprised the practice of adapting and applying water treatment technologies across industry sectors to solve complex problems, particularly relating to desalination and water reuse. The IDA Fellowship Award program was designed to explore this theme through discussions with PUB’s Technology Department and leadership, meetings with academia, and municipal and industrial site visits ranging from Singapore’s NEWater (high-grade reclaimed water) and desalination plants, to petrochemical and semiconductor facilities.



Churman viewing electrodeionization technology at the Tuas research and development test bed facility (left), and visiting a petrochemical complex (center) and a submerged ceramic membrane system treating refinery wastewater on Jurong Island (right).

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Singapore faces important challenges relating to the magnitude and constitution of its future water demand. By 2060, total water demand will double from today's 430 MIGD. Non-domestic water demand will increase from 55% to 70%.

According to its long-term water plans, PUB will expand Singapore's capacity of desalinated water and NEWater, two complex water supplies, to address these challenges. Desalinated water and NEWater will progressively support 30% and 55% of total water demand over the next 40 years, respectively. Industrial water reuse activities will complement this strategy, particularly for refining and petrochemical sectors on Jurong Island, where opportunities to reduce water usage are pronounced.

As desalination and water reuse are key to Singapore's water sustainability, PUB is on the constant lookout for innovative technology to produce water in a cheaper and more effective manner. PUB is researching, developing, and implementing strategies ranging from modelling, to equipment, and to monitoring approaches to optimize water usage in accordance with key metrics, such as water quality, energy consumption and cost. For example, a submerged ceramic membrane filtration system has enabled a refinery to recover wastewater for use in facility processes and cooling towers, reducing sourcing and disposal costs. The robust membranes, coupled with continuous air scouring, has reduced clean-in-place frequencies and intensities, and associated long-term operating costs.

PUB's approach offers valuable lessons for regions where desalination and water reuse can be leveraged to support local municipal and industrial water demands. For example, in the United States, Texas will experience an increase in water demand, as well as a change in demand mix, in coming decades. According to the Texas Water Development Board, total water demand is projected to increase by about 13% to nearly 21,000,000 acre-feet (approximately 15,500 MIGD) through 2060. Municipal water demand will increase from 28% to 37% of total demand, while industrial water demand will decrease from 72% to 63%. The vast volumes of water to be treated, despite the demand mix, combined with the availability of coastal seawater, inland brackish groundwater and recycling applications, offer opportunities to expand the state's water source portfolio to enable growth across sectors. Given the complexity of water treatment needs within

these sectors, such as produced water handling in the oil and gas industry, and ultrapure water generation for the state's expanding microelectronics sector, technology will also play a key role to support expansion.

Churman looks forward to applying lessons learned from the IDA Fellowship Award program to assist clients in solving complex problems in Texas, where she presently resides, and beyond. "PUB's progressive and rigorous approach to water management has enabled Singapore to overcome truly daunting challenges and prepare for the future," Churman says. "I am grateful to PUB and the IDA for the opportunity to work alongside talented individuals who have taught me important lessons about desalination and water reuse. I look forward to continuing my work in this field in the future." ■

World Bank, Brazilian Development Bank Become Strategic Partners of 2017 IDA World Congress

IDA is proud to announce that the World Bank and the Brazilian Development Bank (BNDES) are Strategic Partners of the 2017 IDA World Congress.

The World Bank



WORLD BANK GROUP

With 189 member countries, staff from more than 170 countries, and offices in over 130 locations, the **World Bank Group** is a unique global partnership: five institutions working for sustainable solutions that reduce poverty and build shared prosperity in developing countries. The World Bank Group has set two goals for the world to achieve by 2030:

- End extreme poverty by decreasing the percentage of people living on less than \$1.90 a day to no more than 3%
- Promote shared prosperity by fostering the income growth of the bottom 40% for every country

To help client countries achieve these goals, the World Bank provides technical assistance and financial products and services to developing countries, supporting a wide array of investments in such areas as education, health, public administration, infrastructure, financial and private sector development, agriculture, and environmental and natural resource management. Some of our projects are

co-financed with governments, other multilateral institutions, commercial banks, export credit agencies and private sector investors.

As the world's largest multilateral source of financing for water in developing countries, the World Bank is working closely with partners to achieve "A Water-Secure World for All," by investing in water solutions that enable universal access, promote water security and build resilient societies.

Brazilian Development Bank



BNDES

BNDES is the main financing agent for development in Brazil. Since its foundation in 1952, the BNDES has played a fundamental role in stimulating the expansion of industry and infrastructure in the country. Over the course of the bank's history, its operations have evolved in accordance with the Brazilian socio-economic challenges, and now they include support for exports, technological innovation, sustainable socio-environmental development and the modernization of public administration.

The Bank offers several financial support mechanisms to

Brazilian companies of all sizes as well as public administration entities, enabling investments in all economic sectors. In any supported undertaking, from the analysis phase up to the monitoring, the BNDES emphasizes three factors it considers strategic: innovation, local development and socio-environmental development.

In the 21st century, the BNDES aligns its operations with the reality of a globalized world, with economies deeply connected, and intensifies its efforts to take on roles and duties that surpass the borders of Brazil, in compliance with the increase of the international insertion of the country. Today, the Bank has an office in London, one of the most important financial centers on the planet. The BNDES also finances the expansion of national companies far beyond the borders of the country and seeks to diversify the sources of its resources on the international market. In addition, the BNDES has strengthened its efforts that are already traditionally conducted, such as financing exports of Brazilian goods and services in projects carried out overseas and institutional fundraising through multilateral organizations, sharing experiences and promotion opportunities. ■

Viewpoint (Cont.)

continued from page 3

FAO, Inter-American Development Bank and IHE Delft. The panel is designed to create lively discussion on the importance of water-energy-food nexus thinking and the role of desalination, water reuse and circular economics in satisfying the growing need for water security. Included in this session will be an overview of the newly published UNESCO World Water Development Report entitled "Wastewater, The Untapped Resource."

Another relevant action is the IDA Board of Director approval to establish the IDA Sustainable Water Resources Foundation (SWRF) as a USA 501(c)(3) non-profit corporation, to focus on expanding support for education, research, knowledge sharing and developing corporate social responsibility initiatives for industry consideration and collaboration.

The multi-step process for establishing the IDA SWRF is now underway and is expected to be completed in early 2018. We believe that the Foundation and its structure as a 501(c)(3) non-profit corporation will open new doors for support and participation by business, other non-profit organizations and agencies around the world that share our commitment to sustainable water resources.

Co-founder and a Partner of United4Water, a consulting firm operating in the water, food and energy sectors, Shannon McCarthy is 1st Vice President of IDA and Chair of the Foundation and Public Outreach Committee. She can be reached at mccarthy@united4water.com. ■

Calendar of Events

IDA 2017 World Congress on Water Reuse and Desalination

October 15 - 20, 2017

São Paulo, Brazil
wc.idadesal.org

5th Water Arabia Conference & Exhibition

October 17 - 19, 2017

Al-Khobar, Saudi Arabia
sawea.org/waterarabia2017

Aquatech Amsterdam 2017

October 31 - November 3, 2017

Amsterdam, The Netherlands
aquatechtrade.com/amsterdam

IDW 2017

November 22 - 25, 2017

Busan, Korea
desalist.gdrc.or.kr/main

KDPA-APDA Joint Forum

November 24, 2017

Busan, Korea
desalist.gdrc.or.kr/main

AWWA/AMTA 2018 Membrane Technology Conference & Exposition

March 12 - 16, 2018

West Palm Beach, FL
amtaorg.com/event/2018

Desalination for the Environment Clean Water & Energy

May 6-10, 2018

Nantes, France
edsoc.com

Ozwater'18 - Australia's International Water Conference & Exhibition

May 8-10, 2018

Brisbane Convention & Exhibition Centre (BCEC)
ozwater.org

CaribDA 2018 – Biennial Conference & Exposition

May 29 - June 1, 2018

Curaçao
caribda.com/event/caribda

Singapore International Water Week 2018

July 8-12, 2018

siww.com.sg

AWWA/AMTA 2019 Membrane Technology Conference & Exposition

February 25 - March 12, 2019

New Orleans, LA
More details to follow

IDA Connections is published six times a year by the International Desalination Association in February, April, June, August, October and December. It is available free of charge to all current IDA members. Each issue is available in digital format on the IDA website, www.idadesal.org.

The views expressed in articles contributed to IDA Connections are not necessarily the views of the International Desalination Association. IDA assumes no responsibility for unsolicited manuscripts and/or artwork.

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