







1

"Water Eco-Security 2015" Experience Sharing Workshop on Eco-Security Challenges & Metropolitan Adaptation Strategies

Co-organized by UNESCO-IHP – W-SMART – AMWA - SIAAP 3 to 5, December 2015, PARIS Locations: SIAAP HQ, 2 rue Jules César, 75012 Paris Institut de Physique du Globe de Paris, 1 rue Jussieu, 75005 University Denis Diderot, , 8 place Paul Ricoeur, 75013 Paris

WORKSHOP OBJECTIVES

The "Water Eco-Security 2015" Workshop, organized at the initiative of the W-SMART Association with the collaboration of UNESCO-IHP, AMWA (American Association of Metropolitan Water Agencies) and SIAAP (Interdepartmental Sanitation Syndicate of the Paris Agglomeration - Syndicat Interdépartemental pour l'Assainissement de l'Agglomération Parisienne), is expected to provide an international forum for bringing together drinking water and wastewater utilities, local governments, innovation corporations, R&D institutions, international organizations and other stakeholders in order to interactively assess eco-security challenges, metropolitan adaptation strategies and the perspectives of global solidarity through local initiatives of Disaster Resiliency Measures & Capacity Building.



Upgrading Utility Response Capabilities to Increasing Threats of Climate Change Impacts, Eco- Risks, Anthropogenic and Natural Disasters











Focus Themes

- Emerging climate change effects and eco-sustainability risks facing metropolitan governments in vulnerable regions with regard to increasing water stress or growing threat of natural disasters,
- Their current and future impacts on water basin governance models, regulatory frameworks and adaptation strategies which are currently being implemented by the utilities,
- The role of innovation and the rationale for investment in new technology solutions and "smarter" water network solutions
- The challenges of integrating renewable resources (e.g. reused water, desalination, etc.) in local water resources management, and
- The increasing needs for raising public awareness towards sustainable water security culture and global solidarity support to vulnerable regions

More specifically, the sessions will focus on:

- Lessons learned from recent events and case studies with regard to growing climate change impacts on eco-sustainability challenges and rising public concerns
- Emerging eco-sustainability regulatory frameworks and risks management adaptation strategies initiated by governments and operators to preemptively cope with rising climate change impacts.
- Current R&D industry's needs and initiatives for accelerating innovation, development, assessment and reliable integration of emerging technology solutions for ensuring sustainable security, accessibility and safety of water supply and waste water management services.
- Improving current Crisis Management capabilities and training strategies through field exercises at different decision making levels with updated guidelines and performance benchmarking,
- Global Solidarity support to local capacity building initiatives facing environmental and societal challenges of rising water stress or increasing threat of ecological disasters in vulnerable regions.

Acknowledgement

On behalf of W-SMART we would like to acknowledge and thank UNESCO-IHP, SIAAP and AMWA for their effective cooperation, the W-SMART Members who sponsored the Workshop including SUEZ Environment, VEOLIA, EPAL, SIG, MEKOROT, and VITENS as well as the REMOB Network of Mediterranean Basin Organizations and SmartWater4Europe, the EU-FP7 sponsored R&D Consortium for Smart Water Networks Demonstration for their contribution. Special thanks are extended to the members of the Workshop Steering Committee including Diane VanDe Hei, AMWA, John Sullivan, BWSC for W-SMART, Dr. Blanca Jimenez-Cisneros, UNESCO, Denis Penouel, SIAAP, Jean-Pierre Tabuchi, SIAAP, Francisco Cubillo, Canal Isabel II, Arie Amsalem, Mekorot, Eric Adamse, VITENS, David Alexandre, Tilia Solutions, and Yossi Yaacoby, WaTech, for their support and input for the planning of the upcoming Workshop.

Looking forward to a thought provoking Workshop on the climate change challenges, the threats and opportunities they pose to our local governments and water operators and the assessment of response adaptation strategies to ensure the security and sustainability of our vital metropolitan water supply services.

Bruno Nguyen President

VEOLIA COMEKOROT

Prof Ilan Juran Executive Director





















WORKSHOP PROGRAMME

December 3 10:00 am	Location: SIAAP HQ, 2 rue Jules César, 75012 Paris Registration
10:30 - 12:30 pm	Welcome – Jacques Olivier, General Director, SIAAP W-SMART General Assembly Meeting
1:00 - 5:30 pm	Technical Tour kindly offered by SIAAP - for registration please contact Mr. Bruno Nguyen at <u>b.nguyen@unesco.org</u> and Mr. Wilmer Cantos at <u>wcantos@nyu.edu</u> before December 1 st .
December 4 8:30 – 10:30 am	<u>Location: SIAAP HQ, 2 rue Jules César, 75012 Paris</u> Crisis Management Exercise – Christian Roche, Industrial Safety Expert, SIAAP (W-SMART members and invited experts)
December 4 10:30 am	Location: University Denis Diderot, 8 place Paul Ricoeur, 75013 Paris Registration
11:00 - 11:30 am	 Welcome (SIAAP, UNESCO-IHP, W-SMART, AMWA) Chair: Conceição Almeida, Advisor to the BoD, EPAL, Secretary General, W-SMART <u>Opening Comments</u>: SIAAP – Jacques Olivier, General Director, SIAAP UNESCO-IHP – Dr. Blanca Jimenez-Cisneros, IHP Secretary, W-SMART – Bruno Nguyen, President AMWA – Vincent Sapienza, Deputy Commissioner NYCDEP Workshop Objectives – Bruno Nguyen, President, W-SMART Delegates Introduction
11:30 – 1:00 pm	 Session 1 – Crisis Management Exercises & Capacity Building Chair: Eric Adamse – Security Policy Officer, VITENS SIAAP Crisis Management Exercise – Summary of Hot Points and Lessons Learned – Christian Roche, SIAAP, industrial safety expert Experience Sharing Panelists: MEKOROT – Arie Amsalem, Deputy CEO, South Region EPAL – Alexandra Cristóvão, Director of Corporate Sustainability <i>EPAL Present and Future</i> City of Mumbai – General (Ret.), Ashok Hukku W-SMART – Bruno Nguyen, President Panel Discussion – Crisis Management Exercises and Capacity Building























1:00 - 2:00 pm	Lunch
2:00 - 3:45 pm	Session 2 – Eco-Security Challenges – Post Disaster Observations & Lessons Learned Chair: Dr. Jacques Deveze, Former High Commissioner of Defense, French Ministry of Ecology and Sustainable Development, VP W- SMART
	<u>Keynote Speakers:</u> Vincent Sapienza - Deputy Commissioner, NYC-DEP <i>Post Sandy – Observations & Lessons Learned</i> Dr. Atsushi Masuko – President TSS – Tokyo Water Corporation <i>Disaster Response Experience of Japan - Lessons Learned and their</i> <i>Impacts on Current Practice</i>
	Bernard Michaux – Director of Production – CILE (Liège) <i>Emergency plan due to the pollution of a water network further to</i> <i>the inverse flow of non-potable water on a private connection,</i> <i>consequences and lessons learned</i> Amit Chanan, Director, Infrastructure, City of Sydney <i>Resilience – Learning from Recent Disasters in Australian Cities</i> Dr. Jairaj Pathak, Former Municipal Commissioner, Mumbai <i>Eco-Challenges and Current Response Practices of the City of</i> <i>Mumbai (TBC)</i>)
3:45 - 4:00 pm	Coffee Break
4:00 - 5:00 pm	Panel Discussion – Post Disaster Observations & Lessons Learned Chair: Dr. Jacques Deveze, Former High Commissioner of Defense, French Ministry of Ecology and Sustainable Development, VP W- SMART Panelists: keynote and Case Study Speakers
5:00 - 5:30 pm	Executive Summary of the Day (Sessions Chairs)
7:30 pm	Welcome Diner offered by SUEZ ENVIRONNEMENT
December 5 9:00 - 9:15 am	Location: Institut de Physique du Globe de Paris, 1 rue Jussieu, 75005 Welcome – Opening Comments – Bruno Nguyen, President, W-SMART
9:15 – 10:45 am	Session 3 – Adaptation Strategies for Mitigating Climate Change Impacts Chair: Prof. Fadi Comair, Honorary President of the MENBO, Vice President of SEMIDE 4





















	<u>Keynote Speakers:</u> Jörg Simon, CEO, Berliner Wasserbetriebe <i>Secure a Sustainable Watercycle against Coming Challenges</i> Regis Thepot, Director, Seine Grand Lacs Ido Rosolio, Former CEO, Mekorot <i>Food, Water and Energy - Resources that are Depleted as Mankind</i> <i>Grows: A Global Overview</i>
	Jean-Michel Tiberi, VP Business Development Cities, Veolia Eco Sustainability Challenges and Strategies Adapted By Veolia to Face the Effects of Global Climate Change
10:45 - 11:00 pm	Coffee Break
11:00 - 12:30 pm	Session 4- The Way Forward - Disaster Resiliency Measures & Capacity Building Chair: Denis Penouel, Deputy CEO, SIAAP
	 <u>Keynote Speakers:</u> Diane d'Arras, President Elect of IWA <i>Resiliency Measures and Capacity Building in climate change</i> <i>conditions and growing vulnerable countries</i>" Jack Baylis, CEO The Baylis Group, Los Angeles <i>Policies, Plans, and Practices – Climate Change and North American</i> <i>Local Government Water Agency Examples</i> Eric Macfarlane, Deputy Commissioner Infrastructure, NYC-DDC <i>Challenges and Current Plans of the Way Forward Towards a</i> <i>Resilient NYC</i>
	Panelists: Alain Palmans, Director General, CILE David Alexandre, Executive Vice President, Tilia Solutions Erich Shaw, Municipal Water Corporations Adviser Prof. Fadi Comair, Honorary President of REMOB (Keynote speakers Sessions 3 and 4)
12:30 - 1:30 pm	Lunch
1:30 - 5:00 pm	Session 5 - "Smarter" Utility Networks & Innovative Technologies Solutions " Co-Chairs: Bruno Nguyen, President W-SMART and Dr. Yossi Yaacoby, Director, WaTech, Mekorot
1:30 - 3:00 pm	R&D Forum – SW4EU Opening Remarks - Erick Oostermeyer, Coordinator SW4EU <u>Innovation Case Study</u> - Jean-Pierre Tabuchi, Prospective Advisor, SIAP
	Vitens EPAL SIG SW4EU
	Grupo Aguas de Portugal









SIAAP's Artificial Intelligence for a High Level of Environmental Performance

	<u>Panelists</u>
	Prof. Fernando Nardi UNESCO Chair, Univ. of Foreigners Perugia
	The city of Rome flood risk mapping program: enhancing resiliency
	using innovative GIS and hydro-modelling
	Prof. Fadi Comair, Honorary President of REMOB
	Prof. Isam Shahrour, Director, SUNRISE, Univ. of Lille
	SunRise Smart City: Large scale demonstrator of the Smart and Sustainable City
	Joep Vandenbroeke, Project Manager, Optiqua
	Optical Sensor Technology for Water Quality Monitoring
	François Prévot, IPGP, Sorbonne University
3:00 - 4:30 pm	Technology Assessment Demonstration Workshop
	<u>Opening Remarks</u> – Dr. Kim Ju Hwan, Director of Water Research Center, K-Water
	Innovation Case Study - Christophe Perrod, Deputy Director General, SEDIF
	The provision of public drinking water services in the greater Paris metropolitan area: Network innovation to a Smart network
	<u>Panelists</u>
	Catalina Pedraza – R&D, Thames Water,
	Dr. Cedric Auliac, CEA LIST
	Jordi Raich, General Manager, s::can, Iberia
	i::scan ™ – revolutionizing online water quality monitoring
	Prof. Luigi Franchioli, University of Pavia
	Smart Water Distribution Networks: a new relationship between delivered flow Q and nodal head H for Pressure Driven Analysis application
4:30 - 5:00 pm	<u>Session Summary</u> – Dr. Yossi Yaacoby, Dr. Kim Ju Hwan, Erick
	Oostermeyer, Bruno Nguyen
5:00 - 5:30 pm	Closing Comments Session
	Chair: Conceição Almeida, Advisor to the BoD, EPAL
	Closing Comments:
	SIAAP – Jacques Olivier, General Director, SIAAP
	UNESCO-IHP – Dr. Blanca Jimenez-Cisneros, IHP Secretary, W-SMART – Bruno Nguyen, President
	AMWA – Vincent Sapienza, Deputy Commissioner NYCDEP









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6









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TECHNICAL TOUR

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SEINE MORÉE: HIGHT PERFORMANCE WASTE WATER TREATMENT PLANT



Seine Morée is the last WWTP commissioning by the SIAAP. It is in charge of the treatment of WW from 6 municipalities (over 200 000 inhabitants) in the northeast of the Département de SeineSaint-Denis in the North of Greater Paris. The most recent biological type processes has been chosen, including a separation of biological sludge membrane. Its performance (reduction of 99% of suspended solids, 98% of carbon pollution, 97% of phosphorus pollution and 83% of nitrogen pollution) contribute to achieving the objectives of the Water Framework Directive and is involved in restoration of the Morée River. Technical Tour kindly offered by SIAAP - for registration please contact Bruno Nguyen at b.nguyen@unesco.org before November 30th.





















United Nations Cultural Organization

SPEAKERS PRESENTATIONS

SESSION 1



PROF. ILAN JURAN Executive Director of W-SMART

Prof. Juran's expertise covers areas of interest related to urban infrastructure engineering and innovative technologies for upgrading infrastructure performance, lifecycle extension and resiliency. He earned his Doctorate of Engineering, in 1977, and Doctorate Es Science from the University of Paris VI, in 1987. Prof. Juran's research was summarized in more than seventy refereed publications, technical papers and books. Prof. Juran is the Executive Director of W-SMART, the International Security Alliance of Water Utilities established in the aftermath of 9/11 to promote cooperation among European, Canadian, American and Israeli water utilities for upgrading security management capabilities. He is presently the Secretary of the Specialists Group on Water Safety & Security Management of IWA and the Associate Editor of the International Journal on Water Technology & Science published by IWA. In January 2010 Prof. Juran has been awarded the International Chair of Urban Engineering at the University of Lille. From1990 to 1998, as Head of the Civil & Environmental Engineering Department at the Polytechnic Institute of New York University, the prime responsibilities of Professor Juran included development of educational programs and research initiatives relevant to the urban infrastructure priority needs. For this purpose Professor Juran participated as a co-founder in the creation of several Urban Research Centers, including: The Urban ITS Center, the Urban Utility Center, The Construction Management Technology Center, and a National Science

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Foundation funded Institute for Civil Infrastructure Systems with NYU School of Public Administration, These centers have created the core network of the Urban Infrastructure Institute, which was established with the support of local governments, infrastructure agencies, and the NYC utilities. As the Executive Director of the Urban Infrastructure Institute and its Utility Center Prof. Juran's R&D projects have involved demonstration and assessment of infrastructure technology olutions in a variety of emerging fields, including: waste recycling for polymeric construction composites; seismic retrofitting; infrastructure asset management; infrastructure rehabilitation technologies; post-disaster urban recovery; and water safety and security, working with the city infrastructure agencies and utilities on field assessment and demonstration of innovative technologies for NYC underground Infrastructure rehabilitation projects. Prof. Juran has been actively involved in promoting decentralized cooperation among local governments both as Officer and Representativedelegate of the French Association of Mayors of Big Cities (AMGVF) to the UN and North America and as Chair of the Civil Society initiative which for five years (2006-2010) has been sponsored by the UN Secretary. He is a Co-Founder of several international organizations, including: Secretary General (1995 - 2005) of IMPACTS, International Forum of Transportation Officials of Metropolitan Cities in Europe, North-America, and Latin America, which is dedicated to sustainable mobility (www.impacts.org). the W-SMART Association (www.w-smart.fr), and the IWA Specialist Group on Water Security and Safety management.





EPAL









9











JACQUES OLIVIER **General Director, SIAAP**

Bio - After an engineering degree of Arts and Crafts (ENSAM), Jacques OLIVIER worked in the world of industry and public service. He thus integrated EDF, first as a maintenance engineer in a thermal power plant, then in the nuclear power plant of « Blayais" near Bordeaux. He then worked in the Paris region as an engineer in other



CONCEIÇÃO ALMEIDA W-SMART General Secretary

Bio - Since 2014, Conceição has been Advisor to the Board of Directors of Empresa Portuguesa das Águas Livres - EPAL, SA, the largest water supply utility in Portugal, where her responsibilities includes coordination of studies and projects regarding construction of EPAL's new Headquarters. Currently EPAL covers a much geographic area, covering 96 larger municipalities, including Lisbon and has responsibly to integrate and manage water supply and wastewater collection and treatment. She began employment with EPAL in 1989, as an engineer in charge of projects working on the initial mathematical model and starting the geographic information system of the water distribution network. In 1997, she was appointed as deputy director of water distribution system, prior to occupying the same position within the water production division. In 2003 as head of production, she was responsible for water production system operation and maintenance, as well as customer relations with municipal clients of the company. Between 2009 and 2014, she supervised several major investments related

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nuclear power plants and in hydraulic power stations before returning to the nuclear industry, where he participated in the programming of central stops. This course led him in 2004 on the way to the CCAS EDF, the largest works council of France; where he was first responsible for asset management, then became Deputy Director General and CEO. Now General Director of SIAAP the greater Paris interdepartmental sanitation authority. SIAAP daily cleans the wastewater of almost 9 million Parisians, storm and industrial water conducts large investment projects, sanitation master plans scientific and technical expertise in-house. to the design and rehabilitation of several of EPAL's main infrastructures as head of the project management division. Conceição is a Civil Engineer graduated at the Instituto Superior Técnico of Lisbon with two post-graduate qualifications in business management.



ARIE AMSALEM Deputy CEO, South Region, Mekorot

Bio - Mr. Arie Amsalem has served as director of the southern district at Mekorot since 2009. He has been a member of Mekorot's management since 2007, involved in setting long term strategies and company goals and approval and implementation of the company's long and short term development plans. The Mekorot Group includes the subsidiaries - EMS Mekorot Projects, which serves as the main contractor for the Group and Mekorot Development and Enterprise, which initiates projects in the field of water, waste water and effluent internationally. In his present position, Mr. Amsalem is responsible for the company's water supply system in southern Israel, including three water supply units, the district headquarters, production, generation and supply of 400 million cubic meters per year, development of complex water plants and their

















maintenance with a total financial scope of \$100 million per year. He manages a team of 365 employees. Mr. Amsalem is a member of the board of directors of EMS Mekorot Projects, whose annual revenues total \$120 million. EMS Mekorot Projects is engaged in all fields of production and execution of complex water projects, including projects totaling more than \$100 million for a single project. Prior to his present position, and for his past 26 years at Mekorot, Mr. Amsalem has served in a variety of positions, including Director of the Jordan district from 2007-2009, engineer in the southern district, information systems and computers manager and electrical engineer in the southern district. All these positions have provided him with a broad understanding of drinking water, waste water and effluent systems from a production and transportation, delivery and all water quality aspects. Mr. Amsalem has a B.Sc. in electrical engineering from the Technion - Israel Institute of Technology and an MBA from Ben Gurion University. Mr. Amsalem is married with 3 children.

Preparations for Crisis Management at Mekorot

- Mekorot, Israel's national water comany, is responsible for the supply of 70% of all the country's water and 80'% of its drinking water. Consequently, Mekorot is designated as a critical national infrastructure. The State of Israel and Mekorot are currently facing a variety of threat scenarios, such as: natural disasters such as earthquakes, state of war, contamination of the water sources, intentional poisoning of the water system, disruptions in the electrical supply, attacks on the communications system and cyber-attack. The Company's fundamental principles are based on the guarantee of operational continuity in normal and emergency situations; the quality assurance of the water, which takes precedence to the supply of water; constant operational redundancy; a command and control system with continuous hot backup and being prepared to supply water using different sources & connections. The components

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that ensure preparedness and organization for a state of emergency include: A civil protection system adapted to states of war, detailed procedures in the various emergency fields; Adapting the monitoring system and control rooms to all the required activities, including water supply, water quality, water safety, physical safety of the Company's facilities, while ensuring operational continuity; The Company is prepared for all extreme scenarios with emergency situation rooms deployed nationwide, at headquarters and the Company's districts, which are equipped with the necessary measures for complete functioning in a variety of threat & emergency scenarios; Training and on all levels of the Company, the various disciplines and of course collaboration with the relevant Israeli institutions. The Company's procedures designate the different levels of severity of the various threat scenarios and the full coordination of the manner of responding to them.



ERIC ADAMSE Security Policy Officer, VITENS

Bio - Since 2006, Eric Adamse (1960) is Corporate Advisor for Business Continuity & Security at Vitens Water Utility. Vitens, established in Zwolle, is the biggest water company in the Netherlands that provides 6 million customers with excellent tap and process water. Eric is responsible for the policy and implementation of all necessary measures against terror, (cyber)crime, fraud, hijacking and all types of natural disasters (all hazards approach) and interdependencies including crisis- and consequence management. Eric studied Chemical Engineering at Amsterdam University and has a background as a manager for R&D and Investment Planning at Vitens, Hydron and WMN. Eric started his career as a guality control manager at UTD (Unilever). Eric has further professional qualifications at The Hague

















University (Security Management), Neijenrode Business University (Management Development), (Homeland Tel Aviv Universitv Security). Trimension Institute (Professional Crisis Management), Control Risks (Crisis Management Training & Exercising) and IE Madrid (Executive Management for Security). Eric is married and has four children. His favourite sports and hobbies are tennis, snooker, fishing and photography. Since 2011 Eric is chairing the W-SMART Taskforce Emergency Response Exercise Training. Eric, as Chair of the Crisis & Management Taskforce, and Jean-Pierre Tabuchi, Change manager at SIAAP Direction Santé Environnement, would like to invite you to observe an crisis management exercise organized the 3rd of December at SIAAP at Paris. As a AMWA and W-SMART observer you can help to assess and advice SIAAP during the successive Exercise Assessment & Debriefing Session.



ASHOK HUKKU,Y.S.M General (Ret.) –S1 Crisis Management in Mumbai

Bio - Major General Ashok Hukku (R), Y.S.M. is a former infantry officer of the Indian army. Commissioned in 1965 he has extensive operational experience in India, Sri Lanka and Bangladesh. He is a recipient of Yudh Sewa He was an instructor at the Indian Medal. Military Academy and has held several General Staff appointments at brigade, division, corps and army levels. After commanding an Independent Infantry Brigade in Kargil, he was posted to the Embassy of India in Paris, from 1995-1998, as the Military Attaché with concurrent accreditation to BENELUX. As a Major General he commanded a mountain division in the Kargil war of 1999. After another general staff appointment at the HQ of the Western Army he was appointed as the Chief Military Intelligence Advisor in the Cabinet Secretariat at New Delhi. He retired in 2005 and

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was called as a Centre Director at the National Technical Research Organization in New Delhi. He sought voluntary retirement from NTRO in 2007 and settled down in the city of Pune. Post retirement he has been speaking at international seminars in The US, Europe and SE Asia. He is on the visiting faculty of NATO School in Germany and is a Security Consultant for OSCE. He also writes for "Defence and Security Alert", published from New Delhi.

Crisis Management in Mumbai - Mumbai is located on the west coast of India, it is the capital of the State of Maharashtra and is also the industrial and commercial hub of the country. Its population is 12.4 million. Vulnerability - The city is highly vulnerable to natural and manmade disasters (terrorist attacks). It experiences extremely heavy rain falls in very short periods resulting in floods and inundation bringing life to a standstill and causing human causalities and huge financial losses. Managing floods every year during the monsoons is the biggest challenge for the local administration. Cyclones and industrial disasters also pose a serious risk to Mumbai. The National Action Plan Committee has predicted an increase of 2 degrees C over the next 50 years and a 20% increase in rainfall over the next twenty years. Though much has been done the city is not prepared fully for the present scale of disasters due to flooding/inundation. Some of the utilities under the Municipal Corporation of Greater Mumbai (MCMG) that need urgent attention are: 24x7 water supply, cleaning of drains and sewerage and completion of storm water drainage systems, anti-flooding measures. Disaster Management in India - National Disaster Management Authority (DMA) works under the Ministry of Home Affairs, the nodal ministry for handling management of natural disasters viz. earthquakes, floods, cyclones, tsunami, landslides etc. and man-made disasters viz. fires, chemical, biological, radiological, and terrorist attacks. State Level DM - Down the line State and District DMA have been set up. There is a National Institute of Disaster Management and ¹10















battalions of National Disaster Response Force (NDRF). One battalion is located in Pune. NDMA & UNDP - NDMA works in close cooperation with UNDP. Government of India and World Bank provide funds to various projects for disaster management/relief. Technology - Remote sensing technologies are used for risk and vulnerability assessment and for evaluating



ALEXANDRA CRISTÓVÃO Corporate Sustainability Division in EPAL EPAL Present and Future

Bio: Alexandra Cristóvão has a degree in Materials Science and Engineering and is the head of the Corporate Sustainability Division in EPAL, the largest water supplier in Portugal. With 15 years of experience in the field, she is the liable for issues regarding compliance with the requirements of the management systems: quality, health & safety, environment and energy, social accountability, information security and business continuity. Managing several crosscutting projects regarding risk management and ensuring crisis management, emergency and contingency, she is also responsible for coordinating crisis cabinet in order to enable business continuity. She is the authorised interface with various external entities (e.g.: governmental organizations, police, municipalities, civil protection, environmental and security officials, NGO's, occupational H&S services, etc.). Created in 1868, EPAL is the oldest water supplier in Portugal, with a daily demand of 170.000 m3. Currently, the area served by EPAL covers 96 municipalities, including Lisbon, regarding water supply and wastewater collection and treatment. It occupies a land area corresponding to 33% of the Portuguese mainland and serves 3.8 million inhabitants.

impact of disasters. Attention Required - Though much work has been done there is a great need to: Establish or upgrade observation equipment and networks, Monitor the hazard properly, Improve quality of forecast and warning, Disseminate warnings quickly through the warning system and undertake disaster simulation exercises. largest, water supplier in Portugal. Since July 2015, the area served by EPAL covers 96 municipalities, including Lisbon, regarding water supply and wastewater collection and treatment. It now occupies a land area corresponding to 33% of the Portuguese mainland and serves 3.8 million inhabitants. For some time now, EPAL has been developing, and improving, the operational best practices in order to insure the safety of its infrastructures and maintaining the adequate levels of quality and quantity of the water supplying system, without interruptions.

Regarding Crises Management, risk analysis has shown to be crucial. Security and environmental officials, as well as other international organizations and NGO's, have proved to be important sources of information and improvements, as well as the results of the emergency and crises exercises. The main tasks ahead regard the enhancement of the awareness for these matters, the need to preserve adequate levels of communication, to ensure a reduced response time in emergency situations and provide satisfactory levels of business continuity. Additionally, current and future business challenges, associated to the company's new reality (with a much larger geographic dimension, the management of new supply systems and the integration and management of sanitation systems) also pose a defying role. Future plans in upgrading Crises Management capacity, include, among others, improving the business continuity system, strengthening resilience, along with the reinforcement of the human resources knowledge and awareness, as well as the consolidation of the Biosecurity Project.

EPAL Present and Future - EPAL is the oldest, and

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FADI GEORGES COMAIR Honorary President of the MENBO, Vice President of SEMIDE

Bio: Dr. Fadi Georges Comair, diploma from Texas and Harvard and French universities: Ecole nationale des ponts et Chaussés, and University of Claude Bernard de Lyon I, Ph.D. Civil Engineering, Hydraulics and Energy (High Honor). Dr. Comair returned back to Lebanon in 1993 to be nominated as President of Board for the Litani National Water Authority then he later on occupied the position of the General Director of Hydraulic and Electrical Resources at the Ministry of Energy and Water, Director of the Water Energy and Environment Research Center (WEERC) and professor at Notre Dame University (NDU). Dr. Comair is currently the Honorary President of the MENBO (Mediterranean Network for basin Organizations), the Vice President of SEMIDE (Système Euro Méditerranéen d'Information sur les savoir-faire dans le Domaine de l'Eau) since November 2005. a member of the water initiative of the Union for the Mediterranean UfM, active member at the EWRI-ASCE, and got the honor title of Diplomat, Water Resources Engineer (DWRE) given by the American Academy of Water Resources Engineers (AAWRE) for the fist time to a non-United States citizen, He is also a member of the French "Académie de l'Eau". All long his career, Dr.Comair conducted several initiatives and projects related to the water resources sector in the Mediterranean basin and in Lebanon: The ten years and strategic plan for the integrated water resources planning and management for Lebanon, The Union of the Mediterranean water strategy, The design and construction of dams, reservoirs and lakes (39 projects were designed from which 8 has been constructed or under construction), Recharge of aquifer projects of the sea coast of Lebanon, Design and construction of waste water treatment plants, Climate change

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adaptation strategy and impact on water resources, Impact of conflicts and population movements: Impact of Syrian refugees on the water resources management of Lebanon, Water governance, financing and economics, Nonconventional water resources with IWRM context: "New Water Mass", Water, energy, food and ecosystem Nexus at trans boundary level, Innovative scientific and technological tools and methodologies, Approaches for hydro diplomacy and managing trans boundary water. Dr.Comair has also published several books related to hydro diplomacy and water management: "Sciences diplomacv trans-boundary and water management-The Orontes river case", published with the UNESCO ", Atlas du développement durable et responsible de la France" under the union of the Mediterranean.



BRUNO NGUYEN W-SMART President

Bio - Bruno is since 2015 Senior Consultant at **UNESCO-IHP** (International Hydrological Programme), Water Sciences Division, based in Paris HQ where he his particularly in charge with IHP Theme 4 on "Water and Human Settlements of the Future". Bruno has an Engineer background in the corps of « Ingénieurs de la Ville de Paris ». As civil servant he worked 26 years for the Water Utility of Paris; his last positions there were Director of Operations and Director of Security & International. He is auditor of the Institut National des Hautes Etudes de Sécurité (institute of the French Ministry of Interior), and is very active within the International Water Association (IWA) as elected member of the Strategic Council, Chair of the Specialist Group on Water Security & Safety Management (W2SM), former Governing Member for France and former Member of the Programme Committee. Bruno gives lectures at Sciences-Po in Paris on Water 1 Management.















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CHRISTIAN ROCHE Industrial Safety Expert, SIAAP

Crisis management in sanitation utilities: SIAAP example - The SIAAP (Syndicat Interdépartmental pour l'Assainissement de l'Agglomération Parisienne) is the public service in charge to design build and operate WWTPs and sewer trunk network in the Paris area, with 9 million connected inhabitants. As major sanitation company operating in the France largest urbanised area, the SIAAP management became aware some years ago of the need to better organise our crisis response. This presentation will then explain our approach to this issue (especially the drivers, the main goals and the relation with the risk management strategy), our current organisation and in this context, a debrief of the tabletop exercise done in SIAAP the December 4th morning. Crisis management awareness was fostered by 2 drivers: (1) industrial risk management, with some damaging accidents and with requests from the authorities to build our crisis management due to the specific major risks in our plants; (2) flooding crisis management, in order to cope with the implementation of a global organisation in the Paris area. The SIAAP puts in place in early 2013, a centralised organisation (called CCC Cellule Centrale de Crise) which define the role and responsibility of the top managers during a crisis. It's foreseen for any kind of issues (industrial

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accident, flood but also staff fatalities, assets severe damage, extreme weather, sanitary crisis, strike,,...) with 2 levels of organisation. Classically, this central organisation is mainly in charge of communication management, supporting the field managers that handle directly the crisis and if necessary, trade-offs between the sites (sewer flows redistribution, assets or staff allocation during the crisis,...). This organisation was tested few times (2 times in relation with field exercise industrial accident at site and Paris city flood exercise ECOP15). The today tabletop exercise will give of course some hot points and complete the lessons learned in the previous exercises, and will allow us to better prepare the coming exercise for a major flood in all the Paris area (Sequana 2016). The crisis management challenge for sanitation companies could be seen as different that the one for drinking water producers, since we don't make a product that will be massively distributed to people. In one hand, it's true since drinking water disruption will quickly create major issues, whereas sanitation disruption may allow a longer reaction time. Also, the intentional pollution risk is much more important in drinking water than in sanitation (even if a major pollution of the river by sanitation could be a real issue). But in other hand, the 2 business operate major assets, essential for the community. Indeed, any major failure could impact severely the ability to live, especially in a big city. Then the operator responsibility for such services goes beyond a good operating performance, it encompasses a strong risk management with an efficient crisis management as "icing on the cake".





SW4EU









SESSION 2



JACQUES DEVÈZE Former High Commissioner of Defense and Security, French Ministry of Ecology and Sustainable Development, VP of W-SMART

Bio - After his studies at the Sorbonne, Jacques DEVÈZE joined the French administration in 1975 where he served during 36 years in various positions, mainly with the ministry of Ecology and Sustainable Development. Initially, he was in charge of heritage and landscape protection in eastern France before becoming the regional director for Architecture and the Environment In Burgundy where he represented the ministers of Culture, Public Works and the Environment during ten years. In 1992, he was appointed as deputy director for Human Resources at the ministry in Paris. In 1996 the Defence department was proposed to him. In this position, he became the defence and security advisor to the minister (s) and the high commissioner for water on interministerial level. With the help of the different water companies and public services he is the author of the national security directive for drink water. During the last three years of his professional life, Mr DEVÈZE worked for the general directorate for natural and technological disasters prevention as senior advisor in the field of crisis management and represented the ministry in the international fora (European Council, UN and the EU). Since he retired in 2011, he continues to be active, on a voluntary base, in the different fields dealt with during his civilian and military career (as a reserve officer). He is one of the vice-presidents of W-SMART and chairs other associations. Jacques DEVÈZE was awarded both French highest distinctions: the National Order of Merit and of the Legion of Honor

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Abstract - One forgets where the water comes from when it is abundant: you only have to turn the tap on.

When its distribution is disturbed by some natural, ecological, demographic, industrial or man-made disaster, we then perfectly realize its vital or strategic importance: water is necessary for the population to live as well as for conducting its own activities (economy, agriculture, industry, tourism...). Water must be protected and its distribution secured in order to make sure it can be supplied in the needed quantity and quality. The lessons learned from crises and disasters are numerous. They must allow us to anticipate and find out how to prevent the same events to happen again. With the storm Sandy, the energy and electricity shortage for a population of 7 million must have had an impact on water distribution in the city of NY. Draught and water scarcity in Australia are no longer a fiction but today's reality. The central government tries hard to compensate. Liège and Tokyo had to face emergency situations because their drink water was polluted and could not be consumed by the population. Finally, when the request for water is way above the production, when one third of the resource is being lost because of leakage, theft or trafficking, ecosecurity becomes a priority for the urban development. This will be a real challenge for the mega-cities of today, like Mumbai.



VINCENT SAPIENZA Deputy Commissioner, NYC DEP Post Sandy – Observations &

Bio: Vincent Sapienza is a Deputy Commissioner at the New York City Department of Environmental Protection. He manages the city's water and wastewater construction programs, which deliver around US\$1 billion per year in

Lessons Learned

















capital improvements. Mr. Sapienza is a Columbia University graduate and a New York State licensed professional engineer.

Post Sandy – Observations & Lessons Learned -New York City is a coastal municipality and some of its key water/wastewater infrastructure sits along the shoreline. During the past decade, concerns about sea-level rise have prompted the city to modify its design and construction criteria to better protect these vital assets. The impacts of Hurricane Sandy in 2012 accelerated the city's efforts to improve the resiliency of its operating facilities. The presentation will describe the damage caused by the hurricane and the sustainability work that is underway in NYC.



ATSUSHI MASUKO President TSS Tokyo Water Co., Ltd., Japan

Bio - Up until 2013, Dr. Atsushi Masuko served as the Director General, Bureau of Waterworks, Tokyo Metropolitan Government, and for over 30 years, he made significant contributions to the Bureau in the areas of both of engineering and management, on the field of potable water and industrial water supply in Tokyo. In 2012, Dr. Masuko was awarded the title of "Doctor of Engineering" based on his research on energy reduction in water supply system. Specialized area: Technology and management for nonrevenue water reduction, including leakage control and pipe network management, water meter management, and billing system of consumption control; Energy reduction and high quality potable water supply by direct water supply system without receiving reservoirs and advanced water supply system; Advanced water treatment with ozone contact and biological activated carbon treatment for high quality potable water supply in highly populated area like Tokyo.

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BERNARD MICHAUX Director of Production – CILE (Liège)

Bio: From February 2010: starting as production officer to become Chief Operating Officer in a public Company in Liege (CILE). As member of Management Committee, I am the the coordinator of the different technical services linked to the production and distribution of drinkable water for more than 600.000 people. From September 2007 to January 2010: COO in a chemical Company - other subsidiary of the significant company of Liège described below with more than 60 workers and active in the retreatment of high value materials. From January 1999 to August 2007: plant manager in a subsidiary of the same company (presence on 3 continents). My function consists in; managing of 50 gualified workers, leader in the decisions concerning either safety (OHSAS 18001 - Seveso company), quality (ISO9000 certification) and environment (ISO14001) for the plant, either the maintenance, costs and profitability of the different production processes, leader in the conception and following of new investments, frequent trips all over the world to meet foreign customers and the other plant managers of the company, support of the commercial department for the development of new projects on customer's applications, involvement in the general strategy of the subsidiary.

Emergency plan due to the pollution of a water network further to the inverse flow of nonpotable water on a private connection, consequences and lessons learned.



















JAIRAJ PATHAK Former Municipal Commissioner, Mumbai Water, Floods and Eco-Security: The Case of Mumbai

Bio: Dr. Jairaj Moreshwar Phatak is a retired Administrative Service (IAS) officer settled in Mumbai. He was Municipal Commissioner of Mumbai from 2007 to 2009 and was Secretary of four departments in the Government of Maharashtra for ten vears. Municipal Commissioner (City Manager) is the chief executive of the city government and handles water supply, sewerage, solid waste management, street, education, health and urban transport. Dr. Phatak was CMD of a Central Government Company Rural Electrification Corporation (REC) and Additional Secretary on the Ministry of Local self-government of India. He is a visiting professor to All India Institute of Local Self-government, Mumbai. He holds a Doctorate in Management and three Masters Degrees, one each from IIT (Indian Institute of Technology) Bombay in Physics and Harvard University, USA in Public Administration. He was adjudged the Best All-Round Trainee in 1978 IAS batch and have held several posts in state and central governments. He was UN Observer for the elections in South Africa 1994. He was member of the winnings team of IIT Bombay in the All India Inter University Chess Tournament in 1974 and was later President of Maharashtra **Chess Association**

Abstract: Mumbai (Population 12.4 million), is the largest city in India and its financial capital. During the last few years, the city has experienced extremely high rainfall on individual days causing fears of inundation. Flood management during the monsoons has thus emerged as the most serious challenge. Mumbai gets an annual rainfall of 2500 mm spread over four months. On the 26th July 2005, the city was

hit by a 900 mm rainfall coinciding with a high tide that brought city to a standstill. More than 150 people died due to floods and another 247 died due to diseases. Thousands of properties were damaged with loss to economy estimated at Rs. 2.47 billion. The above signature event has formed the basis for disaster planning in Mumbai. Key steps for eco-security are contour mapping, wider drains with higher run-off coefficient, additional pumping stations in low lying areas, repairs to old buildings and retaining walls on hill slopes to prevent landslides. Every year for April onwards, monsoon preparedness is the buzzword. SOP guidelines have been developed. However, high rainfall coinciding with high tides is an unpredictable event. Climate change predictions are too distant for a systematic planning.



AMIT CHANAN Director, Infrastructure, City of Sydney

Resilience – Learning from Recent Disasters in Australian Cities

Bio - Dr. Amit Chanan is the Director of City Projects and Property at the City of Sydney, Australia. In this role Amit is responsible for providing executive leadership to the City of Sydney's infrastructure delivery program, including several initiatives under the City's Decentralized Water Master Plan. He is also responsible for ensuring sustainable performance of City's own multi-billion dollar property portfolio. Prior to this role, Amit was the Chief Operating Officer with the New South Wales State Water Corporation, in Australia. In this role, he was responsible for managing \$3.8 billion worth of water infrastructure assets including 20 large dams and 300 weirs. Amit led the transformation following the merger of State Water Corporation and the former Sydney Catchment Authority to form Australia's largest bulk water supply entity the Water NSW. Amit has held various other positions within the NSW

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Public sector including at the Kogarah City Council, the Sydney Catchment Authority and the Hawkesbury Nepean Catchment Management Trust. Amit is a recipient of the Churchill Fellowship (2013) to study flood operations in dams. He is a Fellow of the Australian Institute of Engineers. Amit has maintained a strong interest in academia, and is currently a Visiting Fellow and a Member of the Professional Advisory Board at the University of Technology Sydney. In addition, he is the Vice Chairman of the International Water Association's Specialist Group on Water Security and Safety Management, and a member of the editorial board of UK's Institute of Civil Engineers' Journal of Municipal Engineering.

Resilience - Learning from Recent Disasters in Australian Cities - A presentation on the recent natural disasters in Australia and how these have shaped the resilience of Australian cities and water utilities in particular. The presentation will cover the topic of resilience as a distinct objective to disaster response.

SESSION 3



IDO ROSOLIO Former CEO, Mekorot

Food, Water and Energy -Resources that are depleted as Mankind Grows: A Global Overview

Bio - Experience includes; CEO of TELEMENIA an Israeli EPC provider for mead size power plant in the third world, Managing director of IMA (Infrastructure Management Administration) from Mitrelli group, Chairman of the advisory board at Starplast, Senior consultant for Management, Energy, water Infrastructure and regulation, Senior Vice President of BAZAN Group the Largest Israeli petrochemical group, CEO of Mekorot Israel National Water Company, General Manager and CEO of Ashdod oil Refinery and various managerial positions in the Israeli industry. Mr. Rosolio holds a BSc in Mechanical Engineering from Technion Haifa in 1982 and an International Executive, MBA from Tel Aviv University and North Western University (Chicago) in 1998.

Food, Water and Energy - Resources that are depleted as Mankind Grows: A Global Overview - As the global population increases, the

availability of water and energy - the source of life -decreases. Crop growth and food production

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food currently uses 70 percent of the potable water in the world. In order to extract, treat, transport and distribute water, large amounts of energy are needed. As for producing energy, current processes require the use of large amounts of water. It is this interdependency or as should be stated the "food-water-energy" nexus" trait that all three of these resources have. The food-water-energy nexus expresses itself, among others, in the trend of food prices that follows, almost precisely, the global price of oil. The depletion of resources as the global population increases, threatens the sustainability that we are all of us are trying to protect. Integrating these three resources is not a simple solution yet is the only viable solution for future sustainability. The roadmap for changing this trend of depletion is full of challenges, will viewing this nexus in a global require perspective, both politically and technically, that takes into account the interests of all stakeholders including various peoples and nations of the world.





EPAL

















JÖRG SIMON **CEO Berliner** Wasserbetriebe Secure a Sustainable Watercycle against Coming Challenges

Bio - Born on 23 April 1962 in Mechernich, Germany. Married, three children. Education -University degree in civil engineering, RWTH Aachen University degree in industrial Aachen. Professional engineering, RWTH experience: Nov 1999 Berliner Since Wasserbetriebe. Berlin Chairman of the Executive Board, Since Nov 2002 - Berlinwasser Holding GmbH, Berlin Member of the Executive Board, Mar 1999 – Oct 1999 - Compagnie Générale des Eaux Deutschland GmbH, Berlin, Managing Director, 1998 - Oct 1999 - OEWA Wasser und Abwasser GmbH, Leipzig, Chief Executive Officer, 1996 - Oct 1999 - OEWA Wasser und Abwasser GmbH, Leipzig, Managing Director, Responsible for investments, marketing, accounting, legal affairs, purchasing, 1992 – 1996, VEBA Kraftwerke Ruhr AG, Gelsenkirchen, Consultant for power industry, planning and controlling, 1990 - 1991 RWTH, Aachen, Assistant at the professorship for heat transmission.

Secure a sustainable watercycle against coming challenges - Berlin's drinking water is a natural product extracted from regional groundwater. Ideal geological conditions, extensive water protection areas and strict precautionary principles ensure the highest quality of water. As for drinking and household use the water needs no further treatment. High-standard wastewater treatment, large water conservation areas in the city as well as the soil layers which clean the water in a natural way ensure good groundwater quality. In the waterworks only the amount of contained iron and manganese is eliminated by aeration. No chemicals are added. Berliner Wasserbetriebe has to face impacts of the climate change. There will be less rain and rainfalls will concentrate on few but heavy

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events. As a result, less rainwater will infiltrate the soil and recharge the groundwater resources. The rivers Spree and Havel will carry even less water than today. This may cause measures in different parts of the water cycle: The monitoring and management of quality and quantity of the groundwater resources and the whole water cycle is vital. Forecasts show that no water scarcity in terms of quantity has to be expected in the metropolitan area of Berlin. These forecasts have to be updated periodically. Second, the resource quality needs to be strictly monitored. For instance, trace organics from pharmaceutical residues are detected in the drinking water where the urban water cycle is narrow, i.e. where the discharge of purified wastewater into waterbodies is close to the water catchment area. Berliner Wasserbetriebe also observes an increasing concentration of sulphate in the river Spree. The sulphate originates from coal mining activities executed at about 150 kilometres southeast of Berlin. Trace organics and sulphate require technical solutions which are being worked on these days. Stormwater management is also essential. Measures shall be taken in order to increase the amount of locally drained stormwater. The stormwater that is collected needs to be managed to reduce overflows from combined sewers caused by heavy rainfall. This is done in ways. Berliner Wasserbetriebe has two automated its pumping stations so that is possible to operate waste and stormwater flows centrally. What is more, a programme has been established to extend storage capacities in the sewer system. By 2020, a storage capacity of 307,000 m³ will be available. The management of natural resources is crucial since the drinking water comes from regional resources. This includes the near-natural water treatment, groundwater enrichment and the thorough cleaning of wastewater, which flows back into the natural cycle after use. Resulting from the European Water Framework Directive the German legislation will tighten the monitoring values for the parameters nitrogen and



















phosphorus. Wastewater treatment plants need to be equipped with new technologies to meet these values. Berliner Wasserbetriebe has begun to expand the cleaning capacities of one treatment plant. The next will follow. In addition to the operational challenges, Berliner Wasserbetriebe also faces effects of the demographic change. Young employees are mainly recruited from apprentices and students who already do their practical trainings at Berliner Wasserbetriebe. A recruiting strategy is being worked on.



JEAN-MICHEL TIBERI **VP** Business Development Cities, Veolia Eco Sustainability Challenges and Strategies Adapted By

Veolia to Face the Effects of Global Climate Change

Bio - A graduate of France's HEC business school, Jean-Michel Tiberi has been working in Veolia since 1988 period during which he developed deep international experience in managing water and electricity utilities and in launching new business under challenging conditions. His work in Veolia has led him to destinations such as Mexico, Colombia, Chile, Puerto Rico and the Caribbean area. Between 2011 and 2014, Jean-Michel Tiberi hold the position of CEO of Veolia in Morocco, heading 25/30 years PPP contracts in Rabat, Tangier and Tetouan: electricity supply, water supply, waste water collection and treatment services, customer service, asset management and construction program. In 2014, he joined the newly created Innovation & Markets Department at Veolia's headquarters, as Vice President of Business Development Cities.

Eco Sustainability Challenges and Strategies Adapted By Veolia to Face the Effects of Global Climate Change - (1). Circular economy and water: reuse - Reintroducing wastewater into agricultural and industrial cycles, and even domestic consumption, is one solution for

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water shortages – Windhoek. overcoming Seawater desalination provides a precious alternative resource. The world leader for desalination, we have extensive expertise in the very latest filtration technology and are working actively on limiting its environmental footprint. (2) City resilience to withstand water shocks and stresses - Floods: a good real time flow management (sewage network management, water basin management) allows limiting the overflows and the impacts of flooding to the neighboring population. Proactive management of the rain event leads to significant CAPEX savings. In case of extreme rain events, Veolia can provide flood forecast services for big cities that allow the City to warn the population at threat and contain the damage - Copenhagen + La Bièvre - Acts of terrorism New smart equipment allows detecting in real time any potential damaging intrusion in the water network - London Olympic Games - Natural disasters Veolia has the capacity to deploy means in emergency situations - Earthquake and tsunami rescue effort in Japan (3) Towards new business models related to resilience - Resilience issues may be a fertile ground for new Performance Based Contracts.



REGIS THEPOT General director of EPTB Seine Grands Lacs, Paris **EPTB Seine Grands Lacs**

Bio - Regis THEPOT, born in 1953, has a 30 years of experience in water and river management. He holds qualification in civil engineering, superior studies in urban and land use planning, as in applied geology. In 2009 he took up the position of general director of the public Seine river organization (in charge of flood prevention and of low water support in the Paris area). He was before at the head of Etablissement Public Loire (public river organization gathering communities and local authorities at the basin scale) during 12















years. In the 80's he was much involved in the conflicts about dam construction on the Loire and was one the actors of Plan Loire (an integrated river master plan for the Loire). He was also at the initiative and general delegate, between 1995 and 2004 and 2011 and 2012, of the French organization « AFEPTB » whose goal is to facilitate exchange of knowledge and experience between public authorities in charge of river basins all around the country. Regis THEPOT has an experience in several European and Chinese projects and was an invited speaker in several important international events as : World water forum in Mexico (2006) and Marseille (2012), Yangtze and Yellow river forum (2007/2009), Room for the river final conference in Rotterdam in 2012, UNISDR Sendai conference in 2015. He is also deputy general secretary of French water Academy since 2014

Presentation of EPTB Seine Grands Lacs - Created in 1969 to prevent floods in Paris region and to support low water flows during drought

periods, IIBRBS (Interdepartmental Institution for Seine basin reservoirs) is a public River basin organization covering the Departments of Paris, Hauts-de-Seine, Seine-Saint-Denis and Val-de-Marne and the upper catchment of the Seine River and its main tributaries. To fulfill its missions, the Institution manages four reservoirs, representing a total storage capacity of 810 Millions m³, located along the Seine, the Marne, the Aube and the Yonne Rivers. In 2011, it was renamed EPTB Seine Grands Lacs, to account for its new status as a public territorial basin Institution (EPTB) after being expanded to encompass the entire Seine Basin, beginning upstream from the confluence with the Oise River and to increase flood and drought prevention actions at this scale. The Implementation of PAPI Ile de France Seine and Marne including Paris flood prevention is one of its new priorities. Its missions have likewise been extended geographically, so that it now works alongside national and local governments to provide information, activities and coordination.

SESSION 4



DENIS PENOUEL Deputy CEO, SIAAP

Bio - Denis Penouel has 30 years of operational responsibilities in the field of water, waste and energy in public authorities and private company. As a civil engineer he has a Master of Public Management of Ecole Nationale des Ponts et Chaussées and a graduate of the Engineering School of the City of Paris, School of Urban Engineering. As Deputy General Manager in SYCTOM he was involved in household waste management in the whole Paris area Development and implementation of the

investment policy based diversifying on waste household processing means and modernization industrial tools, of project management of major development projects .Implementation of local consultations and public debates, environmental quality charters and As Director of Production and monitoring. Development in CPCU (GDF SUEZ group) he had operational responsibility for energy generation tools (heat, electricity) company planning and implementation of the investment policy in renewable also responsible for International Development of the Company. Then for City of Paris, Head of Services for Water and Sanitation, Definition and monitoring water policies of the City of Paris (blue book), Operation and modernization of the sewerage network in Paris and Organizing authority of the public service of drinking water including oorganization, of

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distribution of non-potable water service. Now Deputy Director General of SIAAP, the greater Paris interdepartmental sanitation authority. SIAAP daily cleans the wastewater of almost 9 million Parisians, storm and industrial water conducts large investment projects, sanitation master plans scientific and technical expertise inhouse.



ERIC C. MACFARLANE NYCDDC Deputy Commissioner

Challenges and current plans of way forward towards a resilient NYC

Bio - Eric C. Macfarlane leads the New York City Department of Design and Construction, Infrastructure Division with a technical staff of 500 employees, consisting mostly of engineers, project managers, and analysts. The division is responsible for the design and construction of the consolidated roadway, sewer and water main capital infrastructure programs for the City of New York. Currently the division has a 5 years capital plan portfolio of 365 projects in various, phases, from planning, design and construction, valued at more than \$5.0 billion. A few significant active projects under his management include: connecting the final section of a third water tunnel to the City's water distribution system, project valued at more than \$235 million, and the East Side of Manhattan Coastal Resiliency, a \$335 million project. The Infrastructure Division also procures the services of a large number of consultants for both design and construction provide management who supplementary assistance in the delivery of DDC's annual infrastructure projects commitment plan. He has a Bachelor of Engineering degree from the City College of New York, and a Master of Science, Civil Engineering degree from Polytechnic Institute of New York (NYU-Poly). He is a New York State licensed Professional Engineer.

Challenges and current plans of way forward towards a resilient NYC - New York City

experienced three extreme weather events in the span of about one year since August 2011: Hurricane Irene, Tropical Storm Lee, and Super Storm Sandy which inflicted significant economic, more than \$19 billion, and material damages to businesses and more than 2 million residents. In addition, 44 New Yorkers tragically lost their lives during this storm. New York City, with 520 miles of coast line, proved to be vulnerable to Sea water storm surges. This clear demonstration of the lack of resiliency prompted the various local and federal governmental agencies to launch into the development of innovative, community driven planning programs and conducting design competitions to find best available solutions to mitigate damages from future extreme weather events which are predicted to intensify with global warming. One winning concept resulting from a design competition conducted under the auspices of the Federal agency, U.S. Housing and Urban Development (HUD) was produced by the firm Bjarke Ingels Group (BIG), and is a flood protection system encompassing the southern portion of the Manhattan water front which is referred to as the "Big U". The NYC Department of Design and Construction was given the task of developing the first phase of the "BIG U" conceptual design into a project Known as the East Side Coastal Resiliency (ESCR) sponsored by the Mayor's Office of Recovery and Resiliency.



DAVID ALEXANDRE Executive Vice President, Tilia

Bio: David Alexandre has more than 20 years of international experience in the development and management of large scale projects and urban services mostly in the water sector. He developed a broad spectrum of experiences, modernizing municipal public companies and developing major PPP projects in such cities as Paris, Berlin, The Hague, New York and Washington DC. David















is now Executive Vice President of Tilia, partner of cities, communities, public and private utilities, industrial businesses and co-investors who seek to develop new projects, make new investments, improve their operations, redefine their strategies and manage increasingly complex challenges in the fields of water, energy and environmental services. David recently (2012-2014) led the operational excellence transformation program of the New York City Department of Environmental protection and led the comprehensive assessment and optimization of the Washington DC water supply organization. Previously, David has been COO of municipal energy businesses in Germany for the Veolia Group (2010-2011) and between 2007 and 2010 was the water CEO for the Benelux countries (Netherlands, Belgium and Luxemburg). Before this, David has been responsible for the water supply of the city of Berlin (Germany) leading the transformation of this department into a more efficient and reliable service. David has developed particular expertise in asset management, operational excellence, change management and large project development. On these topics he is sharing his practical experience, giving regular lectures to graduate students in urban the infrastructure management department of the New York University. He holds graduate degrees in Business Administration and in Engineering from ESSEC Business School and Arts et Métiers - ParisTech.



DIANE D'ARRAS President Elect of IWA

IWA Vision and Initiatives to Support Adaption Strategies of Water Utilities Facing Climate Change Impacts in Vulnerable Regions

Bio - Her career has enabled her to hold positions of responsibility, to gain a broad vision and experience in the various issues involved in water and sanitation management. She started in a Public Water Agency, which allowed her to

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understand the importance of integrated resources management. Later, she joined Suez Environment where she was able to develop wide operational experience in utilities, first in her native country, France, and in 1993 in Argentina. In 1998, she made a big switch to Research and Development, first as Head of R&D at Degrémont and then in the same position with Suez Environnement. She faced there the challenges of research, developing internal and external partnerships with the water R&D networks and professional associations, at European and international levels, with universities, utilities and various industrial entities. This has given her the opportunity to establish extensive contacts in developed countries as well as in emerging countries, in Europe, America, Africa and Asia. It has made her highly aware of the diversity of situations and challenges in the water sector. Current positions - Eureau (Federation of European Water and Wastewater Services): Board Member since 2015; The National Academy of Technologies of France: Elected Member in 2014.; ACEA, a listed public water and energy utility in Italy: Board Member since 2013; Ecole Nationale des Ponts et Chaussées, France: Board Member since 2013; IWA (International Water Association): Vice President since 2012; Suez Environnement, France: since 2011, Executive Vice President Water Europe in charge of operational management, strategy, partnerships in several European countries (Italy, Greece, Czech Republic, Central Europe).



JACK BAYLIS

President and CEO, The Baylis Group, LLC

Los Angeles Water, More Self-Reliant and Resilient for the Future

Bio: Mr. Baylis has excelled in management, operations, business development and client service roles. He has achieved success as a principal, director, and manager of numerous environmental, civil infrastructure and water

















programs and projects. He has experience with p&l responsibilities, technical review, project & program management, and staff development; he has served on joint venture boards specifically focused on strategic and larger programs with construction values over a billion (US) dollars. He specialties include strategic investments and development, understanding how utilities are effective, business development, operations, join ventures, contracts, procurement negotiations, program management, and geopolitical positioning. Mr. Baylis has also served on community, non-profit, and government service boards and commissions including as a Governor appointee to the California Fish & Game Commission and is a US Presidential Appointee to the National Infrastructure Advisory Council (NIAC).

Los Angeles Water, More Self-Reliant and Resilient for the Future - Most U.S. Southern California cities, and their respective utilities, currently import over 80 percent of their water supply. California's largest city, the City of Los Angeles, with over 4 million persons, is reducing that dependency and headed to better selfreliance, security, and resiliency. Significantly exacerbated by Climate Change, the current Western U.S. California drought, causes that importation to be, at best, vulnerable. Good policies can set up good infrastructure planning, which enables good plumbing. A bold and courageous city mayor, Mayor Garcetti, advised by a water cabinet, defined a "One-Water" policy requiring better use of local sources and issued an executive directive to reduce current water imports 20 percent by 2017, and reduce to 50 percent imports by 2024. This presentation walks through Garcetti's vision, the "One Water" policy, and discusses the current engineering assessments and planning, which will enable the construction and changes in operations. The approach will better secure the City 's future water demands including consumer, community, and local government actions, engineering more reliable infrastructure, accessing leading global

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technologies, and better processes and behaviors that are more resilient and less vulnerable to climate changes and other potential events.



ALAIN PALMANS CEO - CILE (Liège, Belgium) Natural Disasters, Pollution and Terrorism

Bio - Alain Palmans has a double degree in Political Science and Public Administration from the universities of Liège (BE) and Bradford (UK). He strengthened his knowledge in Politics and International Relations while studying a master at Dublin University. Mr Palmans has been working for more than 20 years as administrator in various public services, holding high-level positions. He developed extensive knowledge and expertise in water management and established an important network of contacts with the EU and other international institutions. On top of that, for the last ten years, he has been teaching several public administration courses at Liège University. Since 2008, he works as CEO of CILE, one of the main water utilities companies in the Walloon region (BE). CILE produces and supplies drinking water to more than half a million people in the Greater Liège area. As a member of the World Water Council, CILE shares its experience with other water public bodies abroad. In 2009, he became Board member of several organisations: the regional water treatment company (AIDE), a key regional financial company (ECETIA Finances), a renowned Belgian IT group (Network Research Belgium) and the regional water company in Wallonia region (Société Wallonne des Eaux). Since 2011, Mr Palmans is member of the Board of Directors and Management Committee of AQUAWAL (an representing association the producers, distributors and purifiers of water). In addition, in 2012, he has been appointed chairman of the experts Committee of the regional water 2 management public company.















Natural disasters, pollution and terrorism - The presentation will describe the use of a bottling plant as an alternative water supply for

emergency situations. CILE can provide the relevant public authorities with spring water packaged in ten litre bottles.

SESSION 5



YOSSI YAACOBY Director, WaTech, Mekorot The Global Innovation Challenge

Bio -Mr. Yaacoby has 17 years' experience in the water industry. He started his career as a marketing director and project manager at EMS Mekorot Projects, a subsidiary of Mekorot, the national water company, and has acquired extensive experience in water and wastewater treatment, desalination, pumping equipment, pipe works, water supply systems through engineering and sales. In 2015, Mr. Yaacoby was appointed as Chairman of the WaTech Israel Conference and Exhibitions by the Ministry of Economy and the organizers. In this capacity, Yossi has spearheaded the preparations and execution of the conference and exhibition featuring 180 presenters and over 10,000 guests, including people from around the world. Mr. Yaacoby has managed water treatment projects, including the desalination of brackish water, remediation of wells, chlorination and the construction of pumping stations at water corporations in Israel and Cyprus. He has also headed projects for the supply of pumping equipment and water systems in the Palestinian Authority through international funding. Mr. Yaacoby has vast experience in executing water supply projects of large magnitude in Israel and overseas. In January 2010, Mr. Yaacoby joined Mekorot as Director of its WaTech® Division. WaTech[®] - the Entrepreneurship & Partnership Center for Water Technologies - is a unique program that supports new innovative water

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technology solutions which are relevant to the day-to-day functioning of Mekorot . In addition, Mr. Yaacoby has headed innovative ventures in the water industry with start-up companies in Israel and abroad. He is in charge of the applied research in the company, which includes activities with the academia and research institutes in Israel and abroad including the EU. Furthermore, he is responsible for promoting the field of intellectual property. Mr. Yaacoby holds a B.Sc. in Chemical Engineering and an MBA from Ben-Gurion University of the Negev, Israel. Mr. Yaacoby is married with three children.

The Global Innovation Challenge- the Main Challenges of the water sector globally are -Accessible and high quality freshwater is a limited and highly variable resource. OECD projections show that 40% of the world's population currently lives in water-stressed river basins, and that water demand will rise by 55% by 2050; Over-abstraction and contamination of aquifers worldwide will pose significant challenges to food security; In 2050, 240 million people are expected to remain without access to clean water, and 1.4 billion without access to basic sanitation; Water infrastructure in the OECD area is ageing, the technology is outdated and governance systems are often ill-equipped to handle rising demand, environmental challenges, continued urbanization, climate variability and water disasters; Significant investment is required to renew and upgrade infrastructure, estimated at USD 6.7 trillion by 2050 for water supply and sanitation, while including a wider range of water-related infrastructure could triple that bill by 2030 (OECD, 2015c) Main Needed Actions -Develop fit-for-purpose financial instruments -Institutions and stakeholders are currently















discussing how to combine public and private funding, Structural funds, bank loans and private investments within various policy initiatives; Establish coherent regulatory landscape Regulations standards, (incl. harmonized implementation, joint targets) are essential to innovation in the water sector. Although water regulations are highly conservative, at the same time they should also address and facilitate innovation. We can work with the regulatory agencies to understand and anticipate new regulations so that new technologies do not result in new obstacles and to attempt state to state recognition of successful pilot tests; Improve public and investor confidence by showcases and demonstration sites; Testing Network - We shall develop a testing network of facilities and a process to demonstrate new technologies; Dissemination of knowledge - We can spread the word of success as new technology shows measurement improvement.



FERNANDO NARDI

UNESCO Chair, Asst. Prof, Uni. of Perugia

The city of Rome flood risk mapping program: enhancing resiliency using innovative GIS and hydro-modelling

Bio - Fernando Nardi, civil hydraulic engineer with a PhD in flood hydrology from the Sapienza University of Rome, is actually assistant professor at the University for Foreigners of Perugia (Italy) in affiliation with the WAter Resources REsearch DOocumentation Centre (WARREDOC) and the UNESCO Chair Water Resources Management and Culture. Principal investigator since 2011 for the city of Rome flood risk mapping program and Italian Representative for the Natural Science Commission at the UNESCO 38th General Conference, Dr. Nardi's research and scientific expertise relates to the development and application of advanced GIS and 2D hydraulic modeling software for urban planning, flood risk

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assessment, management and mapping. A fellow member the Honors Center of Italian Universities (H2CU) and team member of the flood modelling software FLO-2D, he has participated to several international research and consulting projects providing his professional expertise as flood, mudflow and debris flow specialist within waterdriven risk mapping projects. Author of several international journal publications and invited contributions to conferences, Dr. Nardi is an active member of the hydrologic scientific community and supporting member of AGU, EGU and IHAS, also serving as reviewer in the main international journals.

The city of Rome flood risk mapping program: enhancing resiliency using innovative GIS and hydro-modelling - The historical center of the city of Rome, part of the world UNESCO heritage sites, is at flood risk for the potential inundation of the Tiber river that flows through the city within the historical levees "I muraglioni" before reaching the Tyrrhenian sea. Nevertheless, an observed increase of the frequency of inundations in the urban and peri-urban areas has been observed in recent years even with frequent rainfall conditions. The flood hazard in the highly urbanized area is, in fact, not only due to the Tiber, but also to the rainfall-induced local flooding and to the small catchments of the Tiber tributaries that have been the subject of intense and often unregulated urban development. This work presents the results of the latest researches developed by the Tiber River Basin Water Authority and the City of Rome for the flood risk map updating program with specific regard to the development and application of innovative data and solutions based on Geographic Information System (GIS), remote sensing, hydrologic and hydraulic numerical simulations to understand flood hazard causes, effects and optimal mitigation strategies for enhancing the resiliency of the city to water driven disasters.





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JORDI RAICH-MONTIU General Manager, s::can, Iberia

i::scan [™] – Revolutionizing Online Water Quality Monitoring

Bio: Dr. Jordi Raich-Montiu holds a European PhD in Environmental Chemistry by the University of Barcelona with abroad research collaborations with the University of Copenhagen. Dr. Jordi Raich-Montiu worked several years for CETaqua, the Water Technological and Research Center of the AGBAR Group (Suez Environment) in the field of water quality (surface, drinking and waste water) where he also got a Postgraduate in drinking water distribution network by the Polytechnic University of Catalonia and Agbar Group. Since 2013 he joined s::can Messtechnik GmbH to be in charge of the business segment of drinking water quality and water security monitoring in the distribution network and to be the Project Manager of the FP7 European Project "Smartwater for Europe". Recently, Dr. Jordi Raich-Montiu has become s::can Iberia General Manager. Besides, he has been presenting his work in different Congresses, he has published scientific papers in different journals in the field of environmental chemistry and he has actively participated in several European research projects and networks. Currently he is a member of the "Chemical and Biological Risks to water sector" Group from ERNCIP Project (European Reference Network for Critical Infrastructure Protection) of the JRC (Joint Research Centre).

i::scan [™] – *revolutionizing online water quality monitoring* - s::can is the only firm in the world that has given its heart and soul to online water quality measurement. Since our foundation 15 years ago, nothing else has come out of our development department; nothing else has come out of our production sites.

The i::scanTM is our new miniature multiparameter spectrophotometer probe: From cost

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sensitive simple applications to highly resolved "Smart Water Grids", in small unmanned plants, or even in single building protection. The i::scanTM combines the versatility of a spectrophotometer probe with the cost of a simple photometer. The UV-Vis spectrometry is a purely optical technique, which offers the possibility to accurately measure color, sum organics (COD, TOC, DOC) as well as turbidity, UV254 and temperature, all simultaneously within a single instrument. It is extremely reliable and stable over time, no chemicals or other consumables are needed. Due to its low power consumption it can be easily powered by solar panels and used in unmanned stations. The compact design allows the insertion of the probe directly into pressurized water pipes. The in-pipe monitoring equipment is easy to use and operate. It can be installed in only 30 minutes in any pipeline without interruption of service. s::can products are very sensitive to detect any contamination in real-time. By setting threshold and pattern alarms, you can turn your monitoring system to a powerful event detection system.



JUHWAN KIM

Director of Water Research Center in Korea Water Resources Corporation (Kwater)

Bio - From January 2014: starting as a head researcher to become a director general (senior head researcher) of Water and waste water Research Center in K-water with over than 40 researchers. As a member of water and waste water committee in Korea Water Resources Association and Korean Society of Civil Engineers etc., I have been playing an important role as a chief water supply area and an advisor to coordinate Korean Smart Water Grid. From January 2004 to January 2014: team leader as principal researcher in the same company with national and K-water research projects. Technical

















supports related with water supply sector for Kwater enterprise in the area of water resources management for water supply and land development for industrial purpose. From December 1994 to January 2004 : starting as a senior researcher in a same corporation for national and K-water research projects described below and participate in K-water oversea business program as a consultant and a lecturer for educational purposes. My function consist in;



CHRISTOPHE PERROD Deputy Director Gen, SEDIF

The provision of public drinking water services in the greater Paris Metropolitan Area: Network innovation to a Smart network

Bio - Born December 15, 1960 X - IPEF Engineer, 30 years of professional activity in the field of water including: 2010-2012 TECOBIST, President and principal shareholder - photovoltaic, cover, seal; 2005-2010 GEOSCAN _ and STRUCTURE REHABILITATION President and principal shareholder - nondestructive diagnosis of large sewerage; 1994-2005 Lyonnaise des Eaux - Suez Environnement: Project Director" Americas," Investment Director - Aguas Argentinas - Buenos Aires; Director of the regional center – Bordeaux, Director of the research center "sewerage network and storm"; 1984-1994 Ministry of Environment which - Deputy Director of the Water Agency Rhin Meuse, Deputy Director of the Water Foundation -OIE (Limoges)

The provision of public drinking water services in the greater Paris metropolitan area: Network innovation to a Smart network

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JOEP VAN DEN BROEKE Project Manager, Optiqua **Optical Sensor Technology for** Water Quality Monitoring

development of planning and designing technologies either hydraulics and water quality aspects, Water demand forecasting for water facilities' planning and operation, leakage reduction in water distribution systems, decision-making support for rehabilitation/replacement of water pipes, data mining including time series analysis of water related data, information in order to implement Korea Smart Water.

Bio: Dr. Joep van den Broeke is senior project manager at Optiqua Technologies, a company that develops and produces innovative water quality monitoring technologies. Dr. van den Broeke has extensive experience in water quality and sensor related R&D and has worked with technology suppliers and end-users developers, in development, implementation and operation of (online) water quality monitoring systems. In addition to his expertise with sensoring and monitoring, Dr. van den Broeke has extensive expertise with drinking water quality and legislation, water quality monitoring for security purposes. drinking water and wastewater treatment as well as data collection and data handling and development of software for these purposes. Dr. van den Broeke has Master of Science degree in Chemistry from Leiden University (the Netherlands) and a Ph.D. in from Utrecht Chemistry University (the Netherlands). Dr. van den Broeke has participated in numerous major international research projects on water and sensors, including EU projects TECHNEAU, PREPARED and SmartWater4Europe, and he was the principal investigator for the Global Water Research Coalition project "Compendium of sensors and monitors in the global water industry".

Optical sensor technology for water quality monitoring - Optiqua Technologies is a provider of innovative tools for both online and sample based water quality monitoring. We develop and produce innovative optical biosensor technology















for the real-time and on-site detection of contaminants in water. Optiqua is based in the Netherlands and Singapore, where we have development and production facilities. We serve water utilities around the globe with our groundbreaking solutions. All Optiqua products leverage our award winning and patented lab-on-chip sensor technology. Optiuga's proprietary optical sensor technology is a platform technology that has been developed into both generic and specific sensors for the rapid detection of chemical and (indirectly) microbiological compounds. The technology has applications across a wide variety of markets including water and water security, but also pharmaceuticals, clinical, agriculture, food and beverages, and other industrial processes. Optiqua's core technology is a patented, optical sensor chip based upon Mach-Zehnder Interferometry which measures minute changes in the refractive index of a water (or other sample) matrix. The refractive index is impacted by the presence of dissolved substances in the water and the sensor is capable of detecting these changes at a level of sensitivity ranging from parts per million to parts per trillion. The bare sensor chip provides the basis for continuous, real-time measurement and, in combination with biochemical receptor layers, allows for rapid, sample-based analysis. Optiqua's research and development focuses on (i) integrated optics and sensor design; (ii) algorithm development and data analysis; and (iii) interface chemistry and assay development for water quality testing.



ISAM SHAHROUR

Director, SUNRISE, Univ. of Lille

SunRise Smart City: Large scale demonstrator of the Smart and Sustainable City

Bio - Isam Shahrour, distinguished professor, University Lille1- Science and Technology. Graduated from the National School of Bridges and Roads (Ponts et Chaussées - Paris), professor Isam Shahrour is strongly involved in the research, higher education and partnership with the socioeconomic sector. During the period 2007 - 2012, he was Vice President "Research and doctoral program" at the University Lille1. He was also president of the Innovation Agency "Lille Metropole Technopole" for regional economic development via innovation. Currently, Isam Shahrour is director of the Regional Research "Civil Laboratory and Geo-Environment Engineering - LGCgE" and head of the international master "Urban Engineering and Habitat." Since 2011, he coordinates a regional Smart City project "SunRise: a large-scale demonstrator of the smart and sustainable city" which involves a large partnership with local government, water, energy and information technology operators and startups. His research activity concerns: Smart and sustainable Cities, Sustainable management of resources, Geotechnical natural and geoenvironmental Engineering. He conducted an intensive research activity with a strong industrial partnership. His activity resulted in about 100 refereed journal papers and supervised 60 PhD dissertations. He gave about 15 lectures on the smart city concept and implementation, including a TEDx talk.

SunRise Smart City: Large scale demonstrator of the Smart and Sustainable City - The SunRise-Smart City project started in 2011 within a large public-private partnership with the goal of building a large scale demonstrator of the smart city. The demonstrator aims at experimenting, developing and demonstrating technological and societal innovations on a territory equivalent to that of a small town. The demonstrator is implemented at Scientific Campus in the North of France, which stands for a town of 25 000 inhabitants. It concerns all the urban networks: drinking water, sewage, electricity and district heating. The water network is composed of 16 km of pipes. It was monitored within BioSmart, Incom, SmartWater4Europe prijects by 100 AMR, 5 pressure sensors, acoustic dispositive and water quality control devices (EventLanb and S:scan). Thanks to this instrumentation, we have³ a

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significant data concerning both hydraulic and water quality issues. Data is used for the development as well as the for the verification of innovative methods for the detection of abnormal events such as leakage and water contamination.



CATALINA PEDRAZA Specialist Project Manager, Thames Water Utilities Ltd The Challenge of Data

Bio - Catalina is a Project Manager at Thames Water, in charge of the contractual, conceptual, financial and administrative management of the UK demosite. Responsible for the coordination of the input from the local partners and ensuring objectives are met and that costs, deliverables and milestones are aligned with the budget. Catalina has 15 years of experience in the water industry. Before Innovation, she worked in Asset Strategy and in Waste Asset Planning. Previously, Catalina was a consultant for the Colombian Ministry of Environment, presenting water and sanitation projects for national and international funding. She also worked for Bogota's water company.

The challenge of data - TWIST is the UK demonstration site in Smart Water 4 Europe. It generates a huge amount of data. Some would call it big data. Two District Metered Areas (DMAs) are



JEAN-PIERRE TABUCHI Prospective Advisor, SIAAP SIAAP's Artificial Intelligence

for a High Level of Environmental Performance

Bio - Jean-Pierre Tabuchi has studied hydrogeology but his professional is sanitation. He starts at Seine Normandy Water Agency where he spend 25 years. He worked during almost ten years on storm water management. After that he has been in charge during 7 years of

full of smart meters that tell us how much water is consumed every 15 minutes. Energy meters are recording electricity used by the water treatment works and pumping stations. TrunkMinders are recording operational data including flow, pressure, vibrations and sound over 1,000 times every second across more than a kilometre of vital trunk main. BurstMinders are doing much the same across four select DMAs, measuring and analyzing pressures more than 100 times per second, whilst Incertameters handle the flow measurement and subdivide the DMAs into smaller areas. All of these, combined with our existing network meters and energy meters, provide a enormous amount of data. This data is hugely informative, providing invaluable information network operations for and investment planning. It's a step change in awareness, and it's now a reality. But with great volumes of data comes a desperate need for modernization, and that's where data science is needed. The challenge is to get innovative thinking, problem-solving, mathematics, statistics, programming and industry knowledge together. How to understand the systems, tools and techniques required to extract insight and value from huge amounts of data. Analytics is not just fancy dashboards but a world of complex algorithms, data mining an automation that can make operations simple.

managing financial support to major water public utilities (water supply and sanitation) in Paris region. In 2009 he joined the SIAAP where he is project manager in Health & Environment Department in the field of prospective. He's currently involved in the Greater Paris water management evolution, energy and sludges management, alternative sanitation, climate change, smart systems in sanitation, and different other topics. Jean-Pierre is also involved in technical assistance in integrated water resources management in China and Cuba.

















SIAAP, short presentation - SIAAP (Syndicat Interdépartmental pour l'Assainissement de l'Agglomération Parisienne) is the public utility that cleans every day waste water every day from 9 million inhabitants of Ile de France, including storm water and industrial waste water. This has allowed to get to a large step forward in the Seine and the Marne river quality improvement. SIAAP, with more than 1,700 employees, cleans 7d / 7, 24H / 24, almost 2.5 million m³ of water, transported by 440 km of main sewers and treated by its six wastewater treatment plants (WWTP). There are 282 communities connected on the main sewers operated by the SIAAP. SIAAP has a real time control system to manage flow repartition between its 6 WWT taking into account weather forecast and also the availability of **WWTP** capacity and sewer system maintenance works. The annual operation expenses are around 550 M€/year and currently the investments expenses are around the same level. This due to an important work program for rebuilding its main WWTP and building a new storm water storage facility. SIAAP's artificial intelligence for a high level of environmental performance - Currently the SIAAP operates a large scale real time control system which is named MAGES which is in operation since 2008. This system is quite unique because of its large scale : the collecting area is around 1800 km2 and it is relevant because SIAAP WWTP are interconnected. Today this system aloud a flow management based on rain forecast and depending on operation conditions of the 6 WWTP mainly because of their maintenance operations but also on the sewer system. Tomorrow, the main stakes will be to be in compliance with the good status of the Seine river at least during 90 % of the time. In order to be able to reach this target, the SIAAP has to prepare new tools based on real time measurements and numerical modeling. This project aims to have an holistic approach in order to operate the sanitation system to fullfill several environmental objectives. The needs are around pollutants loads forecast at the inlet of the

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WWTP, management tools for its main WWTP : Seine aval and a Seine river quality forecast in order to setup the target that the operators will have to perform in order to keep the Seine river in good status 90 % of the time



LUIGI FRANCHIOLI Professor University of Pavia Smart Water Distribution Networks

Bio - Professor Luigi Franchioli obtained his Master Degree in Environmental Engineering (specializing in Hydraulics) cum laude at the University of Pavia. After the Master Degree, he attended the Civil Engineering PhD Course (still specializing in Hydraulics), during which he worked on Pressure Driven Analysis (PDA) approach in water distribution networks analysis. After obtaining his PhD, he worked as a fellowship researcher, mainly on reliability analysis of water distribution networks and on their performances evaluation by compact indices. In particular, he focused his attention on the relationship between the actual delivered flow and the nodal pressure in water distribution networks, obtaining a Q-H equation for Pressure Driven Analysis application, and on the pipes failure ratio estimation. From 2012 to 2013 he was the Smart and Medium Enterprises delegate at the Member State Committee of European Chemicals Agency and at CARACAL for REACH Regulation implementation. During this period he also worked as an energy saving expert to the PINE project. Since September 2015 he is Adjunct Professor of Hydraulics Course for Buildings Engineering and Architecture Students at the Engineering Faculty of Pavia University, in a double degree program between Pavia and Tongji University.

Smart Water Distribution Networks: a new relationship between delivered flow Q and nodal head H for Pressure Driven Analysis application -









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The task of a Water distribution Network (WDN) is good quality water supplying, satisfying the users' demand, with a nodal pressure sufficient to ensure the distribution. The common WDN analysis approach considers the users' demand as a problem data and checks if the pressure is enough to fully satisfy it. Such approach, commonly named Pressure Driven Analysis (PDA), does not give reasonable results when the WDN working conditions are different from the design ones. In particular, a WDN working in poor hydraulic conditions, that may occur due to climate changes widely forecasted by the international scientists community, cannot be evaluated by DDA; therefore, the analysis aims to verify the WDN performance, calculating the actual delivered flow, depending on the nodal pressure, by Pressure Driven Analysis (PDA). A smart approach to the WDNs reliability evaluation must consider that the real working conditions should be different from the design ones: the deliver flow should be lower than the actual requested value. In these scenarios, calculation of the actually delivered flow Q is truly relevant and it requires the definition of a good Q-H equation. Our research has been focused on a Q-H (flow-head) equation, statistically based, for the PDA procedure application.



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