

Water for prosperity: resourcing the world, together



New environmental solutions and options for long-term sustainability are needed if the planet and its 7 billion inhabitants are to prosper. This is especially true given the world's historic "take-make-use-dispose" economy which we now understand wasted considerable resources and triggered waves of pollution throughout the 20th century. With increasing pressure on natural resources, competing economies, a substantial increase in world population along with the emergence of a much-larger global middle class and a much greater gap between rich and poor, Veolia has been quietly building and demonstrating a framework of solutions to support people, cities and businesses. Our view is built around the emergence of a circular economy – a market in which all materials in an industrialized economy are in a continuous flow, a market in which one person or operation's waste automatically becomes another's resource.

Through our experience and this framework, we understand how water is increasingly a strategic element for sustainable, long-term growth. We address the need to boost energy efficiency and reduce cost for cities, people and companies. We also demonstrate how companies can benefit when byproduct recovery and value extraction occurs in their manufacturing process.

As the global leader in optimized resource management, we have the ambition to support cities in their quest for greater prosperity and sustainability, and for this we want to contribute in five major areas:

1 Inclusiveness:

Water supply, sanitation and hygiene are a matter of health and dignity. Veolia has vast experience in enhancing water supply and sanitation in the poorest of countries. We now serve millions of citizen in slums, many who previously had no access to healthful water supply and sanitation. We do this through various partnerships with local and national governments and authorities, and financial institutions, that rely on operational and engineering expertise to supply more people with the same resources and assets. These programs are dependent on social engagement to reach out to citizens on a day-to-day basis, everywhere in the world.

Nagpur, India: In June 2007, the city of Nagpur decided to provide 24/7 water supply in every home of the 2.7 million inhabitants, including 800,000 slum dwellers. In order to support the City's project at such an unprecedented scale, Veolia partners with local, social associations: alongside the public works teams, the "Social Welfare Team" was created to craft solutions to specific problems which may arise. A key factor of success was the creation of the "Water Friends" network, which provides future users with information on water, hygiene, and payments schemes. The Nagpur project hence fully aligns with the Indian policy of inclusiveness.



2 Livable cities:

All citizens want better and cleaner streets, air, water, urban landscapes and a higher quality of life. Cleaning and recovering a community's waste or wastewater, or optimizing district heating and cooling are just several aspects of Veolia's scope of work on all continents. While providing these critical services, we simultaneously seek to minimize the environmental footprint of urban zones and to better protect biodiversity within and outside the city limits.



Milwaukee: an excellent example of joint Water and Carbon Impacts Analysis:

- The replacement of natural gas with landfill-generated methane gas to produce electricity significantly reduces the carbon footprint and water impact index equivalent.
- The carbon footprint is further reduced when methane gas generated by the anaerobic digestion process is captured and used to produce the electricity required by the aeration phase of wastewater treatment.
- Veolia is working to help quantify the capacity of green infrastructures so that they can be fully used to complement the more energy intensive pumps-and-pipes, thereby reducing the carbon footprint further.
- Public water conservation has a positive impact on water resources and carbon emissions, reducing the need for energy-consuming water & wastewater treatment.

Team building and stakeholder engagement to restore the environment in Gabon: In Oyem, Gabon, the lake was contaminated by the oil spills from the old power plant which was decommissioned in 2005. The operator SEEG, teamed up with the National Anti-pollution Center, the local authorities (Governor, Mayor, Prefect, Neighborhood authorities, and the Department Of Water & Forest), two NGOs, sub-contractors and consultants to clean-up the old plant site and lake using a biological process. The protection of the neighbouring population's health and the environment are now ensured, and a sports complex is being constructed before handing the site over to the local authorities.

3 Circular economy:

The “take, make, use and dispose” resource-intensive model has reached the planet's boundaries, as increasing water scarcity shows. Veolia provides solutions to cities and industries that enable them to more locally source water, energy and materials while recovering waste streams and performing better on an economic, environmental and social basis. The circular economy also creates jobs.

Urumqi, a circular approach to waste water treatment: In Urumqi, China, strong growth and the explosion of water demand and wastewater treatment needs are critical in a region already experiencing severe water stress. The municipality chose Veolia to upgrade and operate its wastewater treatment works. Using energy-efficient technologies of decontamination and biogas production, this project is key to adapt to the challenges of climate change, in terms of energy efficiency, carbon footprint and stress on water resources. The Urumqi plant produces energy through the recovery of sewage sludge, and treated wastewater suitable for irrigation purposes, which reduces pressure on local water resources.



4 Resilience:

Veolia was there during Hurricane Katrina (Louisiana, 2005), the Tsunami in South Asia (2009), the Tokyo earthquake (2014) and has responded to many other disasters. Our on-the-ground expertise in engineering, operations, technology, capital projects and project management supports clients in their efforts to increase their resilience and provide emergency help to their community.



Flood Protection in Prague: In 2002, while Prague was under water due to heaviest floods ever recorded, Veolia employees ensured the continuous supply of drinking water for all of the inhabitants. Following the floods, Veolia became an indispensable part of the flood protection system, maintaining and regularly testing all mobile flood equipment that now protects the central sewerage network. In early June 2013, another wave of floods affected a large part of Bohemia, including Prague. Prolonged and copious rain swelled small water courses in Prague such as Botič and Rokytká, which flooded certain parts of the capital. Throughout the floods, the Central Wastewater Treatment Plant worked at its full capacity in accordance with the Flood Emergency Plan. The 2013 floods put to test the flood control system in Prague as well as Veolia team. Despite the difficult situation, our employees managed to protect Prague citizens' property and health thanks to their huge effort.

5 Smart:

Veolia has adopted a digital approach to improving operational performance and customer satisfaction; the capacity to measure, simulate and communicate in real time is bringing more economic efficiency and a better quality of life in a more citizen-centric approach.



Smart in saving money: Veolia and IBM have developed a partnership on smart water networks solutions:

- **CAPEX reduction :** The association of IBM's enhanced technology and Veolia's operational excellence carries the promise of 10% capital budget decrease for water network asset replacement.
- **Water loss reduction :** Water losses in a city can reach up to 30%. Reducing these losses by 5% through enhanced predictive maintenance generates significant savings for the city budget.
- **Crew utilization:** Using the solution and associated services may increase by up to 25% Veolia or city work crew utilization and 10 to 15% in transportation cost reduction.



These five ambitions for cities directly and indirectly support society's development. They are at the core of Veolia's services provision throughout the world. Continuously, we adapt or generate new research findings including epidemiology, toxicology, sociology, pollution treatment and communication technologies. In our work with industries and cities, we acknowledge the strong influence of more stringent environmental and health standards, the increasing accountability of national, local authorities, and industries, and we recognize the financial and governance models provided by international institutions. We also need to work closely with the civil society and the numerous NGOs whose expertise and partnership make change possible. **What proves efficient is the use of our nearly 180,000 professionals worldwide**

to build capacity and scale-up promising experiences where it is needed, and the social engagement for the poorest. But organization cannot work alone. Local governance, national leadership, a robust supply chain, financial and economic models, effective validation and verification, practical standards, and an informed and willing citizenry are important for success.

Veolia believes that good governance, management efficiency and long-term financing are of equal importance to drive a sustainable improvement. Good governance starts with clear roles, public debate and transparency, which must be based on key indicators. Financing schemes must cover capital and operations at the same time, including capacity building. And management efficiency can, and must, match the finance and governance arrangements. The World Water Development Report 2015 summarizes this, by stating that wise investment in water infrastructures and sound water management facilitate the structural changes necessary in many economies.

Hundreds of cities and industries tap into Veolia partnerships to enhance their water service delivery or to build and maintain their infrastructure. There is a significant body of data on the costs and benefits related to the reduction of diseases in the areas of healthcare, productivity, mortality, travel and waiting time averted. Indirect benefits will also be better quantified, such as limitation of flood-related impacts, better education through higher school and work attendance, especially for girls, greater security and resilience, and improved livelihood.

Facts support a shift to more partnerships, involving multiple stakeholders such as local authorities, civil society, businesses, regional and national authorities, and international finance institutions. As the World Bank example of the Karnataka Urban Water Sector Improvement Project shows², it is possible to provide continuous 24/7 water supply through individual connections to all residents including the poorest, while reducing overall water consumption (by 10%) and increasing revenue collection (by a factor of almost seven). Most of the solutions are at the nexus between citizens, businesses and cities. Each are asking how their cost of water or energy management can be reduced, how they can increase their revenue streams to deal with water management, how they can make the best of the numerous offerings by a variety of providers, from consultants to suppliers to financial institutions, with the ultimate question: what exactly is the value of water? The fact is that no one is able to address these attributes in isolation, as the solutions lie at the intersection between the sectors. The time for partnerships has come, with the common goal of creating and sharing value, rather than competing and creating value independently.

To make this happen, we need shared values, goals and metrics. This is exactly what the UN does with the 2030 Sustainable Development Goals. Veolia is committed to using them as basis for our future partnerships with local authorities and industries, to contribute to the successful achievement of the Global agenda.

¹ UN-Water, *Water for a Sustainable World, 2015*

² *Water and Sanitation Program, 24x7 Water Supply is Achievable, 2010*

Contact : dominique.gatel@veolia.com